Ethnomathematic Worksheet by Scientific Approaches

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Abstract. The purpose of this research is to develop worksheet based Ethnomathematics with Scientific approaches to improve outcome learning mathematics in secondary school that valid, practical and effective. Development of learning models in this study using ADDIE development model, because it has a simple stage, but clear and understandable. The model consists of five main stages, namely (Analysis, Design, Development, Implementation, and Evaluation). Tests performed on the class VII B Mts Riadlul Jannah NW Penjor. Based on the analysis of the trial showed that the worksheet based Ethnomathematics with Scientific approaches to improve learning outcomes mathematics in secondary school meet the criteria for a valid, practical and effective. Criteria of validity can be seen from the analysis results that meet the criteria of validity worksheet very valid acquisition of the actual total score of 313 out of a maximum score of 375. Criteria of practicality can be seen based of results teacher’s assessment analysis and the results of analyzing the response of students who meet the criteria are very practical based on the assessment of teachers with the acquisition of the actual total score of 123 out of a maximum score of 135 and has achieved practical criteria is based on the students' responses with the percentage of 88.33% of standards. Criteria for effectiveness and results from analysis ≥ 75% student achievement test which student learning outcomes have achieved an average score of 67.5 or value is above the minimum of thoroughness criteria (KKM) 65 and the percentage of classical completeness reached 83.33% of the standard 75%.

Keywords: Developing Worksheet, Ethnomathematics, Scientific Aproach, Learning Outcome.

1. Introduction
According to Ruseffendi, molded mathematics as a result man thinking that is engaged IDE, process, and reasoning [1]. Its mean, to study mathematics, student respondenting to have connection among gnostic one is had and will be studied and critical to a thought. In mathematics exists Ethnomatematic's terminology. Ethnomatematic aloning to constitute mathematics form that is regarded or is gone upon on culture. According to d’Ambrosio word that Ethnomatematic's study in mathematics learning can range all area[2], [3]. Ethnomatematic utilizes mathematics concept widely that bound up with mathematics activity sort, covering activity agglomerates, get computing, measure, designing building or tool, play, determining location and any other as it.

According to Bastide, Ethno mathematical cans be one of point instilling alternatives beginning glorious culture abraded at era modernizes this [4]. Intended modernization, namely usufruct from...
IPTEK’S progress that goes on amends. Its abrades glorious culture points terminological reverential because reducing its implements and grasp to the importance for culture point in society, especially on the rising generation or student[5]. It then, as reason, need to mark sense a container who can bridge nation character instilling in education bases taught culture points. One of its which is via ethno mathematic implement [6].

Study achievement is what students gets aftsers student done a process studies [7], [8] [9]. It in line with opinion Nana Syaodih Sukmadinata one that words that learned result as shaped as realization or unfoldment of proprietary basic efficiency someone after via good learned process learned at school, workshop and also at society environment [10]. Most even more, according to Purwanto result learned to constituting change behaviour as changed as cognitif's aspect, affective and psikomotorik [11], [12]. Learned result also frequent is utilized as refuses fathom to know one how far student gain control material already being taught. In other words, learned result concerning directly with interest that wants to be reached deep a learning process [13].

Mathemticses learned result junior high school student become one of which need to be noticed and improved. It can be seen in PISAS result( Programme for International Student Assessment ) 2015 that release on the fifteenth 6th December 2016, its result points out Indonesia to stay 63'th thread of 70 country [14]. Indonesia gets point 386 (still under average) where is score average mathematics area which is 490. On the other side, base TIMSS’S result( Trend In International Mathematics and Science Study ) 2015, Indonesia on mathematics area have score 397 of scores average 500 [15]. Student ability situation SMP Indonesian lies under average, Indonesia sits rating 45 of 50 Countries. It points out that mathematicses learned result junior high school student at Indonesian still low rank [16].

Severally observational at Indonesia tries to word fakor's factor that can regard studying result. E.g. research which did by Helma and Edizon is Majors Instructor Staff Mathematics at FMIPA Padang Country University on year 2017, and Ratifi Suwardi's Dana of Economic Education Majors [17], [18], Economic faculty at Semarang Country University year 2012, that factor that regards to usufruct participant studying is taught among those which is: (1) Style study, where is this learned style regard participant studying result is taught face to face for material development requirement teaches mathematics, (2) Background and student psychology situations, where is siwa's psychology situation becomes the most factor dominant which is reach 27.54%, and (3) surrounding Environments, one that consisting of environment masyarakan who reaches 10,18% and environmental schooled one reach 8,70%.

To know sooth situation at the site, researcher has done startup observation. This activity is done at class VII MTs Riadlul Jannah NW Penjor those are on silvan Genggelang Regency Ganges district North Paprika with student amount as much 48 person. Usufruct early downloading that done by researcher shows mathematics studying result student braze VII still under average with klasikal's thoroughness percentage that is still contemn. To clearer UAS’S result year Odd 2017 / 2018 student MTs Riadlul Jannah NW Penjor can be seen on Table1 following:

| No | Aspect                  | class VII A | class VII B |
|----|-------------------------|-------------|-------------|
| 1  | Final Test Average Value| 56.42       | 56.67       |
| 2  | Classical Succes        | 16.67 %     | 4.17 %      |

Source: Teacher’s Draft Value

Based on table 1 can be seen that average value of final mathematics test of class VII MTs Riadlul Jannah NW Penjor on class A or class B still not pass the criteria of classical pass that have determinated. Based on average value aspect, class VII A have average value of final exam is 56.42 lower than average value of class B which 56.67. But from aspect of classical pass, class VII A betterl with 16.67 % meanwhile class VII B just 4.17%.
Base cognitive description and various about problem above, Researcher has done research by develops worksheet gets Ethnomatematic's basis with approaching scientific according to curriculum 2013.

2. Method
The Participants on observational it is student braze VII b MTs Riadlul Jannah NW Penjor and MTs Riadlul Jannah NW Penjor's mathematics teacher that total 24 person. This research utilize research and development approaching (research and development). this participants have science that passably to cultrurize aught region so they are made as subject research. To solve the proposed research questions, the data collected by instrument. Needful instrument in this research which is: (1) Instruments to measure validity consisting of Sheet Validates worksheet and Sheet Validates To Essay Studying Results. (2) Instruments to measure practicabilities consisting of Response Questionnaire Learn and Student Response Questionnaires. (3) Instruments to Measure effectiveness utilize To Essay Studying Results.

Data analysis is done to get validities result, practicability, and effectiveness of developed product [19]. (1) Analysis of validity is Worksheet's product and as data of pro comment score which converted becomes qualitatif's data five scale, with adapted formula basis from Saifuddin Azwar [20]. (2) Analysis of practicabilities consisting of data questionnaire responds to learn and questionnaire data responds student each analyzed to questionnaire data responds to learn converted as data qualitatif scale five meanwhile student response questionnaires utilize absolute estimations more than 75%. (3) Analysis is product effectiveness utilize result data studies student as yielding as study resut test who accounted by individually and classically. Student is seen complete individually if get score more than 65 by that realyze that student have can solve, gaining control interest, or reaches learning aim. Meanwhile class success (classical's thoroughness) seen of total participant is taught that can solve or reaches minimal score 65. In this case, developed product is said effective if classical's thoroughness percentage that acquired more than 75%.

3. Result and Discussion
3.1 Descriptive statistics
Based on analysis, it can be seen that Worksheet gets Etnomatematic's basis with approaching Scientific to increase mathematics studying result junior high school student accomplish valid's criterion, practical and effective.

Worksheet that developed validated by three experts Available result even validates to get is seen on Table 2. its followings:

| Table 2. Result Validates Worksheet |
|-------------------------------------|
| Validator | Score |
| I        | 94    |
| II       | 100   |
| III      | 119   |
| Current Total score | 313 |

Source: Sheet validates worksheet

THB validated by three experts. There is result even validates Study Test Result can be seen on Table 4 its followings:
Table 3. Result Validates Study Test Result

| Validator | Averagely Assesses |
|-----------|--------------------|
| I         | 4.54               |
| II.       | 3.83               |
| III.      | 4.71               |
| Validity coefficient | 0.84 |
| Category  | Really Valid       |
| Information | Reasonably been utilized |

Source: Sheet validates Study test Result

Practicability estimation by teacher as sheet of worksheet's practicability estimation. Practicability estimation sheet by teacher is made as much three duplexs which is 1 duplex for worksheet 01, 1 duplex for worksheet 02, and 1 duplex for worksheet 03. That estimation sheet is succeeding loaded by mathematics subject teacher. There is result even validates to get is seen on Table 5. its followings:

Table 4. Practicability Estimation Results worksheet by Teachers

| Worksheet | Score |
|-----------|-------|
| 01        | 41    |
| 02        | 41    |
| 03        | 41    |
| Current Totaled score | 124    |
| Category  | Really Practical |

Source: Practicability estimation sheet Worksheet by teacher

Questionnaire responds student aim to know how student opinion hit learning component up to try the product. Questionnaire responds dispensed student at the early 3rd appointment (last meeting). Questionnaire responds student dispensedd to 24 consisting of student 12 males and 12 females. Estimation is done by use of estimation absolute. There is result even of student response point out developed product practical with student percentage declares for self perceive pleasantly, hankering, interest, understand, clear to component and learning activity as big as 88.33%.

Learned yielding data student is gotten through application essays to usufruct studying to 24 student braze VII b MTs Riadlul Jannah NW Penjor. Study result test who is given as multiple choice as much 20 problems with score 5 / numbers problems. Base scores derived result student, available 4 student don't reach classical cri 65 and is said not complete, meanwhile 20 students have reached the minimum past criteria and is said complete. There is result even student studying can be seen on Table 6. its followings:

Table 5. Result Study class Student VII b Afters be given by study test result

| No | Aspect                        | Score | information                                      |
|----|-------------------------------|-------|-------------------------------------------------|
| 1  | Student Average Value         | 67.5  | Upon the minimum of thoroughness criteria       |
| 2  | classical thoroughness percentage | 83.33% | Upon rule 75%                                   |

Source: Yielding appreciative summary learned student
Base Table 6 above, after student average value follows to essay reaches 67.5 or be on KKM 65 already been determined by school parties. Meanwhile classical’s thoroughness percentage reaches 83.33% or be on minimal rules which is 75%.

3.2 Product revision

Product revision constitute product repair phase bases entry from validator, teacher and also student. Phase revises on this research is divided as two which is Draft product revisions 1 and Draft product revisions 2. Draft product Revisions 1 constitute revision phase before product is tested. It aims to get product that valid before tested. Revision is done bases entry and tips of counsellor lecturer and validator.

Part presented followings worksheet before and after is revised on Draft 1.

4. Conclusion

Integral calculus learning through problem open ended can increase students learning achievement. Result evaluation of each cycles showed the improvement of students learning activity significantly, so the way of treating was given be able to increase students learning result. Students that do planning and doing example in problem solving will be easier in solving the problems instead of those who do not. Lecturer needs to consider and lead of each student’s work. Each of analysis was done by student must be understood based on available theory. Try to ask students to make an example first to make easier of each problems exist.

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