Ethnomathematics in Balinese Dance Movements and Its Potential for Learning

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Abstract: *Balinese dances were passed down by our ancestors as one of the Indonesian cultures which need to be preserved, fostered, and developed. They have both elements of art and mathematical practice in it. For this reason, this study aimed at describing ethnomathematics in basic movements and variations of movements of Balinese dances. The research was conducted using a qualitative approach in form of ethnography study. The data obtained from the resource persons namely Mr Dibia, Mr Kusuma and Ms Tania Wedhi was collected by interview and observation and the main instrument used was human instrument. The data was then analysed using Spradley design through domain analysis, taxonomy analysis, componential analysis, and cultural themes analysis. The result showed the existence of ethnomathematics in Balinese dance movements in forms of parallel lines, intersecting lines, line segments, acute angles, obtuse angles, right angles, reflections, rotation, and translations.*

Keywords: exploration, ethnomathematics, basic movements and different types of movements in Balinese dances

1. Introduction

Culture is one of our ancestor's inheritances that is still being observed and preserved until today. Indonesia has a lot of cultures and each tribe has their own unique culture which makes them different from the others - take for example dances in East Java are different from those in Bali. Balinese dances, especially, have distinctive movements which cannot be found in dances from other areas of Indonesia. The eye movement which is called as *nyeledet*, or the basic stationary / standing position which is called as *agem* is different among dances. With all the uniqueness they possess, the government has been actively preserving Indonesian cultures so as not to be stolen and claimed by other countries. Likewise, the government of Bali has been trying to preserve Balinese culture, especially Balinese dances by creating many events to facilitate the creativity of Balinese artists. Moreover, there are also traditional dancing extracurriculars at schools in order to help look after our ancestors' legacy.

Balinese dances are personification of the complexity of values in Hindu-Bali culture which are manifested in human body movements (Dibia, 2013). Dance in Balinese is called *igel*. Balinese dances have several elements such as *pepeson, pengawak, pengecet,* and *pekaad*. There are several types of Balinese dances such as solo dance, duet dance and group dance (Iryanti, 2000). Based on their development areas, Balinese dances can be divided into two namely North Bali and South Bali dances. Balinese dances are also classified into three types based on their purposes namely sacred dances (*Tari Wali),* semi-sacred dances (*Tari Bebali)* and entertainment dances (*Tari Balih-Balihan).* Taking all of these into consideration, the movements in Balinese dances are varied from one dance to another depending on their purposes and where the dances are originated from. The same movement which every Balinese dance has is the basic movements. These basic movements become the framework of creating the variations of dance movements.

When watching a Balinese dance, we are served with a range of elegant movements. Movement is what we do in life. Accordingly, the movements of Balinese dances are also inspired by the movements that we do in our everyday life. They are given unique names such as *melingser (*spinning), *agem (*basic stationary/standing position), and many more names. The basic movements in Balinese dances are used to create a dance so as to create new variations of movements. Hence, dancers need to know basic movements and variations of movements in Balinese dances. The basic movements and variations of movements should be really based on the dance's basic position which is called as *adeg-adeg*. The *adeg-adeg of* Balinese dances has four important elements such as leg position, body position, hand position, and head position. Based on these elements, there are four types of movements such as *agem, tandang, tangkis,* dan *tangkep*. Knowing all these principal rules is important so dancers will not move randomly but follow the prevailed rules.

People generally are not aware that in their lives they apply mathematical concepts, for example in the techniques used by Balinese artists (called *Undagi),* in looking for a good day (*Dewasa Ayu*) for a religious ceremony, and in doing buy and sell transactions. Mathematics is an exact science which is based on logic and related to abstract things and thoughts and can be learned from many different aspects (Afriyanty, 2019). Besides values, Balinese dances also have mathematical practice in them. This is the reason why the researcher decided to study about Balinese dance movements in order to discover the mathematical practice that the dances have.

Prior research related to mathematical practice in a piece of art was carried out by Desmawati (2019). That research examined

the existence of ethnomathematics in the movements of *Sigeh Penguten Lampung* traditional dance. That research found the concept of two-dimensional geometry and geometric transformation in the dance movements. In addition to that particular dance from Lampung, mathematical practice was also found in the research carried out by Sa'adah et al (2021). The research discovered the concept of two-dimensional geometry and geometric transformation in *Kretek Kudus* dance. Another study conducted by Destrianti (2019) also discovered mathematical practice in *Kajei* dance such as the concepts of geometric shapes such as cylinder, surface area, volume and the geometry of rhythm.

D'Ambrosio first introduced the term ethnomathematics in 1985 and, as quoted from Desmawati (2019), he said that ethnomathematics is mathematics which is practiced in a cultural group, children of certain age, professional classes, and so forth. Through his thought, mathematics learning can be done while maintaining the cultural heritage of the surrounding community. Sirate (2011) mentioned several mathematical domains or activities in daily life such as counting, grouping, designing buildings or tools, measuring, creating patterns, finding locations, playing, explaining and so forth. These domains later play a role in determining ethnomathematical findings.

In the process of reviewing information, the researchers carried out an exploration, which means exploring with the aim of gaining more knowledge. Exploration is an activity done by digging up as much information as possible in order to reach the predetermined goals. Based on the research background mentioned previously, the researcher carried out a study entitled "Ethnomathematics in Balinese Dances Movements and Its Potential for Learning" with the aim of describing the ethnomathematics found in the movements of Balinese dances and its potential for learning.

2. Materials and Methods

This research was an ethnographic type with a qualitative approach. The ethnographic type of research was chosen in order to observe and describe a cultural phenomenon in a society as a whole, while the qualitative approach aimed at describing the process to find the result which is represented in forms of words and figures. This is supported by Creswell (2012) who defines ethnography as a qualitative research procedure to describe, analyse and interpret the elements of a cultural group such as patterns of behaviours, beliefs, and languages that develop over time.

The research was conducted in Bali from December 2021 to July 2022. The subjects of the research were Balinese dancers who were decided using the snowball sampling technique - a technique with samples which grow like a rolling snowball which is initially small and then getting bigger and bigger. In this research, the firstly interviewed subjects would suggest more subjects to be studied to get more detail information.

The data was collected using the triangulation technique which was done by observation, interview and documentation, and the instrument used was human instrument. As the main instrument, the researcher had a role to choose resource persons as data source, decide the research focus, collect the data, interpret the data, and make conclusions based on the research findings. In addition to the main instrument, supporting instruments were also used such as observation sheet and interview guidelines.

The data was analysed using Spradley design. According to Sugiyono (2014) and Sanapiah in Sarwono (2006), Spradley divides data analysis into four namely domain analysis, taxonomy analysis, componential analysis and cultural theme analysis. The last step is checking the validity of the data by extending the observation, increasing reliability, doing triangulation of the data sources.

To get the data, the researcher used the following scientific procedure namely 1) determining the social situation such as selecting informants and their activities which were researched; 2) preparing the interview guidelines; 3) collecting data from the informants through observation, interview and documentation; 4) doing domain analysis based on the data gathered and in this analysis the researcher carried out data reduction in order to discover the domains of the examined data; 5) doing taxonomy analysis to find more detailed data based on its domains; 6) doing componential analysis; 7) carrying out cultural theme analysis on the predetermined components in order to discover the ethnomathematical findings; and 8) doing a validity test to ensure valid findings which were marked by the conformity of the information gathered during the research.

3. Results and Discussion

Interview results

Interviews were done three times with three different informants. The first informant was Prof. Dr. I Wayan Dibya who is a famous Balinese artist from Gianyar and a professor at ISI Denpasar. The second informant was a graduate of Dance Art major at ISI Denpasar named Bagus Kumara, S. Sn and the third informant was Putu Werdhi Cinari who is an alumnus of SMK N 3 Sukawati or so called as KOKAR. The reason for selecting these three resource persons was that, besides they are pursuing a career in the field of dances, those three informants have a lot of experience in creating new dances by using a variety of basic movements (*pakem*) and the basic body position (*abah*).

In general, the result of the interviews with those three people showed that dancers need to know mathematics. In learning or creating new dances, Balinese dancers, known as *pragina,* have to stick to the basic body position (*abah*) of a dance movement. *Abah* means basic body position in Balinese dance. Some of basic movements of Balinese dances employ mathematical concepts. In a movement called *nyiku luang* or *nyiku ngelung* as well as in the basic

stationary position called *agem*, the mathematical concept of right angle is used. Then, there is a movement called *nyeregseg* which is made by moving our left foot forwards or to the left or right side. The spinning movement which is called *melingser* is done by rotating on the axis of one leg and turning around 360°. Balinese dance movements also have jargons namely *akepel (*one fist) and *duang kepel (*two fists). These jargons are used when making *pilak* position both in female and male styles of dances. *Pilak* position is a position in which our legs are spread in the direction of our feet and the width of the leg being opened is decided using fists. In creating a new dance, in addition to creating floor patterns, creating patterns of movements is also necessary in order to make it easier to determine the flow of movements based on the desired story. Usually, in *pengawak (*part of dance composition that displays slow dance movements), there is a movement pattern to the left and to the right side. The movement to the left has the same pattern as the movement to the right and it mirrors the right *agem*.

The result of observation and documentation

Observation and documentation were done in order to observe the movements of Balinese dances. The movements were demonstrated by four dancers namely Ida Ayu Ulan Amanda Mahasuari, Ina Anggasari, Pradnya, and the researcher herself. The basic movements of Balinese dances which apply the mathematical practice are *kembang pada, tapak sirang, tapak kimpus, tapak dara, mapah* and *mapah biu, nyiku ngelung* and *nyiku luang*, hand position in *agem kanan* and *agem kiri, sepat pala, pilak* and *seledet*. On the other hand, the variations of Balinese dance movements which implement mathematical practice are *ngukel, ngegol, malpal, ngumbang, kenser, mungkah lawang, ngeseh, gelatik nuut papah, melingser, nyeregseg,* and *ngepik*. Mathematical practice is also used in doing *abah* or the basic body position during *agem* in several dances such as in *Gambuh* dance, welcoming dance which uses a copper bowl with wide rim, *Oleg Tamulilingan* dance, *Teruna Jaya* dance, *Wiranjaya* dance, *Kebyar Legong* dance, *Bebancihan* dance, *Jauk* dance, and *Bebarisan* dance.

The figures 1 show basic feet position. Figure 1 (a) is *kembang pada* position. It is a feet position in which two feet are positioned parallel to each other or to the same direction. Figure 1 (b) is the female style of *tapak sirang* position, in which two heels meet each other and the toes of both feet face outward at an angle of 45° respectively. On the other hand, to make the male style of *tapak sirang* position, shown by figure 1 (c), the two heels meet each other but the toes of both feet face outward in an angle of between 45° and 90°. Figure 1 (d) shows *tampak kimpus* position in which the toes of the two feet meet each other and figure 1(e) shows *tapak dara* position in which the two feet form an L angle. Figure 1 (f) shows the female-style of *pilak* position. The position of the feet is the same as it is in *tapak sirang* position as shown by figure 1 (b). However, the two heels are separated by a fist (*akepel).* Figure 1 (g) shows the male style of *pilak* position in which the heels of both face inward, parallel to the toes

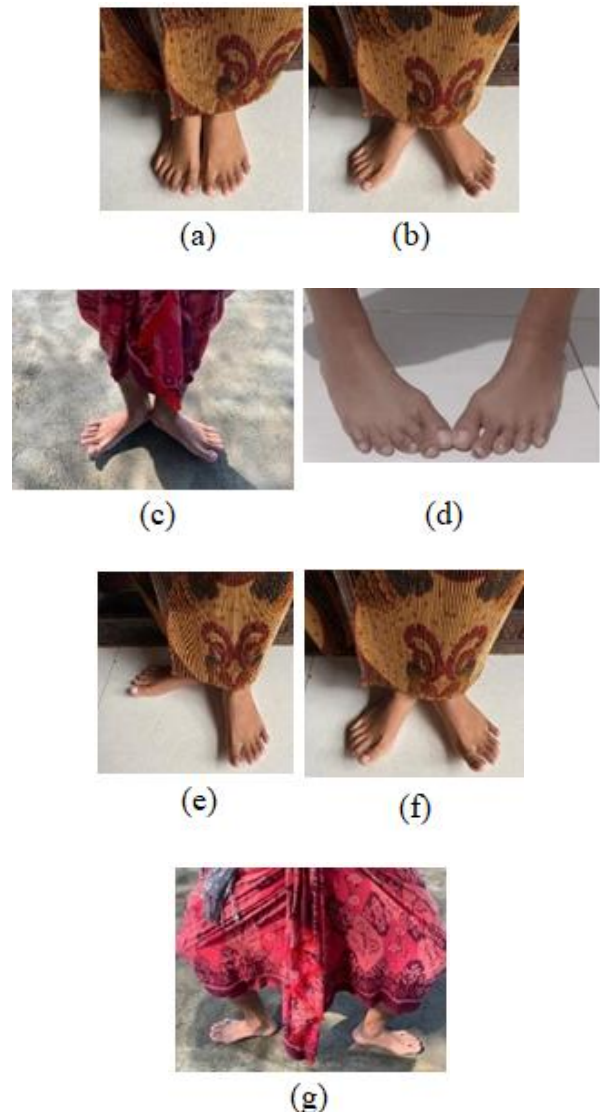which face outward and the two heels are separated by two fists (*duang kepel).*

Figure 1: Feet Position

Figure 2 (a) shows *mapah* position in which the arm is raised in front of the chest and both the upper arm and the lower arm make a straight line. Figure 2 (b) is *mapah biu* position in which the arm is bent in front of the stomach. Figure 2 (c) is a picture of *nyikung gelung* position in which the arm is bent at an angle of less than or the same as 90°. Figure 2 (d) shows the position of *nyiku luang* in which the bending at the elbow is wider than it is in *nyiku gelung* position, which means that the arm is bent at an angle of over 90°. The positions of *nyiku ngelung* and *nyiku luang* are basic positions in forming an *agem*. These four gestures (shown by figure 2 (a) to figure 2 (d)) are four basic arm positions. There are also the variations of these arm positions such as *sepat pala* movement as shown by figure 2 (e), in which the elbow bending is formed using *nyiku gelung* and the elbows are in line with the shoulders.

(a)

(b)

(c)

(d)

(e)

Figure 2: Basic Arm Position

Figure 3 (a) shows the arm position when doing the female style of the right *agem* in which the right arm is at the eye level and the left arm is parallel to the chest. Likewise, the left *agem*, as shown by figure 3 (b), mirrors the right *agem*. Figure 3 (c) shows the position of the arms when doing the male style of the right *agem*. The right hand is in line with the eyes whereas the right hand is aligned with the chest. Similarly, the left *agem,* as shown by figure 3 (d) mirrors the right *agem*.

(a)

(b)

(c)

(d)

Figure 3: Arm Position

Figure 4 (a) shows the movement of the eyes to the top (*nyeledet atas)* in which each of the eyeballs moves from the centre to the right top corner at an angle of 45°. Figure 4 (b) is the movement of the eyes to the side (*nyeledet samping)* in which the eyeballs move from the centre to the left or right. Even though the main focus of this *nyeledet* movement is on the eyeball movement, it also

involves chin movement which follows the movement of the eyeballs.

(a)

(b)

Figure 4: Movement of the Eyes

The variations of movements are developed from the basic movements. Figure 5 (a) shows the variation of movement called *ngukel* in which both hands rotate 360° with the axis on the wrist. The right hand rotates anticlockwise while the left hand moves clockwise. The movement in figure 5 (b) is called *mungkah lawang*. In this movement variation, the hands which first cover the face are then moved far away from each other to form an *agem* gesture. *Mungkah lawang* is usually seen in *Arja* dance when the dancer opens the curtains and in *Condong* dance, too. Figure 5 (c) shows the movement variation called *ngepik*. In this movement the fingertips of one hand face downwards and the fingertips of the other hand face upwards - the wrist of one hand is put on top of the other wrist. These hands then rotate with an axis on both wrists which see the fingertips of both hands face the opposite directions - the previously facing upwards now facing downwards and vice versa. The figure 5 (d) shows *ngejat pala* or *ngeseh* movement. This movement makes the arms rotate 360° with an axis on the shoulders.

(a)

(b)

(c)

(d)

Figure 5: Variations of Movements Arm

In figure 6 (a), the movement is called *ngumbang*. This type of movement is a walking movement. To do the right *ngumbang*, the body should face right, the left hand at the eye level and the right hand is aligned to the waist. Likewise, the position of all body parts in left *ngumbang* mirrors those in right *ngumbang*. Figure 6 (b) is *malpal* movement. This movement is also a walking movement which is typically used in male dances. The right *malpal* is done by raising the right leg while the left *malpal* is done by raising the left leg. Figure 6 (c) is *ngegol* movement which is also a walking movement in dances. To do the right *ngegol*, the head is leaned towards the right side, the left foot is raised slightly, and the backside (butt) is moved to the right. In contrast, the left *ngegol* mirrors the movements in the right *ngegol*.

(a)

Figure 6: Variations of Movements Feet

Figure 7 (a) shows *nyeregseg* movement. This movement begins with *kembang pada* position and then one of the feet is raised. There are two types of *nyeregseg* movement namely the movement to the side (left or right) and the movement forwards. Figure 7 (b) shows *melingser* movement. *Melingser* in Indonesian means spinning. This movement rotates 360° with an axis on one leg. Figure 7 (c) shows *gelatik nuut papah* movement. This type of movement is done by retracting the leg to the side according to its prior position - the leg which faces forwards moves to the side by staying facing forwards. The same goes to the leg facing to the side. Figure 7 (d) shows *kenser* movement. This movement causes a change of position which is done by rotating. There are two axes namely the heel and the toes.

Figure 7: Variations of Movements

Abah is a special position for certain dances. The following movements are *abahs* for certain dances. If a dancer does not follow it when dancing, the dance will lose its esthetical values. Figure 8 (a) is the *agem* specially of *Bebarisan* dances which belong to *wali* dances. The position of the arm is *nyiku gelung* and the elbow is aligned with the chest. Figure 8 (b) shows the special *agem* of *Jauk* dance which is also a type of *wali* dance. The position of the arms applies the concept of *nyiku gelung* except the fingers are laid to the side. Figure 8 (c) shows the first dance created in Balinese culture which is called as *Gambuh* dance. It is danced by a man and woman who act out characters. The *agem* of the male dancer implements the concept of *nyiku luang* with one arm going straight up at an angle of 45°. Meanwhile, the *agem* of the female dancer uses the same concept but with the arm going straight to the side. Figure 8 (d) shows the *agem* of the female style of *Oleg Tamulilingan*. *Oleg Tamulilingan* dance is a duet dance - the female dancer's *agem* uses the concept of *nyiku ngelung* with one arm going straight up at an angle of 45°.

Figure 8: *Abah* 1

Figure 9 (a) shows the *agem* of *Oleg Tamulilingan* male dancer. The *agem* gesture is made using the concept of *nyiku luang* and the dancer holds a fan. Figure 9 (b) is an example of welcoming dances which uses a cooper bowl with a wide rim. Some examples of welcoming dances are *Pendet, Panyembrahma,* and *Gabor*. The *agem* of this dance uses the concept of *nyiku ngelung* with the hand aligning with the eyes and the chest. Figure 9 (c) shows the *agem* of *Bebancihan* dance in which it is made by using the concept of *nyiku luang* with the arm aligning the eyes and the chest. Figure 9 (d) is a picture of the *agem* of *Teruna Jaya* dance and *Kebyar Legong* dance in which the *agem* is made using the concept of *nyiku luang* and one of the arms is in *mapah biu* position. Figure 9 (e) is a picture of the *agem* of *Wiranjaya* dance using the concept of *nyiku luang*.

Figure 9: *Abah* 2

Based on the data collected, the researcher did a data analysis using Spradley design to find out the ethnomathematical findings in the movements of Balinese dances. The researcher discovered ethnomathematical domains in Balinese dances namely language, measurement, and play domains. The second step in the data analysis was taxonomy analysis. Based on its domains, the researcher determined the taxonomy or the levels that suit the language, measurement, and play domains. The result of taxonomy analysis on the language domain showed that certain language expressions, which are called jargons in ethnomathematics, have calculation values when they are further examined. The terms *akepel (*a fist) and *duang kepel (*two fists) are measurements units using the human's fists. The taxonomy analysis on the measurement domain, related to ethnomathematics, is done using a traditional measurement tool which is the human's fists. The analysis on the play domain showed the relation of Balinese dance and ethnomathematics in form of creating patterns. The created patterns represent the movements to the left or the right. The next step of data analysis is componential analysis. The result showed some

ethnomathematical components. The components of the language domains were the jargons *akepel (*one fist) and *duang kepel (*two fists); the components of measurement were the measurement tools namely *akepel (*one fist) and *duang kepel (*two fists), too; and the components of play domain were basic feet positions, basic arm and hand positions, basic movements, variations of movements and special *agem* positions.

Ethnomathematical findings in Balinese dance movements

The final step of the data analysis was cultural themes analysis. This analysis was done to determine the mathematical concept found in the domain analysis. The result showed the existence of ethnomathematics in form of jargons namely *akepel (*one fist) and *duang kepel (*two fists) and in the measurement domain, it is done using a traditional measurement tool in form of the human's fist. In the jargon *akepel,* a fist is used, while in *duang kepel*, two fists are used. The ethnomathematical findings in the dance movements can be elaborated as follows.

Based on the analysis of figure 10 (a), it can be concluded that *kembang pada* position represents parallel lines. The analysis of figure 10 (b) about the female style of *tapak sirang* position, figure 10 (c) about the male style of *tapak sirang* position and figure 10 (d) about *tapak kimpus* position show an acute angle and intersecting lines in each of the position. Figure 10 (e) about *tapak dara* position. Figure 10 (f) about the female style of *pilak* position shows a right angle and intersecting lines, while the male style of *pilak* position as shown in figure 10 (g) shows a line segment and, if it is extended, will form a straight line.
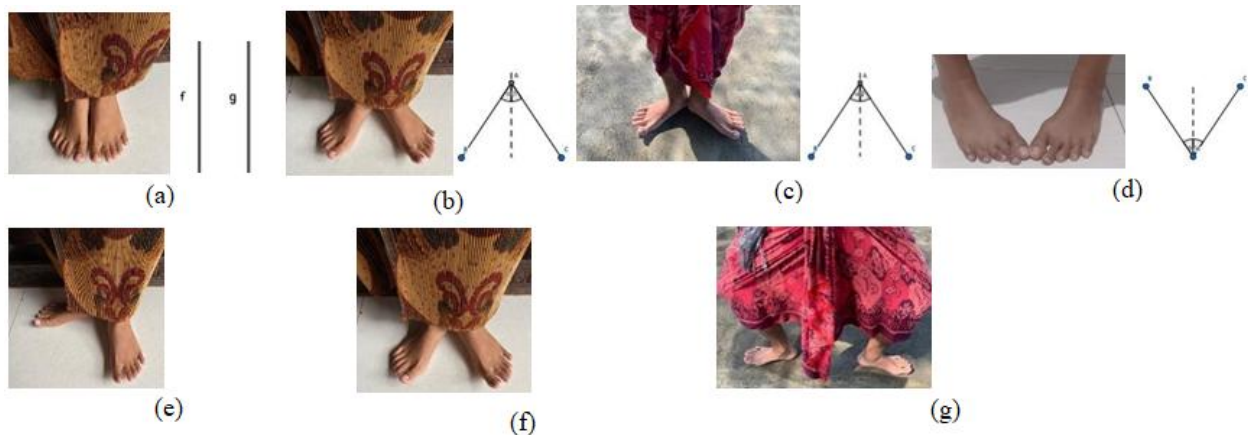

Figure 10: Analysis Movements of Feet

Based on the analysis of figure 11 (a) about *mapah biu* movement, there are a right angle and intersecting lines in the bend at the wrist. Likewise, in figure 11 (b) about *mapah biu*, there are a right angle and intersecting lines in the elbow bend aligning with the stomach. Figure 11 (c) shows *nyiku ngelung* position in which the elbow bend is at $0° < x \leq 90°$. That means there are an acute angle, a right

angle and intersecting lines in the elbow bend. Figure 11 (d) shows *nyiku luang* position. The elbow bend is at $90° < x < 180°$ which means that there are an obtuse angle and an interjecting angle in the elbow bend. Figure 11 (e) shows *sepat pala* movement in which the elbows are bent 90°. This means that there are right angles and intersecting lines in the elbow bend when doing this movement.
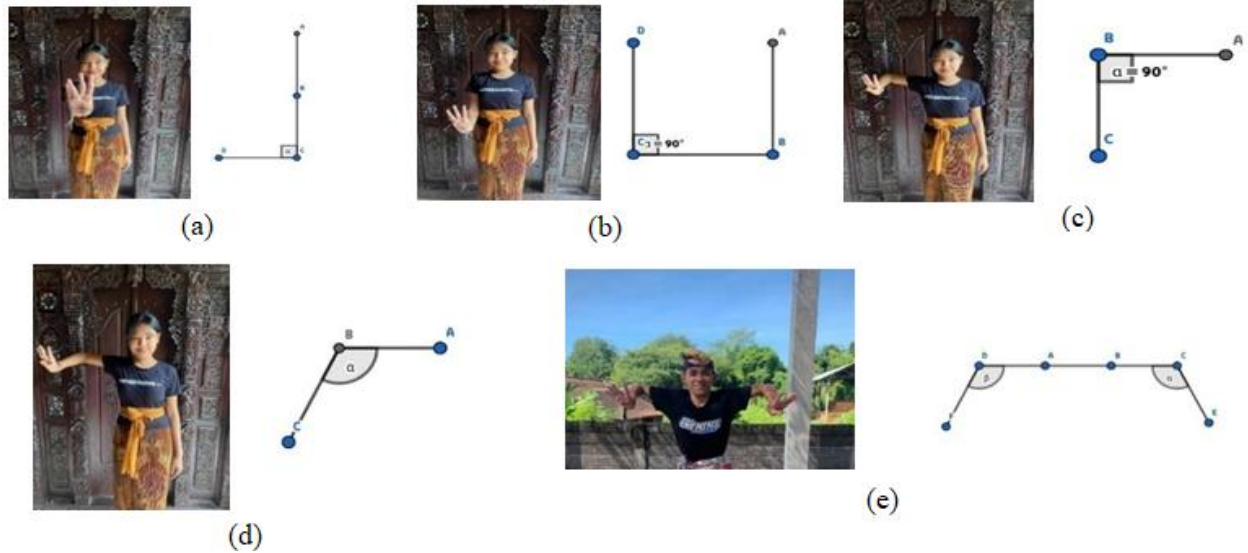
Figure 11: Analysis Movements of

The position of the female style of *agem* as shown in figure 12 (a) applies the concept of *nyiku ngelung* and therefore the resulting angles are an acute angle and a right angle while the bend at the elbow forms intersecting lines. On the other hand, as shown by figure 12 (b), the position of the male style of *agem* implements the concept of *nyiku luang* and the resulting angles is an obtuse angle and the elbow bend makes intersecting lines. The *agem* of *Bebarisan* dance as shown in figure 12 (c) and the *agem* of *Jauk* dance as shown by figure 12 (d) implement the concepts of *nyiku gelung* in which the elbow bend is less than 90° so it makes an acute angle. Both the male and female style of the *agem* of *Gambuh* dance, as shown in figure 12 (e), use *nyiku luang* and therefore there is an acute angle in the elbow bend. The male dancer's arm going upwards forms an angle of 45° so there is an acute angle in this position. On the other hand, the female dancer's straight arm forms a straight line. Figure 12 (f) shows the *agem* of *Oleg Tamulilingan* dance of a female dancer implementing *nyiku ngelung* and her arm being

raised forming an angle of 45° which means there is an acute angle in this position. Figure 12 (g) is about the *agem* of *Oleg Tamulilingan* dance of a male dancer and figure 12 (h) shows the *agem* of *Bebancihan* dance. Both of the aforementioned dances implement *nyiku luang* so there is an obtuse angle in these two positions. Figure 12 (i) shows the *agem* position of welcoming dances using a copper bowl with wide rim or so-called *bokor*. It applies *nyiku ngelung* so there is an acute angle in this position. Figure 12 (j) shows the *agem* position of *Teruna Jaya* dance and *Kebyar Legong* dance in which one of the arm movements implements *myiku luang* and the other arm movement implements *mapah biu* so there are an acute angle and a right angle in the elbow bends. Figure 12 (k) is the *agem* position of *Wiranjaya* dance which implements *Nyiku Luang*. One of the hands holds a fan (*kepet)* so there is an obtuse angle in the elbow bend of the hand holding the fan. Seen in figures 12 (a), (b), (f), (i), (l), (m) and (n), there is a reflection concept as a result of mirroring right *agem* to make left *agem*.

Figure 12: Analysis of *Agem*

In figure 13 (a) *nyeledet atas* movement happens by moving the eyeballs from the centre to the top right corner so in this movement, there's a translation concept with a vector of 45° which is an acute angle. In figure 13 (b) *nyeledet samping* movement happens by moving the eyeballs from the centre to the top beside corner so in this movement, there's a translation concept. Figure 13 (c) shows *ngukel* movement. This movement shows a rotation of 360° with an axis on the wrist. The right hand moves anticlockwise while the left hand rotates clockwise.
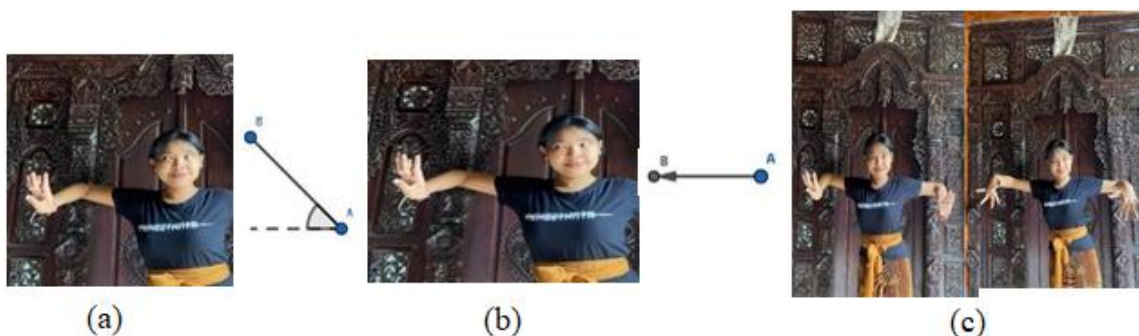

Figure 13: Analysis of *Nyeledet* and *Ngukel*

Figure 14 (a) shows *mungkah lawang* movement which is a movement done by opening the hands and moving them to the opposite direction. This shows the concept of translation. Figure 14 (b) shows *ngepik* movement which is a rotating movement with an axis on the wrist. The hand rotates 180° implementing the concept of rotation. Figure 14 (c) is *ngeseh* movement and it is a movement done by rotating the shoulders which shows the existence of the concept of 360° rotation in this movement. Figure 14 (d) shows *nyeregseg* movement which is a feet movement to the same direction which testifies the concept of translation. Figure 14 (e) shows *melingser* movement which is a full spinning movement which applies the concept of 360° rotation with an axis on one foot. Figure 14 (f) shows *gelatik nuut panah* movement, in which the feet are moved to the side on the same direction which

means that there is a translation concept in this movement. Figure 14 (g) shows *kenser* movement which is a rotating feet movement with two axes on the heel and on the toes which shows the concept of rotation.
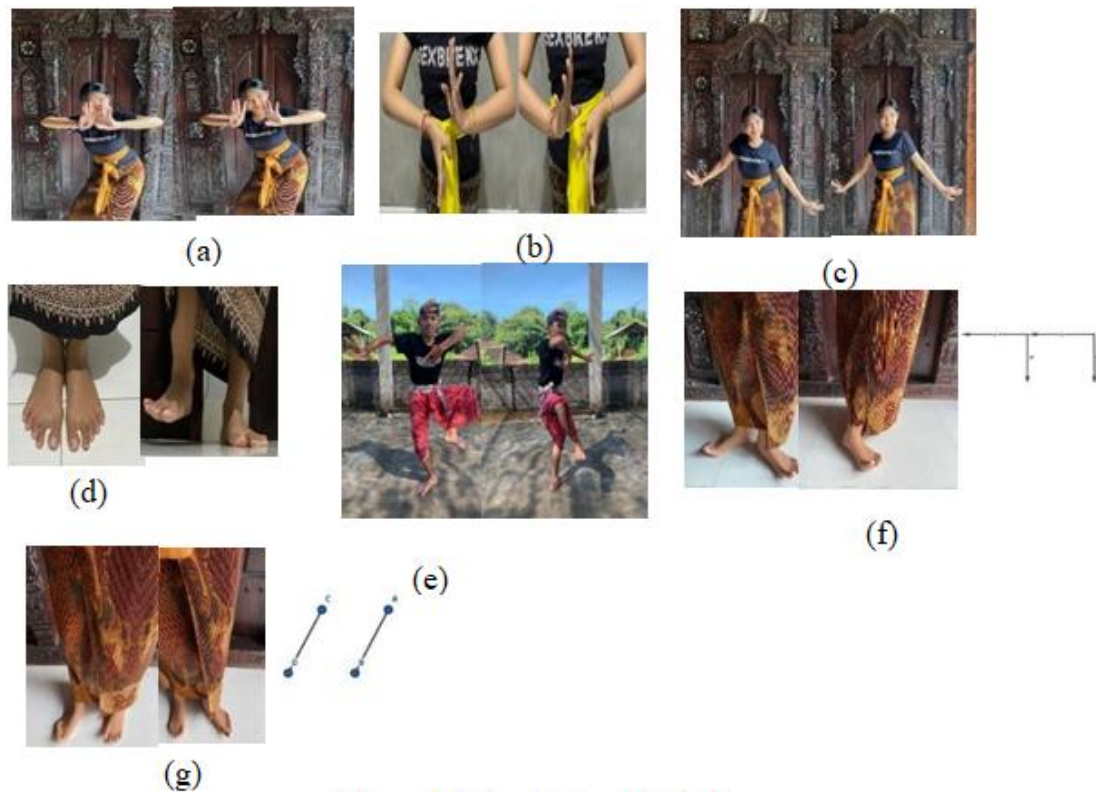

Figure 14: Analysis of Variation

The findings in the search are hoped to be able to be used in mathematics learning. The findings can be used as a theme in creating a mathematical project. Freedom curriculum encourages the use of projects in students' learning in which all teachers collaborate to create projects to be given to their students. Culture-based themes will be beneficial for students' learning because Balinese culture has been widely known in the society and it is a real-life learning source. Students in vocational high schools who are studying visual communication design, for example, can do a project about geometric transformation in Balinese dance by making 2 dimensional or 3 dimensional animations. In the dance program, teachers can use these findings as references to assign a project to create a new dance using the basic gestures with geometric concepts in the gestures. The findings can also be used as contextual problems to strengthen the Pancasila student profile in terms of critical thinking and creativity.

4. Conclusion

The research findings show that Balinese dance movements comprises mathematical domains or activities such as language, measurement, and play domains. Based on the data analysis, the mathematical concepts found in Balinese dance movements are such as jargon, lines, angles, translations, reflections and rotations. The use of contextual problems is really needed in learning, for example incorporating culture into learning will motivate students to learn because culture is an integral part of their life. Besides, culture can give students more varied learning sources. Henceforth, teachers can utilize the result of this elaboration of Balinese dance movements in creating mathematics materials for their students.

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