

Towards improving the critical thinking skills of pre-service teachers in Indonesia

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ABSTRACT

Critical thinking of students is needed in 21st century learning, the fact is the acquisition in the field is still low. Therefore this study aims to improve students' critical thinking skills using the inquiry model assisted with the ethnoconstructivism module. Methodology uses a quantitative design of a quasi-experimental pretest-posttest non-equivalent control group design with a total sample of 64 students taken by purposive sampling technique. There were significant differences in terms of students' critical thinking between the control class and the experimental class. It can be underlined that the inquiry model with ethnoconstructivism has a significant influence on the way students think about cultural values compared to traditional groups.

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1. INTRODUCTION

The current curriculum in Indonesia requires lecturers and prospective elementary school lecturers to instill the cultural values of the society in their learning. It is oriented to create productive, creative, innovative, and effective generations through the integration of attitudes, abilities, and knowledge with life skills [1-4]. Therefore from the educational institutions in the country set competencies as goals of curriculum [5, 6]. In addition, lecturer education practitioners agree that lecturer education aims to educate high-quality lecturers who will be successfully integrated into the education system [7-9]. Future global competence of elementary school lecturers is expected to cover the knowledge base, skills, and attitudes they need to effectively carry out their professional duties in school and function profitably in changing interdependent societies [10]. In accordance with the competence of current lecturers, lecturers must have the skills of perception, interpretation, and decision making in their entirety [11]. In realizing good learning. This can be supported by good lecturer competencies. Good learning can be supported by good lecturer competencies. Competence as the ability to perform tasks in certain situations, such as class situations, in a flexible and adaptive way [12]. Lecturer competencies that must be mastered are pedagogical, professional, personality and social competence. According to Law No. 14 of 2005 lecturer competencies that are mandatory for lecturers include pedagogical competencies, personality competencies, social competencies and professional competencies obtained through professional education [13]. Lecturers who have good competence will produce students who are successful in learning.

Inquiry-Based learning can influence a person's attitude in learning. with the teacher knowing how students' attitudes occur during the learning process, the teacher can improve the design of learning in the classroom, so that it matches the abilities of students [14-16]. One of the attitudes of students, which needs to be considered by a teacher is a scientific attitude. Scientific attitude can influence the learning process [17].

The high scientific attitude of students will help in the learning process. This is because scientific attitudes can shape students' thinking creatively and critically. One learning strategy that provides opportunities for students to discover their own knowledge and play an active role in learning so that they are able to understand concepts well and develop critical thinking skills is inquiry learning strategies. Inquiry learning strategy is a series of activities that involve learning activities to the fullest of all students' abilities to search and investigate systematically, critically, logically, analytically, so that they can formulate their own findings confidently [18, 19]. Critical thinking ability is an ability that involves cognitive, analytical, rational, logical processes, and invites students to think reflective of problems. Therefore students need to have that critical thinking.

In an effort to improve students' critical thinking, it needs to be creative and innovative learning. This learning must be done by lecturers as an effort to have students who are active and creative in solving problems both in lectures and in everyday life. Because the task of the lecturer is only to encourage students to do something. Lecturers come to class with problems to solve by students, then they are guided to find the best way to solve the problem. The level of success of teaching staff in teaching is seen from the success of their students so that it is said that great educators are educators who can provide inspiration for students [20, 21]. According to [22, 23] Educational innovations are ideas, goods, methods, which are perceived or observed as new things for individual or community outcomes, in the form of inventions (new discoveries) that are used to achieve educational goals or to solve them. Currently, students are asked to access knowledge and configure it independently [24, 25] argues that lecturers apply innovative and interactive learning in bringing change in the teaching process.

Inquiry model is a model that is very suitable for use in learning activities. Students are directed to carry out their own learning activities such as formulating hypotheses, designing experiments, analyzing experiments, collecting data so that students can develop process skills. [21, 26] argue that inquiry-based learning is effective in helping students develop critical thinking skills. [27, 28] also said that "Inquiry-based learning activities are the center of learning where students are involved in formulating problems, making hypotheses, collecting and analyzing data, and drawing conclusions from problems". Critical thinking is a high-level thinking skill, which focuses on deciding what to believe or do [29-32]. Inquiry-based learning is a teaching method that uses problem-solving in learning by participating or engaging in learning. This inquiry learning model aims to provide a way for students to build intellectual skills related to thought processes [33, 34]. Problem-solving skills refer to the ability of students to investigate a solution in a given problem [28, 35]. Therefore creative thinking is needed in generating an idea to solve a problem and create a new approach. Meanwhile, group work is often a major component in solving problems [23, 36]. Therefore the inquiry learning model has a good impact on learning. Based on the understanding of inquiry itself, specifically inquiry-based learning also has a relationship with student learning and behavior.

The purpose of this study was to see whether the inquiry learning model assisted by ethnoconstructivism modules with traditional print teaching materials used in lectures could improve students' critical learning in learning. With the research question Is there a significant difference in the critical skills score between the control and experimental group students?

2. RESEARCH METHOD

The research design used by researchers is a quantitative research type quasi-experimental design using pretest and posttest non-equivalent control group design. It was done to investigate causal hypotheses about causes that could be manipulated by comparing one or more experimental groups treated with one non-treated comparison group [37]. The design of this study was applied because it was in accordance with the objectives of the study, where the aim was to find out whether there was a difference between the critical thinking of students using the inquiry learning model assisted by the ethnoconstructivism module and traditional printed teaching materials used in lectures. This study uses descriptive statistics and uses inferential statistics. The inferential statistics used are independent sample t-test.

Table 1. Pretest-posttest non-equivalent control group design

Group	Pretest	Treatment	Posttest
Experimental	O ₁	Inquiry learning model assisted by the ethnoconstructivism module	O ₁
Control	O ₂	Traditional learning module	O ₂

This research was located in elementary school teacher education with a total of 64 6th semester students in Universitas Jambi elementary school education teachers, Jambi Province. In the experimental

class, there were 32 students and in the control class, there were also 32 students. In the experimental class using the inquiry learning model assisted by the ethnoconstructivism module and in the control class using traditional print teaching materials used in lectures. The sample collection technique uses purposive sampling method. Purposive sampling is a sampling technique based on the criteria of the researcher [38]. The procedure for collecting data to refer to [37], Is explained in the Figure 1.



Figure 1. Research procedure

Based on the picture above, it can be seen that the first activity that must be carried out in the process of data collection, namely the dissemination of questions to students of 6th grade elementary school education students. given traditional teaching materials. After that, linking the results of students' critical thinking after being given an inquiry model with those not using the inquiry model. The instrument used is OHRCT. This research uses question instruments and semi-open interviews. Student critical thinking questions were adopted from Oliver-Hoyo Rubric for Critical Thinking (OHRCT). OHRCT was developed by [39] obtaining Cronbach alpha reliability coefficient of 0.84, which has 6 indicators, namely abstract, organization, source of information, content, relevance, and presentation.

All data obtained from OHRCT questions in both the control class and experimental class were collected and then calculated and assisted with the SPSS 21 application. Descriptive statistics were given to calculate the mean of a sample [37] in the control and experimental groups. In this study, quantitative data were analyzed using parametric statistics of the independent sample t-test. Independent sample t-test was conducted to examine the effect of critical thinking of students on cultural values. This study uses SPSS 21 at the significance level of 0.025. And followed by interviews that are used to strengthen the results of quantitative data.

3. RESULTS AND DISCUSSION

Research findings. The average results of the students' either pretest or posttest were explained, to show the inquiry model thinking assisted by ethnoconstructivism modules in elementary schools which are presented as follows in Table 2. and Table 3.

Table 2. The gap in students' critical thinking scores on pretest between experimental classes and control classes

Indicator	Groups	Mean	n
Abstract	Experiment	28.3	32
	Control	27.9	32
Organization	Experiment	35.4	32
	Control	29.6	32
Resources	Experiment	32.4	32
	Control	30.9	32
Content	Experiment	29.3	32
	Control	26.1	32
Relevance	Experiment	30.2	32
	Control	27.8	32
Presentation	Experiment	28.5	32
	Control	26.7	32

Based on the average ratings and categories shown in Table 2, the pretest scores of the experimental group students were slightly higher in the organizational indicators ($M = 35.4$) and the lowest was abstract ($M = 28.3$). Control group students were slightly higher in terms of information sources namely ($M = 30.9$) and the lowest was content ($M = 26.1$). This shows that before being given treatment, all students have the same critical thinking in cultural values.

Table 3. Gaps in student critical thinking scores on posttest between experimental classes and control classes

Indicator	Groups	Mean	n
Abstract	Experiment	39.5	32
	Control	32.8	32
Organization	Experiment	39.7	32
	Control	31.2	32
Resources	Experiment	40.8	32
	Control	34.3	32
Content	Experiment	31.2	32
	Control	28.4	32
Relevance	Experiment	31.9	32
	Control	28.8	32
Presentation	Experiment	29.8	32
	Control	27.5	32

According to the average rank and category presented in Table 3, it shows that the experimental group students were more dominant in all indicators compared to the control group students. This confirms that the inquiry model implementation assisted by the ethnoconstructivism module has a significant impact on students' critical thinking. In addition, the experimental group students obtained the highest average rating in the source of information ($M = 40.8$) and the lowest in the Presentation ($M = 29.8$). Meanwhile, control group students obtained the highest average rating in Information Source ($M = 34.3$) and lowest in presentation ($M = 27.5$).

Table 4. Independent sample t-test for critical thinking

	t	df	Mean	Std.deviation	95% confidence interval	
					Lower	Upper
Critical thinking	18.642	64	3.0912	.14321	18.134	.6120
	18.642	128.067	2.2033	.20015	17.885	.8615

From Table 4, it can be seen that the value is obtained (t count) with the value of t table. The t-table value can be found in table t with a significance value of 0.025 (2-sided test) with degrees of freedom (df) 64. In this study, the results for t table are 1.97658. Whereas the value of t count can be seen in Table 4 (column t) which is 18.642. The hypothesis testing criteria is the value of rejecting H_0 [40, 41]. So, it can be concluded that there are significant differences in students' critical thinking skills between the control classes taught with traditional teaching materials and experimental classes that use the inquiry-based ethnoconstructivism module. It can be seen from Table 4 that the average value of student interest is 3.0912, which means that it can improve students' critical thinking skills in learning cultural values.

The need for education in the curriculum of educational institutions is oriented to create productive, creative, innovative, and effective generations through the integration of attitudes, abilities, and knowledge with life skills. One of them we can apply to the learning strategy that is using inquiry. Inquiry-based learning strategies are learning models that involve students more actively in learning activities to explore the potential within themselves with the direction of the lecturer. According to the results in Table 4, all students showed unsatisfactory performance. Based on the analysis, we found that there were significant differences in the control class scores and the experimental class using inquiry-based learning. This shows that before treatment, all students had similar prior knowledge. Regarding students' low skills, we found that they had difficulty in solving their problems. According to the observations we made before conducting the research, it was caused by lecturers who only used traditional methods during learning. Finally, we assume that students taught using conventional methods tend to obtain less than optimal performance [42, 43]. Therefore, the inquiry model is assisted by the ethnoconstructivism module to enhance students' critical thinking. Increasing the critical thinking ability of the experimental class students is due to the application of the inquiry learning model that gives students the opportunity to think. Students apply knowledge in practice and problems, present results in class, reflect, assess, and improve what they get that later makes students think critically, starting from making abstract, observing, finding sources of information and organizing in solving problems.

Based on the data obtained from the implementation of the inquiry learning model assisted by the ethnoconstructivism module, it can be seen that the use of modules is effective in increasing students' critical thinking from the students themselves. This is supported by the results of interviews with students and teachers. The results of interviews with several student representatives obtained responses to the application

of ethnoconstructivism-assisted inquiry learning models. A sample of 10 students stated that learning applied to cultural material provides more experience for students in understanding the material presented and student involvement in learning more optimally. Student opinions are supported by statements delivered by lecturers through interviews with lecturers. Interviews with lecturers were obtained information that the lecturers felt more enthusiastic about delivering learning through the application of the ethnoconstructivism assisted inquiry model to improve pre-service teacher for critical thinking. The involvement of students in each activity has a positive impact especially on student participation during learning so that the material delivered by lecturers can be well understood by students. The lecturer concluded that the application of the ethnoconstructivism assisted inquiry learning model could improve students' critical thinking skills. Therefore, if students have an attitude to good cultural values, it will have a positive impact on students' critical thinking. Where learning is a characteristic of cognitive, affective and psychomotor, as indicators that act relatively stable for learning that are interconnected and react to the learning environment [44]. And attitudes have factors that can influence social and internal conditions in themselves [45].

Through learning to use products from information and communication technology various multimedia services can be easily transferred, such as audio, video, high-resolution graphics so that the thought process can lead to thinking [46-48] developed a personalized mobile learning system to support guided inquiry learning activities. They found that student learning attitudes and attitudes increased significantly.

4. CONCLUSION

It can be seen that the results of students' critical thinking have a good category. On the results of students' critical thinking skills for the control class using traditional teaching materials, there were significant differences with the experimental class using the inquiry learning model assisted by ethnoconstructivism modules who were in the superior experimental class because they used the ethnoconstructivism module learning inquiry model with t-test scores of 18.642. According to the results, it is recommended that pre-service teachers need to be given the opportunity to develop direct experiences and thoughts in cultural activities. The lecturers must utilize the inquiry learning model assisted by the ethnoconstructivism module to develop various learning skills from students for life.

REFERENCES

- [1] Andrini, V. S., "The effectiveness of inquiry learning method to enhance students' learning outcome: A theoretical and empirical review," *Journal of Education and Practice*, vol. 7, no. 3, pp. 38-42, 2016.
- [2] Kabeel, A. R., and Eisa, S. A.-M., "The correlation of critical thinking disposition and approaches to learning among baccalaureate nursing student," *Journal of Education and Practice*, vol. 7, no. 32, pp. 91-103, 2016.
- [3] Taghva, F., Rezaei, N., Ghaderi, J., and Taghva, R., "Studying the relationship between critical thinking skills and students' educational achievement (Eghlid Universities as case study)," *International Letters of Social and Humanistic Sciences*, vol. 25, pp. 18-25, 2014.
- [4] Siburian, J., Corebima, A. D., Ibrohim., and Saptasari, M., "The correlation between critical and creative thinking skill on cognitive learning results," *Eurasian Journal of Educational Research*, vol. 81, pp. 99-114, 2019.
- [5] Pantic, N and Wubbels, T., "Competence-based teacher education: A change from Didaktik to Curriculum culture," *Journal of Curriculum Studies*, vol. 44, no. , pp. 61-87, 2012.
- [6] Unlu, Sahika, "Curriculum development study for teacher education supporting critical thinking," *Eurasia Journal Educational Research*, vol. 76, pp. 165-186, 2018.
- [7] Ezer, H., Gilat, I and Sagee, R., "Perception of teacher education and professional identity among novice teachers," *European Journal of Teacher Education*, vol. 33, no. 4, pp. 391-404, 2010.
- [8] Boonjeam W., Tesaputa K., and Sri-ampai A., "Program development for primary school teachers' critical thinking," *International Education Studies*, vol. 10, no. 2, pp. 131-138, 2017.
- [9] Dobber, M., Vandyck, I., Akkerman, S, Graaff, D, R, Beishuizen, J., Pilot, A., Verloop, N and Vermunt, J., "The development of community competence in the teacher education curriculum," *European Journal of Teacher Education*, vol. 36, no. 3, pp. 346-363, 2013.
- [10] Signagatullin, I. M., "Developing preservice elementary teachers' global competence," *International Journal of Educationa*, vol. 28, no. 1, pp. 48-62, 2019.
- [11] Konig, Lammerding, Nold, Rohde, Straub, and Tachtsoglou, "Teachers' professional knowledge for teaching english as a foreign language: Assessing the outcomes of teacher education," *Journal of Teacher Education*, pp. 1-18, 2016.
- [12] Kaendler, C., Wiedmann, M., Rummel, N., and Spada, H., "Teacher competencies for the implementation of collaborative learning in the classroom: A framework and research review," *Educational Psychology Review*, vol. 27, no. 3, pp. 505-536, 2015.
- [13] Ministry of National Education, Law Number 14 of 2005, *Regarding Teachers and Lecturers*, Jakarta: Ministry of National Education, 2005

- [14] Guido, R. M., "Attitude and motivation towards learning physics," *International Journal of Engineering Research & Technology*, pp. 2087-2094, 2013.
- [15] Astalini, Kurniawan, D. A., Perdana, R., and Pathoni, H., "Characteristic of students' attitude to physics in Muaro Jambi high school," *Humanities & Social Science Research*, vol. 7, no. 2, pp. 91-99, 2019.
- [16] Kurniawan, D. A., Astalini., and Anggraini, L., "Evaluation of junior high school attitudes towards science learning in Muaro Jambi Regency (in Bahasa)," *Jurnal Ilmiah Didaktika: Media Ilmiah Pendidikan dan Pengajaran*, vol. 19, no. 1, pp. 123-139, 2018.
- [17] Trumper, Ricardo, "Factors affecting junior high school students' interest in physics," *Journal of Science Education and Technology*, vol. 15, no. 1, pp. 47-58, 2006.
- [18] Basar, N., Jawawi, R., Matzin, R., Jaidin, J. H., and Musa, J., "Teaching tourism in geography through an inquiry-based approach (IBA)," *Journal of Education and Learning (Edulearn)*, vol. 13, no. 1, pp. 81-86, 2019.
- [19] Servitri, M. O., and Trismawaty, W., "The development of inquiry science worksheet to facilitate the process skills," *Journal of Education and Learning (Edulearn)*, vol. 12, no. 4, pp. 575-580, 2018.
- [20] Sofanudin, A., and Rokhman, F., "Quality-oriented management of educational innovation at Madrasah Ibtidaiyah," *Journal of Education and Practice*, vol. 7, no. 27, pp. 176-180, 2016.
- [21] Cetin, Y., Mirasyedioglu, S., and Cakiroglu, E., "An inquiry into the underlying reasons for the impact of technology enhanced problem-based learning activities on students' attitudes and achievement," *Eurasian Journal Educational Research*, vol. 79, pp. 191-208, 2019.
- [22] Kunnari, I., and Ilomäki, L., "Reframing teachers' work for educational innovation," *Innovations in Education and Teaching International*, vol. 53, no. 2, pp. 167-178, 2016.
- [23] Aybek, B., and Aslan, S., "An analysis of the units "I'm learning my past" and "The place where we live" in the social studies textbook related to critical thinking standards," *Eurasian Journal Educational Research*, vol. 65, pp. 35-54, 2016.
- [24] Tezer, M., Kan, and Bas., "Content analysis of master's degree and doctorate theses where social skills training is approached," *International Journal of Cognitive Research in Science, Engineering and Education (IJCRSEE)*, vol. 7, no. 1, pp. 43-49, 2019.
- [25] Rabgay, T., "The effect of using cooperative learning method on tenth grade students' learning achievement and attitude towards biology," *International Journal of Instruction*, vol. 11, no. 2, pp. 265-280, 2018.
- [26] Şimşek, P., and Kabapınar, F., "The effects of inquiry-based learning on elementary students' conceptual understanding of matter, scientific process skills and science attitudes," *Procedia-Social and Behavioral Sciences*, vol. 2, no. 2, pp. 1190-1194, 2010.
- [27] Wulandari, S., "Inquiry-based active learning: the enhancement of attitude and understanding of the concept of experimental design in biostatics course," *Asian Social Science*, vol. 9, no. 12, pp. 212, 2013.
- [28] Syahrin, A., Dawud., Suwignyo, H., and Priyatni, E. T., "Creative thinking patterns in student's scientific works," *Eurasian Journal of Education Research*, vol. 81, pp. 21-36, 2019.
- [29] Irwanto., Saputro, A. D., Rohaeti, E., and Prodjosantoso, A.K., "Using inquiry-based laboratory to improve critical thinking and scientific process skills among preservice elementary teachers," *Eurasian Journal of Educational Research*, vol. 80, no. 8, pp. 151-170, 2019.
- [30] Allen, M., "Promoting critical thinking skills in online information literacy instruction using a constructivist approach," *College & Undergraduate Libraries*, vol. 15, no. 1-2, pp. 21-38, 2008.
- [31] Canziani, B., and Tullar, W. L. "Developing critical thinking through student consulting projects," *Journal of Education for Business*, vol. 92, no. 6, pp. 271-279, 2017.
- [32] Irwanto, Rohaeti, E., and Prodjosantoso, A. K. "A survey analysis of pre-service chemistry teachers' critical thinking skills," *MIER Journal of Educational Studies, Trends & Practices*, vol. 8, no. 1, pp. 57-73, 2018.
- [33] Gillette, C. M., "consideration of problem-based learning in athletic training education," *Athletic Training Education Journal*, vol. 12, no. 3, pp. 195-201, 2017.
- [34] Aktekin, N. C., "Critical friends group (CFG): Inquiry-based professional development model for Turkish EFL teachers," *Eurasian Journal Educational Research*, vol. 81, pp. 1-20, 2019.
- [35] Zhong, N., Yingxu Wang, Y., and Chiew, V., "On the cognitive process of human problem-solving," *Cognitive Systems Research*, vol. 11, pp. 81-92, 2010.
- [36] Winarno, Sri., Muthu, K.S., and Ling, L.S., "Direct Problem-Based Learning (DPBL): A framework for integrating direct instruction and problem-based learning approach," *International Education Studies*, pp. 1-8, 2018.
- [37] Creswell, John W., *Educational Research: Planning, Conducting, And Evaluating Quantitative And Qualitative Research*, New York: Pearson, 2012.
- [38] Kerlinger, F. N., *Foundations of behavioral research*, Yogyakarta: Gadjah Mada, 2014.
- [39] Oliver-Hoyo, M. T., "Designing a written assignment to promote the use of critical thinking skills in an introductory chemistry course," *Journal of Chemical Education*, vol. 80, no. 8, pp. 899-903, 2003.
- [40] Cohen, L., Manion, L., and Morrison, K., *Research methods in education*, Routledge, 2005.
- [41] Cramer, D., *Advanced quantitative data analysis*, UK: McGraw-Hill Education, 2003.
- [42] Duran, M., and Dökme, I., "The effect of the inquiry-based learning approach on student's critical-thinking skills," *Eurasia Journal of Mathematics, Science and Technology Education*, vol. 12, no. 1, pp. 2887-2908, 2016.
- [43] Wartono, W., Hudha, M. N., and Batlolona, J. R., "How are the physics critical thinking skills of the students taught by using inquiry-discovery through empirical and theoretical overview?" *Eurasia Journal of Mathematics, Science and Technology Education*, vol. 14, no. 2, pp. 691-697, 2018.

- [44] Keefe, J. and Ferrell, B., "Developing a defensible learning style paradigm," *Educational Leadership*, vol. 48, no. 2, pp. 57- 61, 1990.
- [45] Craker, D. E., "Attitudes toward science of students enrolled in introductory level science courses at UW-La Crosse," *UW-L Journal Of Undergraduate Research IX*, vol. 9, pp. 1-6, 2006.
- [46] Astalini, A., Kurniawan, D. A., Sulistiyo, U., Perdana, R., and Susbiyanto, S., "E-assessment motivation in physics subjects for senior high school," *International Journal of Online and Biomedical Engineering (iJOE)*, vol. 15, no. 11, pp. 4-15, 2019.
- [47] Wongwatkit, G., Panjaburee, P. and Srisawasdi, N., "'A proposal to develop a guided-inquiry mobile learning with a mastery learning mechanism for improving students' learning performance and attitudes in Physics'," *Int J. Mobile Learning and Organisation*, vol. 11, no. 1, pp.63–86, 2017.
- [48] Zheng, L., Li, X., Tian, L. and Cui, P. "'The effectiveness of integrating mobile devices with inquiry-based learning on students' learning achievements: A meta-analysis'," *Int. J. Mobile Learning and Organisation*, vol. 12, no. 1, pp.77–95, 2018

BIOGRAPHIES OF AUTHORS



Syahril is an associate professor in the study of indigenous knowledge language and linguistic field. Language as a cultural product of local wisdom is one of the markers of civilization. Ethnic language (local) has an important function and role as important as the national language and international language as a bridge in global communication. Decreasing the vitality of ancestral languages will affect the safeguarding of local wisdom values. Noble advice contained in culture will stop being inherited as language skills fade. So from that, the value of local wisdom must be maintained, explored and developed for students. This is intended so that later the development of culture and science becomes the basis for human resource development. Syahril is a member of the research group ethnoconstructivism and works at the Elementary Teaching and Education Program, Universitas Jambi.



Asrial is professor in the study of indigenous knowledge chemical field. This knowledge can be applied to 21st Century learning at the elementary, junior and senior high school levels. And preparing teacher candidates to understand the value of local wisdom to improve competence pedagogical. By applying education based on local wisdom it is hoped that it will be able to create education that gives meaning in the learning process for students. So that education is able to create young generations who are able to preserve and love their own culture. In addition, education must be able to shape human character with high integrity and great character and dignity in accordance with the spirit of education which is humanizing humans. Asrial is the chair of the research group ethnoconstructivism and that group is aimed at analyzing all the values of local wisdom to serve as a medium and source of learning.



Dwi Agus Kurniawan is a lecturer and member of the ASPS Group Research (Attitude Towards Science and Science Processing Skills). His research interest includes E-Assessment and Evaluation specially in Attitude Towards Physics and Science Processing Skills. The age level of a child will experience very much difference, both in the form of his mindset, his skills, his relationships, and his attitude as a student. For teachers, it is very useful to know the differences in the mindset of their students, and about their daily interactions, and the behavior of their students. Benefits that can be obtained are: can create the right classroom for students, can provide innovative and varied learning methods, can provide lessons on deep moral aqidah, and explain the consequences for those who violate certain rules. He works at Science Education Program, Jambi University Indonesia.



Reza Aditya Pratama is a graduate student at universitas Jambi and member of the research group ethnoconstructivism and that group is aimed at analyzing all the values of local wisdom to serve as a medium and source of learning.



Rahmat Perdana is a graduate student at universitas Jambi and member of the ASPS Group Research (Attitude Towards Physics and Science Processing Skills). The current research is Attitude Towards Physics E-Assessment. Student learning attitudes will manifest in the form of feeling happy or not happy, agree or disagree, like or dislike those things. This attitude will affect the process and learning outcomes achieved. In learning physics studies, good learning outcomes will be obtained if in delivering subject matter, the teacher can apply learning methods that are in accordance with the characteristics of students. Because the attitude towards science is very important for life now, students who have the attitude of science are needed in the present because modern society is very dependent on science.