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Rundown of The 4th Annual Internatioanal Seminar on Transformative Education and Educational Leadership (AISTEEL) 2019
Garuda Plaza Hotel, Medan, 23 – 24 September 2019

1st day (Monday, September 23, 2019)

Time	Activities	PIC
15.00 – 20.00	Registration in Garuda Plaza Hotel	committee

2nd day (Tuesday, September 24, 2019)

Time	Activities	PIC/Moderator
07.00 – 08.30	Poster Sessions 1	Section Poster 1
08.30 - 09.00	**Opening Ceremony** 1. MC Speech 2. Traditional Welcome Dance 3. Indonesian National Anthem 4. Pray 5. Chairperson Report 6. **MoU signing between Unimed and PSU - Thailand** 7. Welcoming speech of Director of Postgraduate School 8. Welcoming speech and official opening of Rector of State University of Medan	MC
09.00 – 09.40	Plenary Lecture 1: **Prof. Dr. Syawal Gultom, M.Pd** (State University of Medan– Indonesia)	Moderator Section
09.40 – 10.25	Plenari Lecture 2 **Prof. W. L. Quint Oga-Baldwin** (Department of Education, Faculty of education and Integrated Art and Sciences, Waseda University - Japan)	Prof. Amrin Saragih, PhD (Panel)
10.30 – 11.15	Plenari Lecture 3 **Prof. Dr. Wu-Yuin Hwang**(Graduate Institute of Network Learning Technology National Central University, NCU - Taiwan)	
11.15 – 12.00	Plenari Lecture 4 **Prof. Dr. Ekkarin Sungtong** (Dean of Faculty of Education Prince of Songkla University - Thailand)	Mangara Simanjorang, PhD (Panel)
12.00 – 12.45	Plenari Lecture 5 **Asst. Prof. Patcharin Panjaburee, Ph.D.(**Mahidol University – Thailand)	
12.45 – 13.30	**Lunch Break/** Poster Sessions 2	Section Poster 2
13.30 – 15.30	**Parallel Session 1**	
15.30 – 16.00	Break/ Poster Sessions 3	Section Poster 3

15.50 – 18.00	**Parallel Session 2**	Moderator/Operator
18.00 – 19.00	Break/ Prayer	
19.00 – End	Banquet (Gala Dinner) - Announce of Best Presenter - Announce of Best Poster	Consumption Section

Proceedings of the 4th Annual International Seminar on Transformative Education and Educational Leadership (AISTEEL 2019)

Preface

The 4th Annual International Seminar on Transformative Education and Educational Leadership (AISTEEL 2019) was held in Garuda Plaza Hotel, Medan City-Indonesia on 23-24 September 2019. This seminar is organized by Postgraduate School, Univesitas Negeri Medan and become a routine agenda at Postgraduate program of Unimed now.

The AISTEEL is realized this year with various presenters, lecturers, researchers and students from universities both in and out of Indonesia participating in, the seminar with theme "Education, Learning and Leadership Innovation."
The plenary speakers coming from various provinces in Indonesia have been present topics covering multi disciplines. They have contributed many inspiring inputs on current trending educational research topics all over the world. The expectation is that all potential lecturers and students have shared their research findings for improving their teaching process and quality, and leadership.

The fourth AISTEEL presents a keynote speaker and 4 distinguished invited speakers from Indonesia, Japan, Taiwan, and Thailand. In addition, presenters come from various Government and Private Universities, Institutions, Academy, and Schools. Some of them are those who have sat and will sit in the oral defence examination.

There are 310 articles submitted to committee, some of which are presented orally in parallel sessions, and others are presented through posters. The articles have been reviewed by double blind reviewer and 172 of them were accepted for published by Atlantis Press indexed by International Indexation and 96 papers are published by digital library indexed by google scholar.
The Committees of AISTEEL invest great efforts in reviewing the papers submitted to the conference and organizing the sessions to enable the participants to gain maximum benefit.

Grateful thanks to all of members of The 4th Annual International Seminar on Transformative Education and Educational Leadership (AISTEEL 2019) for their outstanding contributions. Thanks also given to publisher for producing this volume.

The Editors

Bornok Sinaga
Rahmad Husein
Juniastel Rajagukguk

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The Effect of Cooperative Learning Model Based on Aceh Culture to Improve the Generic Science Skills of Student

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***Abstract*— This study aims to improve the generic skills of science and honesty of students through an Aceh culture-based cooperative learning model with the Culturally Responsive Teaching approach. This research was conducted at the MAS Laboratorium of UINSU. This type of research is a quasi-experimental exercise using two-group pretest-posttest design. The sample in his research was class X MIA 1 as the experimental class and class X MIA 2 as the control class. The instrument used was a generic science skill test instrument and student honesty questionnaire. The data in this study were analyzed using the t-test and gain test. The results showed that the generic science skills taught by the Aceh culture-based cooperative learning model were better than those taught by the conventional model and there was an increase in student n-gain honesty with the Aceh culture-based cooperative learning model. The results of the study show that physics learning through the Culturally Responsive Teaching approach integrated ethnophysics can develop generic science skills including; direct observation, logical inference, awareness of scale and indirect observation and student honesty.**

Keywords*— *Cooperative Learning Model Based on Aceh Culture, Culturally Responsive Teaching, Generic Science Skills

I. INTRODUCTION

Physics is a science learning related to the environment. Physical science learning cannot be separated from laws, concepts, and fundamental theories. Thus after studying physics, students can explain natural events in the environment with concepts, theories, and laws of physics. To realize this, the effort to procure facilities and infrastructure as well as teaching model innovations must be continuously carried out so that physics science learning can grow aspects of life skills, one of which is social skills or cooperation [1].

Based on the results of observations on physics learning that the researchers did at the MAS the Laboratory of UIN SU Medan, showed that there were still some students who said that physics was difficult, difficult to understand and the opportunity to train students' generic science skills in learning was still lacking. This is indicated by the lack of opportunities to develop student questions in building and training logical inference and mathematical application in solving problems given in learning.

In general, student activities listen more to the teacher teaching and taking notes, giving examples of questions and working on the questions given by the teacher. Thus, students learn more passively and they are unable to apply and explain physical phenomena in everyday life. With the lack of facilities and opportunities of students in practicing generic skills in the learning process resulting in generic science skills possessed by students are still weak. This is in line with the study of preliminary results on students through tests of generic science skills students are still weak, especially in making indirect observations, symbolic language, logic inference, and modeling.

Based on the results of a preliminary study interview with one of the physics teachers at the MAS Laboratory of UIN SU Medan, the usual learning model still has many shortcomings so that learning is not optimal. One of them is the learning process carried out has not been oriented to train the generic science skills to the fullest and has not implemented learning based on daily or cultural students that they have known so far related to physics. In addition, students still cheat when working on assignments, even though honesty in the teaching and learning process is very important because honesty underlies all activities in teaching and learning. As with the 2013 curriculum objectives to form the character of students well, including one honest attitude. The implementation of the 2013 curriculum is one of them in physics. 2013 curriculum learning is learning that strengthens authentic learning and assessment processes to achieve competency in attitudes, knowledge, and skills. Thus the 2013 curriculum can be expected to produce productive, creative and innovative people [2].

Physics will be more meaningful if there is continuity between subject matter and daily life. Therefore, the presentation of knowledge in each educational unit must be able to cover all changes that occur, one of them is by

integrating culture in physics learning so students will feel the relevance of learning faced with their life experiences. Innovative learning is needed in education so that the culture in the community can be inserted in the learning process [3]. Humans, wherever they are, very closely related to customs and culture. Humans create culture and culture also shape the human character itself. Culture occupies a central position in the entire life order of humans and humans standing on a cultural foundation [4]. Culture-based learning is one alternative that can bridge physics with culture.

Furthermore, Pannen [5] says that culture-based learning is a strategy of creating a learning environment and designing learning experiences that integrate culture as part of the learning process. Local culture-based learning is based on recognition of culture as a fundamental and important part of education and development of knowledge.

Ethnically, the Acehnese are classified as Malay or Malay. Ethnically, the formation of the Acehnese tribe is the result of mixing several ethnic groups in the world. So that ethnic Acehnese are often identical with Arabic, China, Europe, the Indies or Hindustan. This is indeed almost indisputable because seen in terms of physical posture, curves, facial axis, Acehnese people, and the background of Acehnese ethnic culture are indeed almost similar to those of the four ethnic groups [6]. Aceh as a region that once triumphed with the progress of its brilliant civilization, of course has a legacy of a wealth of art and culture that is classified as unique from other regional cultural arts in the archipelago. Almost all Acehnese arts or cultural arts are the art of breathing Islam. Aceh which always prioritizes Islamic teachings in every day's activities [6]. In Aceh province there are several tribes, namely the Acehnese tribe, the *Gayo* ethnic group, the *Aneuk Jamee* ethnic group, the *Singkil* ethnic group, the *Tamiang* ethnic group, the *Alas* ethnic group, and the *Kluet* tribe. Each tribe has its own peculiarities. Puteh [7] states that cultural diversity in Aceh is presented in the form of symbols, objects, literature, songs, music, traditional clothing, and so on. So that the diversity of Acehnese culture is very suitable to be integrated with learning, especially in physics learning.

So, the integration of the Acehnese cultural context into physics learning can provide opportunities for teachers to improve students' generic science skills and introduce a variety of Acehnese cultural contexts that are close to the child's environment so that the culture is maintained and opportunities for development remain open in the school environment. Learning in schools that are separate from local culture can result in students being detached from the cultural roots of their community, which in turn will make students not have good ability to participate in solving local problems that require methods and methods inherent in customs and customs. where the students navigate their lives later.

II. RESEARCH METHOD

This research will be held at the MAS Laboratory of UIN SU Medan, having its address at Jalan William Iskandar Pasar V, Kenangan Baru, Medan Estate and its implementation in class X. The sampling technique was done by cluster random sampling as much as two classes, namely the experimental class applied cooperative learning model based on Aceh culture and the control class applied conventional learning. This type of research is a type of quasi-experimental research and design used was two-group pretest-posttest design.

TABLE I. DESIGN OF THE TWO GROUP PRETEST-POSTTEST DESIGN

Class	Pretest	Treatment	Postest
Experimental	Y_1	X_1	Y_2
Control	Y_1	X_2	Y_2

Information:
X_1 = Treatment by applying the culture-based learning model of Aceh.
X_2 = Treatment by applying conventional learning.
Y_1 = Pretest given to the experimental class and control class before treatment.
Y_2 = Posttest given after treatment in the experimental class and the control class.

Data collection instruments in this study were generic science skill instruments and observation sheets. Instrument for generic science skills to determine students' generic science skills.

III. RESULT AND DISCUSSION

The Acehnese culture-based cooperative learning model provides opportunities for students to get better learning outcomes. The results obtained in this study showed that there was a difference in the increase in learning in the experimental class using cooperative learning models based on Acehnese culture and the control class using conventional learning. This can be seen from the average test results of the experimental class of Science Generic Skills instruments before treatment was 45.44 and the posttest scores of students were 85.34. While the pretest of the control class was 43.11 and the posttest score was 56.81. The difference in the results of the class Science Generic Skills instrument test before and after treatment in the experiment class and control can be seen through Figure I.

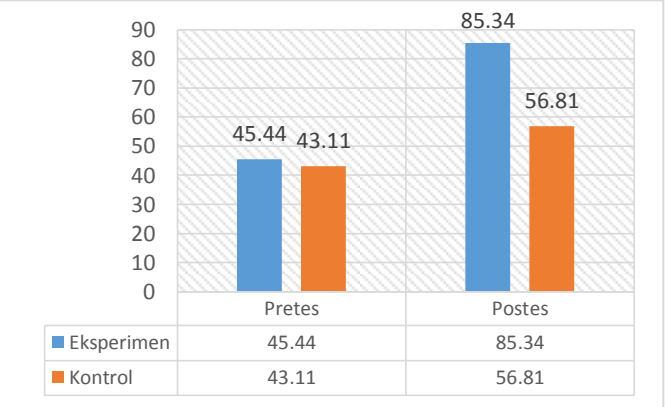

Fig I. Results of the Science Generic Skills Instrument Test.

The data in Figure I shows that there is an increase in the results of the Science Generic Skills Instrument Test for students after and after treatment. The results of the Generic Science Skills Instrument Test in the experimental class can increase if the Aceh Culture-based cooperative learning model is applied, this is in line with the research conducted by Siswanto [8] stating that the average generic science skills of students increased from 56.48 to 71.30 after learning by using E-lab. Calculations with gain score show that the increase is 0.34 with a low category by looking at the results, E-lab has an influence on improving Science Generic Skills. This is because learning with E-lab facilitates students to do a practicum with activities involving indirect observation, using scale, symbolic language, logical inference, causal law, mathematical modeling, and facilitating concept building. This shows that generic competence is derived from process skills through practicum by combining these skills with the components of the concept or principle in the material studied and Pawestri [9] shows that the percentage of each student's skills in using inquiry-based worksheets to improve generic skills science students whose average achievement of grades is high is 86.20%. The five generic science skills with the highest criteria students possess logic inference is 88.5%, scale awareness is 87.83%, symbolic language is 86.01% and observations are 80%. Based on the results of their research there are significant differences (with a significant 5%) on the t-test of posttest data obtained from the calculation t count = 5.80 and t table = 1.67 which means t count <t table then the hypothesis is accepted. This shows that there is the influence of cooperative investigation type group investigation model on students' generic science skills on vibration and wave material. In addition, Hamdani [10] has examined, science learning that is oriented to generic skills with the development of learning centered on student activities and the use of computer excellence. The results show that the application of generic skills-oriented learning models can improve students' mastery of concepts up to the "moderate" category. Wan Azlinda's research [11] also stated that the results of the study showed that cooperative learning had improved four generic skills, namely: solving problems, communicating ideas and information, planning and organizing activities and using mathematical ideas and techniques. Puspitasari [12] states that there is a significant influence on the contextual approach to students' generic science skills on indicators of building concepts, symbolic language, awareness of scale and mathematical modeling. Kistiono [13] states that the contextual practicum model is more effective in increasing the understanding of physics concepts and generic science skills of students than conventional practicum models, because by using a contextual practicum model the student activities are oriented towards planting conceptual understanding so students are aware that physics concepts are very close everyday life.

Based on the results of the posttest and pretest scores of students in the experimental class, the highest n-gain value obtained in the direct observation aspect was 0.9 with a high category. This happens because according to students practical activities are very interesting in physics learning. At each meeting, ethnophysical articles are given in accordance with the material practiced. This has an effect on the science generic skills of students based on Wijaya's research [14] stating that the increase in Science Generic Skills is an effect of the lecture process in groups which gives students the opportunity to interact with teaching materials that are presented repeatedly. Thus broad access to students interacting with teaching materials has presented a social environment that plays a major role in the process of building their knowledge.

In the learning process, the first meeting is material momentum and impulses that are integrated Aceh culture, namely the typical Acehnese game *Kekuriken* which is a ball made of clay used to do momentum labs and impulses at the first meeting. The second meeting of temperature and heat material, the culture integrated here is the process of reducing water content found in banana sale using a simple tool and discussion to investigate the temperature and amount of heat when banana sale is heated, the third meeting is related to the physics of doppler effects integrated cultural traditions crying *dilo* where the crying is done at dawn when the bride is brought to her husband's house so that the sound heard by observers at a certain distance is related to the doppler effect and the meeting of the four organs pipes using glass bottles filled with water to listen to the different sounds and measure the sound frequency using the frequency meter this is connected with the Aceh flute or called *bangsi*.

The achievement of all indicators of students' generic science skills is as follows: the generic skill of direct observation is to observe objects directly through the five senses [15]. Direct observation indicators get the highest achievement among all indicators because learning using cooperative culture based on Aceh culture in this study students' direct observation skills are good, that is at the collaboration stage based on the type of assignment given by students given ethnophysical articles and with the cultural experience students have more quickly understood what must be done or design your own experimental experiments so that at the experimental stage students can better develop generic skills indirect observation science.

Generic science skills indirect observation and indirect observation include indicators that are easily remembered and developed by students in accordance with what is revealed by Brotosiswoyo (in sudarmin,) [15] that direct and indirect observation skills are included in indicators that are easy to master. This is

reinforced by research that shows that students' generic science skills in the direct observation indicator get the highest percentage among other indicators. In addition, Rosidah et al [16] found that the average value of students' generic science skills in the indirect observation aspect was 32.83, the sense of scale aspect was 48.43, the symbolic language aspect was 74.87, the principle of logical obedience at 72.55, the concept building aspect was 78.67, the abstraction aspect was 81.5 and the logic inference aspect was 66.66.

Based on the results obtained during the four meetings of generic science skills aspects of direct observation with an average score of 93, indirect observations with an average score of 79, awareness of the scale with an average score of 83, symbolic language with an average score amounting to 86, logical frames with an average score of 82, logical consistency with an average score of 86, the law of cause and effect with an average score of 79, modeling with an average score of 76, logical inference with an average score amounting to 90, and abstraction with an average score of 81. This is reinforced by the research of Arrita [17] which states that the lowest science generic skills mastery is mathematical modeling of 32.5 with a moderate category, due to lack of mastery on the basis of decreasing mathematical formulas, so that experience difficulty in solving problems.

In addition to n-gain through the pretest and posttest scores of students, then gain value was also obtained during the learning process which lasted 4 times. The value of n gain at each meeting increases until the last meeting is obtained n value of gain of 0.7 in the medium category. This result is similar to the results of a study conducted by Yulianti [18] in improving generic skills through inquiry-based virtual laboratories. The mean gain indicators of generic science skills are included in the medium category and Muhammad Anwar [19]stated that there are differences in learning implementation. the significant n-gain of student science generic skills due to the difference in force, students of 2007 received n-gain science generic skills higher than the students of 2005-2006.

Handayani's research [20] also states that through physics learning models using cooperative culture-based Acehnese learning models, increasing students' understanding of the culture derived from ancestors, aware of the role of students in preserving culture derived from state traffic, having a sense of responsibility to protect their own culture. This is most important in physics learning research using a cooperative model based on Aceh culture, namely the achievement of the objectives of each basic competency and indicators of physics learning so that students understand and understand physics material. in addition there is an increase in Generic science skills by using the Acehnese culture-based cooperative learning model that is obtained at each meeting, meetings 1 and II of 0.32 with low qualifications, in meetings II and III obtained 0.34 with moderate qualifications, at meetings III and IV obtained 0.67 with moderate qualifications. This states that there is an increase in using the Acehnese culture-based cooperative learning model.

The influence of the Cooperative-Based Aceh Culture learning model on generic science skills is known by comparing the results of the pretest of generic science skills of control class and experimental class students as well as posttest generic science skills of control class and experimental class students using hypothesis testing t-test with a significant level of 5% using SPSS 17 assistance. While student honesty is calculated by increasing n-gain before and after cooperative learning based on Acehnese culture.

Based on the results of the t-test test table on the pretest of the generic skills of the control and experimental class science obtained a value of 1.480 <2.002 or count <t-table so it can be concluded that there were no significant differences in the results of the pretest generic science control class taught with conventional learning and the experimental class was taught by the Acehnese culture-based cooperative learning model. Based on the results of the t-test test table on the posttest of generic science skills in the control and experimental classes, 17, 129> 2,002 or t count> t-table were obtained so that it can be concluded that there is a significant effect on students' generic science skills with the application of culture-based cooperative learning models Aceh.

The influence of the Acehnese culture-based cooperative learning model on generic science skills and student honesty is obtained because the sample taken is homogeneous. The influence of each learning model given to the control class and experiment after being pretested to students so that the students' final ability is obtained in the learning process.

The application of the Aceh Culture-based Cooperative learning model resulted in a number of improvements in science generic skills in the high category, namely on aspects of direct observation, logical inference, awareness of the scale and indirect observation.

IV. CONCLUSION

Based on the results of the research and discussion it can be concluded that the gain or improvement of students' generic science skills taught with the Acehnese culture-based cooperative learning model is 0.7 with a moderate category, while the students gain generic science skills taught with conventional learning models of 0.2 with categories low.

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