

Development of Ethnoscience Approach in The Module Theme Substance Additives to Improve the Cognitive Learning Outcome and Student's entrepreneurship

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Abstract. Ethnoscience approach is an interesting research today. The purpose of this research is to develop approaches ethnoscience and modules ethnoscience theme additives based ethnoscience; as well as assess the feasibility and effectiveness of module theme additives based ethnoscience to improve learning outcomes and the entrepreneurial character of students. This type of research is the Research and Development (R & D). In this research consist of four stages, namely define, design, development and implementation. The subjects of this study were students of the School of MTs Maarif NU Brebes. Data were analyzed by descriptive qualitative and quantitative. The results showed that ethnoscience approach and the module theme substance additives used declared worthy of National Education Standards Agency (BNSP) with an average percentage of validation on the feasibility aspect of the content, language feasibility, and feasibility of presenting respectively for 94.3%, 86 % and 92% and a very decent entry criteria. The effect of the application modules substance additive based ethnoscience can improve on the cognitive learning classical amounted to 90.63%, and increased learning outcomes category was based on the scores of N-gain. Influence ethnoscience approach application and module theme substances additives based ethnoscience able to improve the entrepreneurial character of students. Based on the results of this study concluded that the ethnoscience approach and module theme substance additives based ethnoscience effective to improve learning outcomes and students' entrepreneurship.

1. Introduction

Indonesia is currently implementing the curriculum in 2013 for primary and secondary school levels, thus for science subjects in secondary schools should refer to the curriculum [1]. On learning of science in junior high school or junior refers to the curriculum in 2013, it must be developed as an integrative science subjects and not as an educational discipline that has been happening. The content of the curriculum in 2013 on the subjects of science can support and engage the culture and local wisdom, it means that science teachers should be responsive to the development of culture and local wisdom, technology and art that are around it to build curiosity and the ability of learners to make the right in their science lessons. Learning science which utilizes culture and local wisdom called Ethnoscience Approach [2]. Learning with Ethnoscience approach is learning with the linking of local culture, indigenous science and scientific knowledge has been developed in Brazil [3] and Canada [4], and Tanzania [5]. In fact science learning that takes place in school when less attention to local culture that developed in the community, due to the limitations of teachers in linking concepts, processes and contexts of science and scientific knowledge [6].



Suastra [7] states that, most (90%) the purpose of learning science at school is directed on achievement of scientific knowledge in the form of concepts, facts, theories, principles, laws, and rules as the product of science, and the rest is aimed at developing the skills and scientific attitude. In the science curriculum in 2013 at this time, a scientific attitude developed referring to entrepreneurship student's.

At this time, Indonesia has a diverse culture and has not been widely used as a source of science learning [8]. Indigenous knowledge from society as the culture and local wisdom in order to be maintained, it was necessary to the conservation of the various noble values and local wisdom through science education based on local culture or ethnosience, example culture farming [9], as well as African countries [10] and Brazil [11]. Thus the science teacher as a subsystem of education is responsible for the preservation and conservation of the noble values and incorporate them to the learners. A project-based learning model and Chemo-Entrepreneurship integrative Ethnosience Approach been done by Rohayati, *et al* [12]. Pursuant to the study of research and theory, the approach can be applied to learning with Ethnosience approach for theme substance additive in science curriculum 2013. In learning themes such additives, science teachers are expected to implement innovative approaches through Ethnosience by focusing on the learning resources of local foodstuffs as life skills certain areas in Indonesia to improve entrepreneurship students. In this research, students were given the task of looking for a project to the public information indigenous science of the substance additive from natural ingredients that are often used as colourants, preservatives, and sweeteners in food and drink locally, then reconstruction of indigenous science become to the substance additive into a science knowledge. Thus this innovative learning will be more effective than learning by lecture, discussion, and frequently asked questions.

In the era of global and scientific literacy today, then students in Indonesia does not quite mastered the knowledge of science or theory, but also to scientific literacy that is capable of applying in the social life of society in solving a phenomenon of nature and everyday life [13]. Such education is directed to the formation of the entrepreneurial spirit that is education that has the courage and willingness to face life's problems in a reasonable and creative search for solutions, it should be developed to reduce unemployment [14]. According to Sakali [15] with their entrepreneurial spirit and creative thinking will make a solution to reduce the unemployment rate. So as to reduce the number of unemployed is need for a solution that is learning the concept of entrepreneurship among students. In this research, the development of entrepreneurial spirit in students through learning additives food ingredients with ethnosience approach. The importance of this research is done, because the results of observations by Khaerunisa, R.F [16] in Madrasah Tsanawiyah (MTs) Brebes and Rohayati [12] in High School in Magelang demonstrate his learning has not developed the entrepreneurial character, linking scientific knowledge with the local culture, as well as learning science has not contextual. Though Brebes has a kind of local wisdom, such as salted egg, food rice yellow (*yellow rice*), drinks wine, *cendhol [javanese]*, and well-known plant scallions, palm sugar, *turmeric*, and suji as a substance natural additives, while famous traditional in Magelang is foods *gedhuk [Javanese]* with using natural pigments so interesting food.

In the teaching and learning process in the classroom science teachers also rarely apply their science lessons integrated with culture and entrepreneurship character [12]. The results of interviews with teachers in the School of Science states that the limitations of the media or integrated science and learning resources and learning tools. Teaching books and learning source used are books and Student Worksheet is not all based science integrated. In some of the books held by teachers and students of both the book and the Student Worksheet for topics additives have not addressed the linkages theme additive dyes, preservatives, sweeteners with a variety of additives naturally found around the community Brebes, as well as indigenous knowledge society about substance natural additives and food and local beverages can be reconstructed or transformed into scientific knowledge and can develop the entrepreneurial spirit of students. The model of applied learning is project-based learning. Project-based learning approach is a scientific approach suggested in education in Indonesia today.

Ethnosience is indigenous knowledge in the form of the language, customs and culture, morals; as well as the technology created by the community or a particular person that contain scientific knowledge [17]. Indigenous knowledge is one study in ethnosience, which knowledge from indigenous in the community can test the truth through literature review, scientific explanation, work and scientific

processes; so it can be used as a source of innovative and applied learning in science learning in the classroom [18]. On the theme of substance additive as part of the topic of science in junior secondary school. The teaching and learning can apply Ethnoscience approach, as the use of natural additives in the variety of traditional food and beverage, which traditional foods are one part of local wisdom and culture in Indonesia. Teaching and learning with ethnoscience approach, students are trained skilled to made and the use of additives have naturally evolved in Indonesian society and as a culture, meaning that the ingredients and use of the additive as a ways and habits that developed and shared by a group of people and passed down from generation to generation [19].

On learning in the classroom to provide students entrepreneurship, Susiana, N [14] to improve the entrepreneurial spirit of students using project-based learning approach to making local food products, and then sell them to friends and the community. Lee *et al.* (20) said that entrepreneurship education in each country is different because of the unique culture in each country. Teaching materials that integrate entrepreneurship education course contain more material to be taught, and thus require more instructional hours to be able to implement it. Therefore, the setup module can be an alternative teaching materials appropriate to integrate entrepreneurship education, because the modules students can learn independently so that more efficient allocation of instructional hours. Thus the modules developed in this research as a form of teaching materials in it have been equipped with instructions for self-learning so that students can perform the learning activities theme additives without the presence of a teacher directly. In this study, the approach is a strategy creation ethnoscience learning environment and planning learning experiences that integrate culture as part of the learning process of science [21]. The application of science teaching and learning with ethnoscience approach, the necessary ability of teachers to combine indigenous knowledge with scientific knowledge. However, not many science teachers who have this ability. Therefore, the main purpose of this study was to determine the feasibility of a theme additives module integrated ethnoscience, determine the effectiveness of modules developed to increase students' knowledge, and entrepreneurial students.

2. Methods

The method used is research and development (R&D). While that was developed in this work is a science module ethnoscience charged, along with learning materials, learning models and research instruments. The study population was all students in grade VIII (VIII A and VIII B) Maarif NU 1 Brebes. The sample in this research is ten students to test readability and enforceability of learning modules with ethnoscience approach on the theme of food additives. While the experimental class is a class VIII A and Class B as the control class. The research design was pretest-posttest control group design. The independent variables in this study is a model of teaching and learning modules ethnoscience approach developed. Class experiments using project-based learning approach Ethnoscience, while the control class using learning lectures, discussions, and question and answer. The dependent variable is the result of learning and entrepreneurial spirit of students, while the control variables are learning materials, teacher, curriculum, 2013, and the number of lessons.

In this research, the stages of research and development in this study consisted of: (1) analysis of needs, (2) analysis of learning, (3) analysis of students and context, (4) design module, (5) design validation module, (6) design revisions (7) testing the readability module, (8) the revised module, (9) test field implementation. The technique of data collection through the test and non-test. The method collecting data in this study consists of (1) interview, (2) the method questionnaire (questionnaire), (3) the test method, and (4) documentation. Data analysis methods include the analysis of test instrument mastery of concepts through the test of validity, reliability, the level of difficulty and distinguishing features. The feasibility analysis modules include modules feasibility content, language, and display the indicator according to the National Education Standards Agency (BSNP); as well as an analysis of the responses of students and teachers. In this study to measure entrepreneurship students through observation, questionnaire, and an assessment of the product life skills of local knowledge with additional foodstuff additives.

In this study, as the data for entrepreneurial spirit obtained through observation during the learning process in the classroom and laboratory. Aspects of the entrepreneurial character assessment include teamwork, discipline, responsibility, communicative, confident, resilient, creative, and innovative. The data obtained were analyzed descriptive Qualitative and quantitative. The research data obtained from this study analyzed the results of the module development, the effectiveness of the module in its application teaching ethnosience approach, learning outcome, analysis of entrepreneurial character, and classical completeness.

3. Result and Discussion

This research will develop science modules with theme-based additives is charged or ethnosience. Module compiled based problem analysis, requirements analysis, then validated against the validation of content, language and display module substance additives based ethnosience. Retrieving data using questionnaires legibility module, student and teacher responses. While the learning outcomes data using test instruments that measure learning outcomes aspects of knowledge, while the data retrieval code entrepreneurship students use observational data, questionnaires, and assessment of products. In the following description presented results of the research.

3.1. The Development of module theme substance additive based ethnosience

3.1.1. Feasibility of Module theme substance additive based ethnosience

Feasibility science module and ethnosience theme additive substance is derived from an assessment instrument according to National Education Standards Agency (BSNP) were assessed by an educational expert and science teacher at Junior High School. Feasibility than science module theme Additive substances based ethnosience and validated by expert content, language and presentation. Module theme substances additive based ethnosience is feasible to use in learning, if when obtained percentage score of $62.50\% < \text{skor} \leq 81,25\%$, while said to be very feasible if obtained percentage score of $81.25 < \text{skor} \leq 100\%$ based on criteria BSNP [22]. The results of expert assessment and validation of the first and second are presented in Table 1.

Table 1. Results of validation by expert on the content, language and presentation of the module

No.	Validator [Assement]	Validation phase 1		Validation phase 2	
		Average (%)	Criteria	Average (%)	Citeria
1	Validator Contents I	100%	very feasible	97.1%	very feasible
2	Validator Contents II	100%	very feasible	92.6%	very feasible
3	Validator Language I	100%	very feasible	82%	very feasible
4	Validator Language II	100%	very feasible	90%	very feasible
5	Validator Presentation I	100%	very feasible	95%	very feasible
6.	Validator Presentation II	100%	very feasible	89.3%	very feasible

The results show that the assessment by the National Education Standards module theme additives science and based ethnosience very decent used in science learning in junior high schools because it has met the eligibility criteria BSNP. This can be seen in the results of the expert assessment of the eligibility criteria module that shows excellent results. As for how to integrate the content of substance additives into foodstuffs with based ethnosience related indigenous science in substances additive naturally follow the patterns Michie [23] which is associated reconstruction sciences scientific of indigenous science of society Aburigin and through a participatory action research cycle, teachers contextualised and conceptualized the Cultures Cross-Curriculum Priority (CCP) in terms of social justice, pedagogy, and student engagement [24]. Related research has also been conducted ethnosience approach Chowdhury [25] who implementation of The Module with approach-TechnologySociety Science-Environment (STSE) and

Socio-Scientific-Issues (SSI) in science education, and critically examines their contributions to science education and science teaching, and how they are underpinning values and ethics in society. The research Chowdhury [25] shows that the ethnoscience (socio-scientific) approach can improve values in science education; foster values and ethics in students' minds, and benefit the societies.

In the research module development through stages define, design, and implementation. Module theme additives based ethnoscience after design, then do validation with two stages of assessment or validation by experts. In the first phase of this assessment are suggestions of experts to revise the map section for more simple concept, the purpose of learning to be more detail and each sub-subject matter contained evaluation. After the expert advice given, the researchers could then proceed to revise the feasibility assessment module in the judging of the second stage. Assessment and validation modules in the second stage consists of three components, namely component content, language components, presentation components. Assessment module second stage, each component of the indicator evaluation by the two validators that of lecturers and school teachers. Each component consists of several aspects that are contained within the grains and the assessment indicators of the module. The results of the feasibility validation for component modules by each validator is described as follows

3.1.1.1. The components of the feasibility of contents

Assessment of the feasibility component content of the module on the second stage after the module passed the first stage assessment. Assessing the feasibility of the module contents are intended to assess the six aspects, which include the scope and breadth of study material, the accuracy of the study materials, novelty, stimulate curiosity, contextual and entrepreneurship. The sixth aspect contains seventeen grains assessment that has been validated by experts. The average score for overall feasibility components contents reached 3.79 with an average percentage of 94.85% and included into the criteria very worthy according to National Education Standards Agency or BNSP. These results were obtained from the validation by two experts with the material contents and feasibility assessment instruments both expert assessment results are averaged. In assessing the feasibility of the contents of the first validator giving an average score of 3.88 (97.1%) and the second validator giving an average score of 3.7 (92.6%). Thus concluded that the contents of the feasibility component module additive theme-based substances etnosains said to be very good and feasible for use in science learning in class, as determined in accordance with the provisions of the National Education Standards Agency (BNSP).

Assessment and validation of an experts show different scores, it is because each expert giving a different score on each nut. In the first expert and experts both assess that material in the modules thema substances aditive and based ethnoscience was sufficient and there was nothing to be fixed just first expert gives advice to fix the cover to make it more interesting, create a concept map that is simpler and gives examples natural additives based on local wisdom, such as leaves *suji*, curcumin, or others. In the module, it appears that the goal of learning to be more detailed and include four aspects of Audience, Behavioral, Condition, and Degree, as demanded by the curriculum 2013, while for each sub subject that in the given evaluation questions and give feedback on each test question. At the material, researchers must add the charge ethnoscience adapted to the conditions that exist around the students. In assessing the feasibility of the contents of this module, then there is a difference in absorbing the contents of the module, it is in line with research conducted by Libman [26], implying that the lessons learned should be connected to real-life situations in which students are likely to use it. Advice from experts such material was then followed up for revision until the material experts claim that the module that was developed declared fit for use

Gupta [27] has developed science module and how the integration of a indeginous knowledge into a curriculum, modules, teaching materials, and school learning. On the development of the module, as teaching materials include public knowledge relating to agriculture, how to maintain health, ethno-toxicants, cutting, pruning, tissue culture and cloning, seed treatment in the nursery, symbiosis and Nitrification, fishing-cum-paddy cultivation, fuel collection, classification of soil types, classification of ground cultivation, cultivation on the fertile alluvial soil on the river islands, bush fallow cultivation, seasonal cultivation, cultivation yearly, annual and biennial cultivation, flowering in the first year of a biennial crop variety, mixed cultivation, identification of certain plant species on trees, or in soil causing

severe harm to the crop production, weeds used in removal of pests and other harmful organisms, earth-warm in maintenance of soil fertility. In this research, only limited indigenous knowledge about natural additives, food and traditional drinks as the local wisdom that made the field of study.

3.1.1.2. *The components of the language feasibility*

The linguistic component consists of seven aspects of conformity with the development of students' cognitive, communicative, interactive, straightforward, logical, the use of terms and symbols and emblems in science, as well as compliance with the rules of Indonesian correct. The seventh aspect refers to the provisions of the National Education Standards (BSNP) and contains fifteen items assessment has received a positive response from the experts. The average score for the overall feasibility of the language component reached 3.43 and the average percentage of 86% that go into very decent criteria according to National Education Standards. These results were obtained from the validation by two expert content with instruments feasibility language component. The next two expert ratings averaged wherein the first validator giving an average score of 3.27 (82%) and the second validator giving an average score of 3.6 (90%). Thus the reference to the results of judging of the language in this module can be concluded that the components of the feasibility of the language in the theme substance additives and based ethnosience to be very good and deserves to be used without revision, by the provisions set of BSNP.

The assessment of the experts showed different scores, it is because each validator experts give different scores on each nut. Based on the assessment of language experts, it is known that the value obtained in every aspect ranging from 3 to 4. Not all the aspects that received a score of 3 fixed. Improvements were made based on suggestions and feedback given by language experts. Neither validator expert I and expert II assesses that the language in the modules either only expert I provide suggestions for improvement in the use of punctuation, writing sentences on the matter, the writing module should pay attention to the spelling of the enhanced *Ejaan Bahasa Indonesia Yang Disempurnakan* or EYD, giving the quote image which can show the value of current that the source / reference and giving sentences that refer to each table to make it more easily understood. This is according to research Wagiran [28] which states that the accuracy of the word is a word to evoke the same idea in the reader's imagination, such as thinking and feeling author. Based on the advice of the researchers make improvements on the part suggested by experts to modules developed are feasible for use

3.1.1.3. *The components of presentation feasibility*

Presentation component consists of three aspects such as presentation techniques, supporting the presentation of the material, and presentation of learning. These three aspects are contained fourteen items of ratings that have received positive responses from the experts. The average score for the overall feasibility of the language component reached 3.70 and the average percentage at 92% which is very feasible criteria according to National Education Standards. These results were obtained from two expert validation on the material instruments, where the validator I gave an average score at 3.80 (95%) and validator II gave an average score at 3.60 (89.3%). It can be concluded that the components of the presentation feasibility in the science module is said to be very good and deserves to be used without revision.

Based on the advice the module improvements on the part suggested by experts were done to reach the feasible criteria for use. Eligibility is determined by a module other than expert validator is also determined from the responses of students and teachers to use module theme Substance Additive based ethnosience. Student responses obtained to trials legibility and scale implementation of the field. Data were taken together while testing the readability of the module and also the application of questionnaire responses of students to the module. Results of student feedback on readability test modules and implementation of the field is presented in Table 2.

Table 2. Students recapitulation student response to validation modules and implementation in the field.

No	Trials	Percentage Result (%)	Information (criteria)
1	Legibility	98.25%	Very good
2	Field implementation	96.7%	Very good

The test trial was conducted on module legibility in VIII B class with ten students. The module used was the module that has been corrected based on the feedback given by experts. Data taken while testing the readability is the questionnaire responses of students to the module. Legibility trial aims to determine the readiness of the module before use in the classroom application. Based on the results of trials on legibility, the response shows the average percentage at 98.25% and the students responded positively to the modules that have been developed. Based on the results of these responses, it is known that the students responded positively to the modules that have been developed. Students expressed that module the substance additive and based Ethnoscience is interesting, using understandable language; simple vocabulary election, drawing support materials, presentation of the material presented in a systematic and consistent, and the material in the module add the new insight.

The result of test implementation on students, their response was obtained at an average percentage (96.7%), it is at very good criteria. The percentage of student responses is also supported by the comments of students who were asked at the end of learning. According to the students, they mentioned that the teaching material in the form of this module is new and exciting and can add a reference to learn because the module is equipped with interesting pictures and content of the material that is easily understood. Moreover, the student and teacher's feedback on the questionnaire of the module was also assessed by teachers. The results of responses are shown in Table 3.

Table 3. The responses of teacher in MTs Brebes based on the field test implementation

No	Results of Response in Science Teacher	Percentage (%)	Criteria
1.	Science Teacher 1	91.6%	Very good
2.	Science Teacher 2	98.8%	
	Average Percentage	95.2%	

Based on the results of the questionnaire on modules theme substance additive based ethnoscience, the teacher responses were assessed. This is evident from the results of the poll by the acquisition of the teacher I who obtained an average percentage at 91.6% while the feedback questionnaire filled out by the teacher II obtained an average percentage at 98.8%. As a whole the average percentage was at 95.2% with the criteria very good. The result of teacher responses shows that the module can be broadly accepted to facilitate teachers in delivering learning materials. Teachers at MTs Maarif NU 1 Brebes felt happy and helped by the presence of the integrated science module. Teachers found it because the module enables teachers to deliver the particular theme. The ethnoscience-integrated module developed is new to both teachers and students where science learning is associated with local culture. Ethnoscience learning digs up the original views of students about the culture or habits of people in the use of natural additives; then, it is translated into scientific knowledge. This is consistent with research by Rist et al. [29] which helps to improve the assumption ethnoscience received by the community of local indigenous knowledge that proved to be true.

3.2. The development of learning approach based Ethnoscience

In this research, the development of learning approach based ethnoscience to improve entrepreneurship students using the module substance additives based ethnoscience. In this research, ethnoscience approach using project-based learning (PjBl). In The Project based

learning based ethnosience, the researchers gave students assignments MTs NU Maarif Brebes as research subjects for planning, implementation, and evaluation of projects relating to (a) interview and observation community about indigenous science related additives which are used in the manufacture of life skills traditional., (b) plan, implementation of manufacturing of the product life skills, as well as the end product evaluation life skills activities produced by students. In this research, product life skills, local knowledge generated is making *salted eggs* with traditional salt, food of yellow rice cone with natural dyes turmeric, and traditional beverages *cendhol* with natural dyes, sweeteners, and natural preservatives. In this reserach, students who produce local wisdom life skills assessment of creativity and the entrepreneurial character of students. Ethnosience approach in this research is characterized by project-based learning integrated ethnosience, as it has been developed Sumarni, W [30].

3.3. *Analysis of the effectiveness from the module additives based ethnosience*

The effectiveness of module substance additive based ethnosience was obtained from the pretest, post-test values, results of classical completeness and also the observation sheet of student’s entrepreneurship interest while learning. The module suntance additive bsd ethnosience is declared to be effective as a supplement for teaching books to improve learning outcomes and improve entrepreneurial students. The Module substance additive based ethnosience developed is able to improve student learning outcomes, which proved on analysis of the calculation of student learning outcomes as shown in Table 4.

Table 4. The field Implementation test results in class VIIIA students

No	Information	Pretest	Post test	Score N-gain	Criteria
1	The number of students	32	32		
2	Average value	51.6	80.38	0.6	moderate
3	The lowest value	36	68		
4	The highest value	72	92		

The effectiveness of the module substance additive based ethnosience developed can be seen from the results of student learning and entrepreneurial students. The developed module substance additive based ethnosience is expected to be one of the teacher materials that serve to improve learning outcomes aspects of entrepreneur knowledge and improve interest in the learning process, especially for teaching in science.

3.3.1. *Analysis of the application modules to the cognitive learning outcomes*

Effectiveness module theme substance additive based ethnosience validated based on the study of the experimental class is class VIII A through pretest and posttest. Before the modules that have been developed are implemented, students are given questions about additives, the results were analyzed as the value of pre test, and after the module is implemented, students return given the same questions but were randomly assigned a number and its double selection and the result is used as the value of posttest. Rate procurement concept with this method, called the pretest and posttest design assessment as conducted by Arifianawati, *et al* [31], which do analyzes results of studying chemistry with pre test posttest design as well. The results of pre-test and post test has been obtained, then further analyzed normality test, homogeneity test, t-test and N-Gain. This is done in order to really known experimental class learning outcome. Analysis of the study results of pre-test and post-test can be concluded that the average post-test results better than the average pre-test, it means learning model approach and modules developed ethnosience effective. In this study, analysis of the N-Gain is used to determine the increase of student learning outcomes. From the analysis of N-gain seen that students who get high N-Gain as much as 8 students, N-Gain were as many as 24 students and no N-Gain obtain low.

While in Table 4 it can be seen that for an average increase in learning outcomes experimental class of the pre-test and post-test is obtained N-Gain of 0.6, namely the criteria of being. Student learning

outcomes in addition to the value obtained from the pre-test and post-test were also obtained from the value of individual tasks and the value of the task group. The duty value averaged then combined with the value of posttest in order to obtain the final value. In the study, students can pass the study said if the final value of each student reaches a value of at least 75, or if converted to 3.00. Classical completeness of students can be seen in Table 5.

Table 5. Classical completeness of learning outcomes

No.	Source Data	Result test	Conversion	Classical Completeness
1.	Average value of assignment	90.56	3.62	
2.	The mean value of pretest	79.75	3.19	
3.	Average value of post est	83.85	3.33	90.63%
3.	Number of students completed	29		
4.	The number of students not completed	3		

In this research, thoroughness score set by the school is 75 or if converted to 3.00. In Table 5 it can be seen that the number of students who pass the study for the implementation of the class is 29 out of 32 students in order to obtain the percentage of classical completeness of the application class VIII A of 90.63%. The large percentage of more than 85% so that the module can achieve mastery of classical science. This is consistent with research Rosyidah [32], which states that by developing modules theme substance additives based ethnosience can improve 93.75% of students achieving mastery learning.

3.4. *The implementation Ethnosience approach towards entrepreneurship students*

The final assessment of students in this research not only on knowledge, but the assessment also emphasizes the aspects of students' entrepreneurial attitude. Competency assessment entrepreneurial attitudes of students performed at the students when making food manufacturing project life skills and sell food and traditional snacks made them. Rate the realm of attitudes interest in entrepreneurship students can be seen in Figure 1.

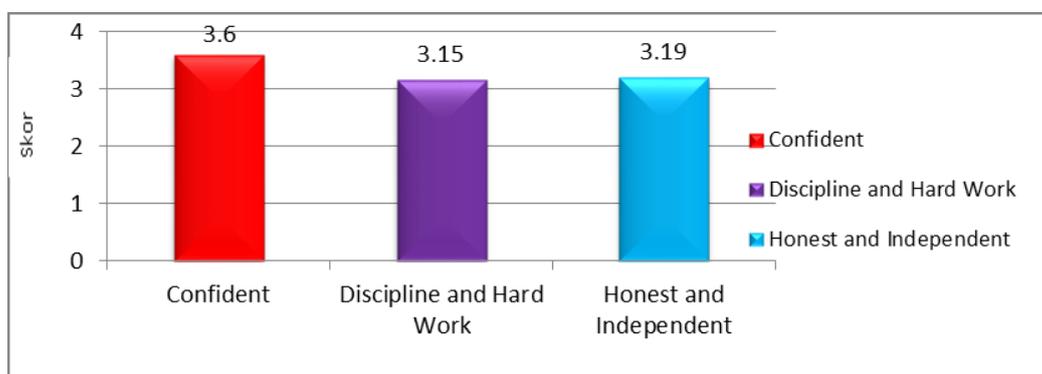


Figure 1. Assessment of entrepreneurship student's after learning approach ethnosience

The effectiveness of science module ethnosience theme-based additives in addition to the learning outcomes assessed mastery of concepts, but also the attitude and the entrepreneurial character of students. Rate realm attitude assessed is entrepreneurship students do when students sell food or traditional snacks made in those assessed by the researchers, science teachers MTs, and buyers. In this study, there are several aspects of the entrepreneurial character who rated namely self-confidence, discipline, hard work, honest and independent. After every aspect rated, then analyzed the average score of every aspect of

entrepreneurship. The data obtained were analyzed and calculated the percentage to determine how the entrepreneurial character of students while selling traditional homemade food and snacks. The meals are made and sold a traditional food with the addition of additives, namely salted with salt preservatives, **drinks cendol** with natural dyes from *Suji*, and the manufacture of additives yellow rice with natural dyes from turmeric.

In this study, data showed that the confidence aspect average score obtained was 2.70 with a maximum score of three, and if converted to an average score of 2.70 was 3.60 with a value attitude. Aspects can confidently say that the confidence of students classified in the criteria very well. The students already have high confidence. The confidence of the students indicated boldly speaking in public, but in this case, there are still some students who offended in selling at the time on a question and given feedback by the buyer. When student practice of selling food and beverages, seen students feel that the buyer insulted; so impressed the students angry and less friendly when selling, nevertheless found some students are shy in selling; so that buyers buy food or snacks that students are selling because of pity. This is because the entrepreneurial character is learning and new experiences for students, so it still looks there are some students who have not yet formed an entrepreneurial attitude that is the lack of confidence in the students to sell angry and less friendly when selling, nevertheless found some students are shy in selling; so that buyers buy food or snacks that students are selling because of pity.

In the aspect of discipline and hard work the average score obtained was 2.36 with a maximum score of 3, which when converted an average score of 3.15 with a value of 2.36 is the attitude of B + so that it can be said discipline and hard work of students classified in the criteria good. Basically the students already have the discipline and hard work is good, it can be seen as they see them excited and tried to sell the food/snacks made in them by using speech polite and behaviour was polite and did not force the purchaser to buy food / snacks artificial they. However, there are still some students who still use the language when selling Brebes so impressed absence upload posting between seller and buyer. It makes the parents who will buy the feeling that students are less friendly and less polite in selling. Results of assessment of all aspects of entrepreneurial interest on average earn a score of 2.48 with the highest average score of 3, so when converted an average score of 2.48 was 3.31 with a value of B + attitude. 3.31 if the conversion value in percentage classical be 82.81, in which case it can be said that interest in entrepreneurship students included in the classification began to grow. This is consistent with the results of research Yenny [33] which states that the development of teaching materials or modules can increase entrepreneurship student's. At lately has been investigated relate to the relationship between people's knowledge of food conservation activities, which through learning integrated food ethnoscience able to foster environmental conservation and the conservation of traditional food or food local wisdom [34].

4. Conclusion

Based on the results of research and discussion, it was concluded The results showed that ethnoscience approach and the module theme substance additives used declared worthy of National Education Standards Agency (BNSP) with an average percentage of validation on the feasibility aspect of the content, language feasibility, and feasibility of presenting respectively for 94.3%, 86 % and 92% and a very decent entry criteria. The effect of the application modules substance additive based ethnoscience can improve on the cognitive learning classical amounted to 90.63%, and increased learning outcomes category was based on the scores of N-gain. Influence ethnoscience approach application and module theme substances additives based ethnoscience able to improve the entrepreneurial character of students. Based on the results of this study concluded that the ethnoscience approach and module theme substance additives based ethnoscience effective to improve learning outcomes and the entrepreneurial character of students.

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