RESEARCH ARTICLE

Ethnomathematics on Dayak Tabun Traditional Tools for School Mathematics Learning

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ABSTRACT

The purpose of this study was to describe ethnomathematics on Dayak Tabun traditional tools in school mathematics learning. This study uses a qualitative approach, with descriptive research methods. Observation techniques are direct observation and communication techniques, namely interviews with Dayak Tabun community leaders, especially makers, users, and traditional stakeholders. the results of the research obtained are: 1) form, learning context in geometric concepts, namely flat and wake up space; 2) aspects of the motive, the learning context in the geometry concepts, like are two-dimensional, lines, and angles, besides that the algebraic concept is a number pattern in the form of a constant sequence; 3) the way of making, the learning context in the algebraic concept of numbers, namely fractions in dividing the material into two parts, calculating operations especially on natural numbers, sequential numbers through measurement of materials; 4) in terms of the use of tools, the context of calculating operating learning is the tool used in the dance, namely the tapping of movements and elevation angles in trigonometric material, namely the use of a Sangkuh Akai tool. Therefore, ethnomathematics on traditional Dayak Tabun ethnic instruments can be used as the context of school mathematics learning.

1. INTRODUCTION

The uniqueness possessed by traditional Dayak Tabun tools is not much noticed by the public, even the Dayak youths themselves are not able to make these tools. In fact, many young people do not know the kinds of traditional tools themselves. A random survey by conducting a brief interview with the mathematics education student of the Teacher Training University (IKIP) PGRI Pontianak, which is of the Dayak ethnicity, was obtained from information that students only knew certain traditional tools such as the Mandau, Marabai, while the other tools were mostly unknown to them. In addition, craftsmen who are able to make these traditional tools are also increasingly scarce, as is the case with the Dayak Tabun community with a number of craftsmen of no more than five craftsmen who have different skills. If this continues, cultural extinction will occur or maybe the culture will be recognized by other allied countries.

Culture is the accumulation of all beliefs and beliefs, norms, institutional activities, and patterns of communication from a group of people (Liliweri, 2002) avoided in everyday life, because the function of Indonesian Education can be sought in indigenous cultures of indigenous peoples there is in our country a unit that cannot.

Cultural integration in schools should be carried out on learning that occurs in schools. Mathematics functions as a need to be explored (Simanjuntak, 2014: 108). This means that education and culture are symbolic languages, surely with the symbol mathematics can describe the properties of traditional tools. The nature of

traditional tools such as shapes can be geometrically understood, while their size can be algebraically rendered.

Ethnomathematics of mathematics which is practiced used in a culture, social, or community activity is called practiced among identifiable cultural groups, such as national language societies, labor groups, children of certain age brackets, professional classes, and so on (Gerdes, 1994:19). It can be interpreted that ethnomathematics is mathematics applied by certain cultural groups, labor groups/farmers, children from certain classes of society, professional classes, and so on. One reason why Ethnomatology is a scientific discipline and has become a widespread concern lately is that teaching mathematics in schools is indeed too formal. Therefore learning mathematics is very necessary to provide content and bridge between mathematics in everyday life based on local culture with school mathematics so that there will automatically be an introduction or preservation of culture, especially Dayak Tabun traditional tools. For this reason, the author intends to find ethnomathematics on Dayak Tabun traditional tools and their use in school mathematics learning.

According to D'Ambriaso (Tandililing, 2015: 40) in the prefix, "ethno" is interpreted as something very broad that refers to the socio-cultural context, including language, jargon, code of conduct, myths, and symbols. The basic word "mathema" tends to mean explaining, knowing, understanding, and carrying out activities such as coding, measuring, clarifying, concluding and modeling. The suffix "tics" comes from techine, and means the same as technique.

While in terms of mathematical terms are interpreted as: "Ethnomathematics, which is practiced among identifiable cultural groups, such as national ribbility, labor groups, children of certain age bracket, professional classes, and so on" (Gerdes, 1994: 19). It can be interpreted that ethnomathematics is mathematics applied by certain cultural groups, labor groups/farmers, children from certain classes of society, professional classes, and so on.

Based on these definitions, can be interpreted as mathematical ethnomathematics practiced by cultural groups such as urban and rural communities, labor groups, children of certain age groups, indigenous peoples, and others. In connection with this definition, the conceptualization of mathematics in everyday life, especially seen in the culture and art we meet the diverse cultures that represent many mathematical concepts.

Ascher (Tandililing, 2015: 40) defines ethnomathematics as a study of the mathematical ideas in a literate society. That is, unconsciously artwork created by a group of people or certain ethnic groups that do not contain a formal education math concepts.

Ethnomathematics serves to express the relationship between culture and mathematics. Thus, ethnomathematics is the use of mathematical concepts in the culture by a particular group of people or a particular tribe (Tandililing, 2015: 38). The idea would ethnomathematics increasing activity existing mathematical knowledge. Therefore, if the development has been studied ethnomathematics it is not impossible mathematics taught understated by taking the local culture. As we know, the "content" and "spirit" math is everywhere, including within a particular cultural group such as architecture, agriculture, community games, grammar, religious worship, even the traditional equipment. Of course, being studied are traits or forms of mathematical therein. Learning math can take advantage of that culture, especially as a source of learning mathematics.

The implementation of an ethnomathematical perspective in the school mathematics curriculum helps to develop students' intellectual, social, emotional, and political learning by using Reviews their own unique cultural referents to impart Reviews their knowledge, skills, and attitudes. This kind of curriculum Provides ways for students to maintain Reviews their identity while succeeding academically (Rosa & Orey, 2011).

The article can be said that the implementation of ethnomathematics in mathematics can develop students' intelligence aspects of intellectual, social, emotional, and management or organization. The more important thing is to apply mathematics ethnomathematics at school provides opportunities for students maintaining their cultural identity.

Culture-based mathematics instruction (ethnomathematics) does not necessarily make the subject a primitive society or back in antiquity. But how culture has become a genuine character of a nation can survive with adjustable time and era today. Ethnomathematics is an approach to teaching and learning of mathematics that build on students' prior knowledge, background, role-playing environment in terms of content and methods, and the past experience and the current environment (D'Ambrosio in Supriya et al, 2016). In this case, the question is contextual mathematics learning Tabun Dayak culture that Dayak Traditional tools Tabun.

Understanding the oldest of culture proposed by Edward Burnett Tylor in his work Primitive Culture, that culture is a complex of all knowledge, belief, art, law, customs and any other capabilities and habits possessed by humans as members of society (Liliweri 2002: 107). Hebding and Glick in Liliweri (2002: 107) also says that

culture can be seen in material and nonmaterial. The culture of material objects appear in the resulting material and human use. For example: of the tools of the simplest such as jewelry accessories hands, neck, and ears, household items, clothing, computer systems design, architecture, automotive engine until the instrument for major investigation though.

According to Fridulin Measure in Muhrotein (2012: 15) revealed there are some fundamental characteristics that are typical of the culture that showed similarity among all the Dayaks in Kalimantan. This is referred to as a base Dayak cultural identity that includes a longhouse, Weapons, wicker, pottery, farming systems. The system has become a culture in the Dayak community includes ritual/ceremony, building up the traditional tools. Dayak culture is the focus of this research is a traditional tool with sub-Dayak Tabun. Dayak is one of the tribes in Kalimantan, West Kalimantan in general and in particular. Based on data from BPS in 2008, the number of Dayaks in West Kalimantan reached 41% of the total population (Muhrotein, 2008: 1). Alqadrie (Muhrotein, 2008: 1) revealed the ethnic and religious identification in the Dayak ethnic group in West Kalimantan more comprehensive or cover the overall cultural identity groups that characterized the elements and the cultural identity of the ethnic group.

The term "Dayak" means people who come from inland or mountain (Muhrotein, 2012: 41). It means "Dayak" is a social group that is in the interior of the mountains. (Alloy 2008: 11) expresses the term Dayak initially indeed results in colonial reconstruction to refer to the entire indigenous population of Borneo Island. In the tribe "Dayak" itself, there are groups "tribal children" very heterogeneous with all the differences, such as language, style of art, social organizations, and various other cultural elements (Muhrotein, 2012: 48). Dayak people of Borneo island consists of tribal groups large and small sub-tribes. There are those who argue that the number of sub-Dayak ranged from 300 to 450s. Alqadrie (Muhrotein,2012: 43) once calculated sub-group detailed, numbered 405.

Alloy (2008: 55) reveals The Dayak who are in Sintang is as follows: Dayak Sekubang, Sekujam, Village, Mualang, Ketungau consisting of Ketungau-pour, Ketungau-Sebaru, Ketungau Fever, Ketungau Sekalau, Ketungau-Sekapat, Ketungau-Senangan, Ketungau-Air-Tabun, Ketungau-Begelang, Ketungau-Merakai, Ketungau-Saber, Ketungau-Kumpat, Ketungau-Embarek, Dayak Bugau, Iban, Kebahan, Lebang, Inggar Silat, Unda Barai, Kayan, Nanga, Goneh , Papa ', Paya', Tebidah, Uud Danum Danum Dohoi Uud, Danum Uud-Cihie, Melahoi, and Selawe. Based on the statement can be seen that Dayak Dayak Tabun is located in Sintang precisely in the District Central Ketungau.

Ketungau is the name of a river that flows in Sintang, before 1963, people living around the river flow Ketungau called People Ketungau (Alloy 2008: 195). Since 1963 emerging new identities. The names of the ordinary ketemengungan based on geographical element name, the river or hill. Nevertheless, the linguistic characteristics that they see themselves had almost the same, which often use the word Nadai which means "no". Thus, when viewed from the side of its linguistic, they are referred to as the Benadai (Alloy 2008: 195).

Dayak Ketungau Air Tabun is a group of Dayak people who live around the river water Tabun where the river empties into the river Ketungau. According to oral history, the first to enter the stricken Air Tabun are Pagun and Legena (Alloy 2008: 195). Distribution of the Air Tabun is now sighted in Central Ketungau in sub-district Village, the Village Panggi Court, Kerta Sari, Argo Mulyo, and the Sumber

Sari. According to the District Statistical Middle Ketungau 2003, the Air Tabun is estimated at 3,739 (Alloy 2008: 198).

Therefore, the focus of this research is "How ethnomathematics on traditional tools of Dayak Tabun in mathematics at school?" To clarify the focus of this research, the researchers lowered a few sub-focus: 1) Tools of traditional ethnic Dayak Tabun which can be used in the learning of mathematics in the School; 2) the use of tools of Dayak Tabun ethnic traditional in learning mathematics in school.

2. RESEARCH METHODS

The method used in this study is a descriptive method. The descriptive research method is intended to gather information about the status of existing symptoms, the symptoms according to what their circumstances at the time of the study (Arikunto, 2013: 234). The purposes of this study were to describe the traditional tools of Dayak Tabun that can be raised in mathematics in school.

Forms of research used in this study are qualitative research with an ethnographic approach. Ethnography is a systematic delineation and analysis of a cultural group, community or tribe gathered from the field in the same period (Bungin, 2012: 181). This research was conducted on the Dayak community in the village Tabun Kedembak Air Tabun Ketungau District of Central Sintang West Kalimantan Province.

The data in this study of the form of traditional tools, motive, means the use of traditional tools, how to manufacture and use of traditional tools in the study of mathematics. Data sources are classified into two primary data sources and secondary data sources. In this study, the primary data source is the Chairman of the indigenous or tribal leaders, collector, maker of traditional tools and mathematics teacher at Dayak Tabun, while the secondary data source is the general public Dayak Tabun.

The techniques of collecting data to be used are: 1) Technical observations used in this study was the observation overtly or covertly, observation sheet used to help researchers perform direct observation of the traditional tools Dayak Tabun that can be raised in the learning of mathematics in the School. In this study used observation sheet is shaped field notes and checklist with four aspects to be measured containing mathematical concepts that form, motif, use and manufacture; 2) direct communication techniques are interviews uses an interview guide contains several questions to be asked orally and face to face with respondents ie, the Dayak Tabun well chairman of indigenous (tribal chief), a collector of traditional tools, maker and teacher of mathematics elementary, junior high and high school who were around Dayak Tabun; 3) Documentation, In this study documentation techniques used are shooting against Dayak traditional tools for mathematics.Kamera Tabun which contains elements used to photograph the observation results obtained for photographing researchers and investigators while talks with the informant/source data.

The data obtained in this study is qualitative data analysis. The qualitative data analysis followed the model of Miles and Huberman. Miles and Huberman in Sugiyono (2016: 246) suggests that activity in the qualitative data analysis carried out continuously until complete so that the data is already saturated. Activities in data analysis, namely data reduction (data reduction), the display data (data presentation), and conclusion drawing/verification (conclusion and verification). (Sugiyono,2016:246). Data reduction means summarizing, choose the basic things, focus on the things that are important, look for themes and patterns (Sugiyono, 2016: 247).

Thus the reduced data will provide a clearer picture, and facilitate research for the next data collection, and look for a time when necessary, this process continues throughout the implementation of the study. The research on traditional tools of Dayak Tabun, the data is reduced are the types of equipment, the form of equipment, utility and equipment manufacturing stage. Simplified data during the study so that eventually obtained data is already ready to be served.

Once the data is reduced, then the next step is to display the data (Sugiyono, 2016: 249). According to the Sugiyono Miles and Huberman (2016: 249) argues that the most frequently used to present data in qualitative research is the text that is narrative. In this study, data presentation is compiled based on the points contained in the data reduction, and delivered using phrases and language researchers are assemblies are arranged in a logical sentence and systematic, so it will be easily understood when read. The third step is the conclusion and verification. Initial conclusions presented only temporary and will be changed if no evidence is strong and supports the following data collection (Sugiyono, 2016: 252). In this study, after testing the source data using the triangulation method, then make inferences from the data that has been presented that are considered able to answer this research question.

Interactive data processing can be presented diagrammatically as a pattern like this:
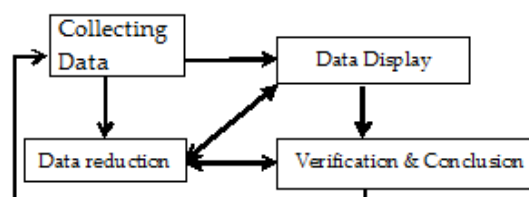

Figure 1. The processing of data interactively
Source: Miles and Huberman in Sugiyono (2016: 247)

To test the validity of the data researchers used a technique precisely riangulation source. Triangulation techniques according to the terms Sugiyono resources (2016: 274) is a technique triangulasi. For credibility test data is done by checking of data obtained through several sources. Chart research procedures performed in this study:

Figure 2. Procedures of Research

3. RESULTS AND DISCUSSION

This study aimed to describe ethnomathematics on traditional tools of Dayak Tabun that can be used in mathematics learning at school. This study was conducted to prepare research instruments. The research instrument prepared is the observation sheet and guide the interview. Observation sheets and interview guidelines prepared by a team of researchers then validated and corrected until the second instrument used by the team to be an eligible validator.

This study was conducted in the village of Panggi Court (Kadembak Air Tabun) Tengah Ketungau Sintang District of West Kalimantan. Licensing is done through the District Office and the Office of Rural orally. The study activities carried out by observing and doing interviews and documentation study to obtain data as much as possible. Observing the process using observation sheet and a camera to be explored further. Interview on the subject of research is the chairman of the indigenous Dayak Tabun, collector, maker traditional tools of observation, and two members of the Dayak community as a user Tabun.

Based on the information obtained from all the informants there are some traditional tools of Dayaks Tabun is sirat, selutup, terabai, saber, tawak, drums, pentik, fabric Sebat, cupai menarang, ligit, stagnant, Tanggui, kelayak, confinement manuk, dimples, pestle, Kisar, tanga 'pepper, traps, entayak, chopsticks, stool' dejected, sangkuh akai ouch, capan and pemansai. Information obtained from the informants are not all the same and therefore test the validity of the data using triangulation techniques sources and there are several factors that affect the limitations of traditional tools Dayaks Tabun is the extinction of traditional tools due to the influence of modern culture so that the role of usefulness in society replaceable and because tabun society today upholds religious values so that there are some tools that may not be used again as opposed to religious values Tabun Dayak community.

Furthermore, a team of researchers and collaborators and mathematics education practitioners in the local area analysis and discussion of the traditional tools of the Tabun Dayaks in mathematics in the School as follows:

a. Lesung

Figure 3. Lesung

Lesung can be used as props in the material that is geometrical geometrical and geometrical cone beam. To menhitung dimple volume can be used formula reduced volume Cone beam volumes.

Volume of lesung   = Volume block - Volume cone or
Volume of lesung   = (p x l x t.block) - (1/3 x $\pi r^2 x\ t.cones$)

As for the formula dimple surface area is spacious sixth minus side area of a circle or L p.lesung = area of six side - the area of a circle: Area of Surface lesung = 2 (p x l) + 2 (P x T) + 2 (L x T) - πr^2

b. Kisar

Figure 4. Kisar

Kisar can be used on materials wake tube space, where the use of Kisar on geometrical tube material can be in the form of application of the matter because it forms a large and difficult Kisar brought into the classroom so Kisar only is used in calculating the volume Kisar. For application can use the formula tube whereas for Kisar surface area can use the bare tube surface area and equal to the volume Kisar Close. Volume tubes and Kisar surface. Kisar circumference of a circle equals its height multiplied.

Volume of Kisar= πr^2 x t.tabung
Area of Surface Kisar = (2 x $\pi\ x\ r$) x t. of tube

c. Kelayak

Figure 5. Kelayak

Kelayak can be used on flat wake rectangular material, where the use of Kelayak can be used as props and also about the application of the rectangular flat wake matter, therefore, the formula to calculate the area and perimeter Kelayak same with formula calculates of the area of a rectangle and rectangular circumference.
Area of Kelayak = P x l
Roving Kelayak = (2 x P) + (2 x l)

d. Tanggui

Figure 6. Tanggui

Tanggui can be used as material geometrical sequence and series in particular geometric sequence and series used in the application form about the weaving pattern that has a number rintai (eye webbing) that vary in level. The use Tanggui on geometrical cone material is as props to get the students to measure the volume and surface area Tanggui that resembles a cone without a mat.

Volume of Tanggui = 1/3 x πr^2 xt
Area of Tanggui = πr xs

e. Tangga Peper

Figure 7. Tanga Pepper

Tanga pepper can be used as material Pythagorean Theorem and Trigonometry (Random Triangle area) because sugang on Tanga pepper can be arranged near and distance by foot tanga pepper so as to form a triangle arbitrary and the right-angled triangle between the legs tanga pepper, land, and sugang. However, for the use of tanga pepper in two such material only in the form of the matter because tanga pepper has a very large size.

f. Bubu

Figure 8. Bubu

Bubu can be used as material comparisons and fractions in the manufacturing process, and material that is waking up geometrical space between the tube and cone mix. As for the use of traps in the material comparison and broken only in the form of matter and the use of traps in the materials wake space could be used as props by the formula traps volume equal to the volume of the tube is reduced by the volume of the cone and to trap surface area equal to the surface area of the tube without the cap.

Volume of Bubu = (r^2 x t.tube) - (1/3xπr^2x t.cone)
Area of Surface Bubu = + (2 x) $\pi r^2 \pi$ r x t.tube

g. Entayak

Figure 9. Entayak

Entayak can be used as materials wake chamber of tube and cones, use geometrical entayak in the material can be used as props to explain the geometrical concepts contained in the entayak namely geometrical tube and truncated cone. For fractional entayak material can be applied in the form of the matter because it relates to the manufacturing process entayak.

Entayak volume equal to the volume truncated cone plus tube volume and surface area entayak equal with truncated cone surface area barefoot and without a lid coupled with the surface area of the tube without the cap.
Volume of Entayak= volume of conical + volume truncated tube

Volume of Entayak = (1/3 x π xt cone x (R² + R xr + r²) + πx r² xt
Area of surface Entayak = wide blanket blankets + tube + broad area of the base tube.
Area of surface Entayak = $(\pi(R + r)s) + (2\pi r) + \pi r^2$

h. Sangkuh Akai Aduh

Figure 10. Sangkuh Akai Aduh

Akai Sangkuh aduh can be used on any material with a triangle trigonometry and elevation angle, use the dalammateri adoh sangkuh akai based usability of the tool. but the use of sangkuh akai ouch on the matter only in the form of application problems.

i. Tinja' Jelu

Figure 11. Tinja' Jelu

Feces dejected can be used on materials that room wake wake beam bare space, the use of stool 'dejected in the wake of matter only limited application of space beams matter, because the great form and stick to the ground. To volurme stool 'dejected beam can both use the formula volume while the stool surface area' dejected equal to the surface area of the beam without a mat.

Area of surface Tinja' Jelu = (p x l) + 2(p x t) + 2(l x t)
Volume of Tinja' Jelu = P x l x t

j. Terabai

Figure 12. Terabai

Terabai can be used in the material compared to the use of terabai, use terapai on material comparisons can be used in the form of matter and materials Flat is Flat isosceles trapezoid, terabai on the material flat wake can be used as props to explain the flat wake contained in terabai and ask students to analyze and measure it using the formula terabai is widely terabai formula equals the area of a trapezoid with isosceles multiplied by two and a circumference equal to the circumference terabai isosceles trapezoid multiplied by two and subtracting the longest ribs.Terabai can be used as material fractions is in the process of use terabai, terabai use the material fractions in the form of application problems.

Area of terabai=(2 x (½ x sum of paralell side x height))
Roving of terabai=(2 x lenght of arround trapezoid) – longest of side.

k. Sirat

Figure 13. Sirat

Sirat can be used in the material flat wake of a combined two right-angled trapezium. Flat Sirat on the material can be used as props to explain the flat wake contained in the mesh and ask students to analyze and measure the area and perimeter mesh. Sirat same circumference dengang twice around the trapezoidal bracket reduced longest ribs and wide mesh coincides with the two right-angled trapezoidal areas and circumference equal with around two trapezoidal bracket congruent reduced longest ribs.

Roving sirat = (2 *x* the number of fourth ribs) - the longest ribs
Sirat Size = 2 x (½ *x* number of parallel ribs *x* t)

l. Baju Temeran

Figure 14. Baju Temeran

Temeran clothes can be used in the material number and flat wake patterns. The concept of the number pattern that is constant in the motif sequence that forms an array of beads and white dots (ex: 3, 3, 3, 3, ...). Concepts of Flat which is two isosceles trapezoid and a circle. Temeran clothes on the material flat wake can be used as props to explain mathematical concepts contained in temeran shirt which is a combination of two isosceles trapezoids and a circle, as well as asking students to analyze and measure the area and perimeter dress shirt temeran. Areas of temeran clothes equal with twice the area of an isosceles trapezoid reduced to the formula area of a circle and the circumference clothes temeran equal with around twice the circumference trapezoidal ribs isosceles reduced longest.

Roving of Temeran Clothing = (2 x the number of fourth ribs) - the longest ribs
Areas of Temeran Clothes = (2 x (½ x Number of ribs parallel x height)) - πr^2

Mathematics is the science of logic on the form, composition, scale, other relationships concepts which are numerous and are divided into three areas of algebra, analysis and geometry (Hamzah and Muhlisrarini, 2014: 47). Based on the research that has been conducted data analysis proves that the Dayak community Tabun there are various tools Traditional can be lifted into the study of mathematics that deals with the measurement and breadth of which are summarized into one material that geometry is the mortar that has a shape resembling a beam and there are cones barefoot therein, Kisar which has a tubular shape, kelayak which has a shape resembling a rectangle, Tanggui which has a shape resembling a cone without a pedestal.

But not only on the geometry, of course, the traditional tools of ethnic Dayak Tabun can also be used in the comparison material, fractions, and the sequence and series. Material comparison in the process of making pots, shards on Terabai use, manufacture of pots and manufacture Entayak while the sequence and series in the manufacturing process Tanggui.

The statement revealed that the study of mathematics can be done by building a knowledge based on the experience of students. This is in line with the principles of mathematics by NCTM in Van de Walle (2006: 3) that the students have to learn mathematics with understanding, actively construct new knowledge from experience and prior knowledge.

Traditional tools Tabun Dayaks are grouped by size and mathematical concepts which are attached to the traditional tools. Sobel and Evan (2004: 67) reveal that the strategy of using props to make the real situation for students to help motivations for students and is able to generate interest in students to the problems faced by. The traditional tools of ethnic Dayak Tabun that can be used as props that dimples, Kelayak, Tanggui, traps, Entayak, mesh, clothes, and Terabai. Using of Temeran traditional tools in the learning of mathematics in the School to strengthen the relationship between local culture and learning mathematics thereby creating realistic or

contextual learning. This is in line with the opinions Traffers in Wijaya (2012: 21) the context or the problem realistically be used as the starting point of learning mathematics. Context does not have to be a real-world problem but could be in the form of games, the use of props, or other situations as long as they are meaningful and can be imagined in the minds of students.

In addition to the use of traditional tools of the Dayaks Tabun in mathematics in school as props, traditional tools Dayaks Tabun can also be used in the application of the matter, thus creating mathematics learning contextual and realistic. Implementation of the local culture in the learning of mathematics in schools to enhance the knowledge, skills, and love of students to the culture. This is in line with the statement of Rosa and Orey (2011:32) the implementation of an ethnomathematics perspective in the school mathematics curriculum helps to develop student's intellectual, social, emotional, and political learning by using Reviews their own unique cultural referents to impart Reviews their knowledge, skills, and attitudes. That is, the introduction of a perspective ethnomathematics School with the help of learning the mathematics curriculum in order to develop the intellectual, social, emotional and political culture of students using their unique referral and instill the knowledge, skills, and attitudes.

4. CONCLUSIONS

Ethnomathematics that appears on the traditional tools of ethnic Dayak Tabun in terms of shapes, motifs depicted on the appliance, the way these tools are made, and how these tools are used. School mathematics learning which is basic math ethnomathematics associated with the traditional tools of ethnic Dayak Tabun include: 1) in terms of shapes can be used as a context for learning in geometry concepts are flat wake and wake up the room; 2) in terms of motifs can be used as a context for learning in geometry concept is Flat, lines, and angles, in addition to the concept of algebra, is a pattern in the form of row number is constant; 3) The terms of the way the tool is created, it can be used as a context for learning in algebra concepts are fractional numbers in dividing the material into two parts, arithmetic operations primarily on natural numbers, sequence of numbers through the measurement of a longer or shorter than the benchmark parameters; 4) The terms of the way the tool is used, as a context for learning counting operation is a tool that is used in that knock-knock dance movement and the elevation angle at which the use of trigonometry material Sangkuh Akai Aduh.

Therefore, ethnomathematics on traditional tools Dayaks Tabun can be used as a context for learning mathematics school. as a context for learning counting operation are a tool that is used in that knock-knock dance movement and the elevation angle at which the use of trigonometry material Sangkuh Akai Aduh. Therefore, ethnomathematics on traditional tools Dayaks Tabun can be used as a context for learning mathematics school. As a context for learning counting operation are a tool that is used in that knock-knock dance movement and the elevation angle at which the use of trigonometry material Sangkuh Akai Aduh. Therefore, ethnomathematics on traditional tools Dayaks Tabun can be used as a context for learning mathematics school.

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REFERENCES

Alloy, et al. 2008. *Mosaic Diversity Dayak Dayak sub-tribes and languages in West Kalimantan*. Pontianak: Institut Dayakologi

Amalia, R., Saiman, S., Sofiyan, S., & Mursalin, M. (2018, September). Designing computer-based fraction worksheets for junior high school. In *Journal of Physics: Conference Series* (Vol. 1088, No. 1, p. 012110). IOP Publishing.

Arikunto, Suharsimi. 2013. *Research Procedure A Practical Approach*. Jakarta: PT Rineka Reserved

Bungin, Burhan. 2012. *Qualitative Research Data Analysis*. Jakarta: King Grafindo Persada

Fonna, M., & Mursalin, M. (2018). Pengembangan Modul Geometri Analitik Bidang Berbantuan Wingeom Software untuk Meningkatkan Kemampuan Representasi Matematis Mahasiswa Program Studi Pendidikan Matematika Universitas Malikussaleh. *UNION: Jurnal Ilmiah Pendidikan Matematika*, *6*(3), 391-402.

Gerdes, P. 1994. *Reflection on Ethnomatematics. For the Learning of Mathematics, 14 (2), 19-21.*

Hamzah A and Muhlisrarini. 2014*. Planning and Mathematics Learning Strategy. Jakarta*: King Grafindo Persada

Kuswana, Dada. 2011. *Methods of Social Research*. Bandung: Pustaka Setia CV

Liliweri, Alo. 2002. *Basics Intercultural Communication*.Yogyakarta: Student Library

Marsigit, et al. 2015. *Development Learning Tool For Increasing Competence Etnomatematika Mathematics Education Students*. It 1-9. Yogyakarta: Faculty Jurdikmat UNY

Masitoh, L. F., & Fitriyani, H. (2018). Improving students' mathematics self-efficacy through problem based learning.*Malikussaleh Journal of Mathematics Learning (MJML)*, *1*(1), 26-30.

Muhrotein, Andreas. Rekrontruksi 2012. *The identity of the Dayak*. Yogyakarta: TICI Publications

Mursalin, M., Nuraini, N. L. S., Purnomo, H., Damayanti, N. W., Kristanti, D., Rohim, A., ... & Fonna, M. (2018, September). The development of algebra teaching materials to foster students' creative thinking skills in higher education. In *Journal of Physics: Conference Series* (Vol. 1088, No. 1, p. 012101). IOP Publishing.

Nawawi, Hadari. 2015. *Methods of Social Affairs*. Yogyakarta: Gadjah Mada University Press

Putriani, D & Rahayu, C. (2018). The Effect of Discovery Learning Model Using Sunflowers in Circles on Mathematics Learning Outcomes. *International Journal of Trends in Mathematics Education Research, 1*(1), 22-25. doi:10.33122/ijtmer.v1i1.26

Rosa, M. And Orey, DC (2011). Ethnomathematics: the cultural aspect of mathematics. Latinoamreicana Revista de Etnomatematica, 4 (2). 32-54

Saleh, Mohammed. 2010. Improving Student Understanding On the Concept of Invention Approach Through the Triangle area in junior high Guided Bandaaceh City. It 42-49. Aceh: *Journal of Science Education Porch*

Sobel and Maletsky. 2004*. Teaching Mathematics*. Jakarta: Erland

Sugiyono. 2016. *Quantitative Research Methods, Qualitative and R & D*. Bandung: Alfabeta

Suharsono and Retnoningsih. 2011. *Complete Indonesian dictionary*. Semarang: Widya Karya.

Tandililing, Edy. 2013. Development of School Mathematics Learning Approach Based Etnomatematika Local Culture as an Effort to Improve the Quality of Teaching Mathematics in National Mathematics *Seminar Sekolah.Prosiding danPendidikan Mathematics*. Yogyakarta: FMIPAUNY.

Tandililing, Pitriana. 2015 Etnomatematika Toraja (Toraja Cultural Exploration). It 40 - 46. Jayapura: *Scientific Journal of Mathematics and Learning was*

National Education Act. 2008. RI Law No.20 of 2003 Jakarta: Sinar graphics.

Van De Walle, John A. 2006. *Primary and Secondary School Mathematics Teaching Development*. Jakarta: Erland.

Wijaya, Ariyadi. 2012. *Realistic Mathematics Education*. Yogyakarta: Graha Science.