The 4th International Conference On Educational Research and Innovation

Research, Education, and Innovation for Development High Quality and Humane People

CONFERENCES PROCEEDINGS

Institute of Research and Community Services Yogyakarta State University
May 11-12, 2016
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May, 11-12, 2016
MESSAGE FROM THE RECTOR OF YOGYAKARTA STATE UNIVERSITY

Assalamu’alaikum warahmatullah wabarakatuh.
May peace and God’s blessings be upon you all

Welcome to Yogyakarta, Indonesia!

It is a great honor and pleasure for me to welcome you all to the 4th International Conference on Educational Research and Innovation held in Yogyakarta, Indonesia. On behalf of Yogyakarta State University and the committee, let me extend my warmest greetings and appreciation to all speakers and participants who have traveled hundreds or even thousands of miles by various transportation means to come to Yogyakarta to attend this conference. It is my strong belief that your safe journey has been due to the blessings granted by God the Almighty and the Most Merciful to Whom we without any further due have to express our gratitude and praise.

It is indeed a privilege for Yogyakarta State University to have the opportunity to organise this very important conference in which educational researchers and practitioners get together to share ideas, experiences, expectations, and research findings. This conference is held as one of the items in the agenda of Yogyakarta State University to celebrate its 52nd anniversary.

Research is one of the activities among the academic members of a university. It is a systematic effort to solve the problems or answer the questions by collecting data, formulating the generalities based on the data, then finding and developing organized knowledge by scientific method. It is expected that from research activities valuable empirical facts can be obtained to improve and develop the theory and practice to bring a better quality of education.

In line with it, the advancement of science and technology, sport, languages, and art should be dedicated to not only facilitate the human life, but also to educate human beings themselves with values to be high quality beings, good citizens, and more humble people to God. If we produce a gun, it may kill people; if we make insecticide, it may kill insects. However, in the hands of good people, the gun may be used to protect them from a maniac; bioinsecticide can be used to protect crops from harmful insects. The quality of human beings is the key to using or applying the advancement of science, technology, languages, sport, and art.

The fourth International Conference on Educational Research and Innovation (ICERI) aims at bringing together researchers, educators, scientists, engineers, and scholar students to exchange and share their experiences, new ideas, and research findings about all aspects of education, research and innovation, and discuss the practical challenges encountered and the solutions adopted to develop humanity and the quality of human life. In response to this, in this year to support the roles of the Institute of Research and Community Services of Yogyakarta State University in encouraging researchers to conduct high-quality researches, an International Conference on Educational Research and Innovation (ICERI) is held under the umbrella theme of “Research, Education, and Innovation for Developing High Quality and Humane People.” It provides teachers/lecturers, education practitioners, college students, and policy makers the opportunity to share their knowledge, experiences, and research findings which are innovative and relevant to develop the educational practices focusing on the process and product.
This fourth conference is aimed at discussing the papers on the research findings related to Educational research for human quality development, Character educational research for building humanity, research, education, and innovation on science and technology, sport, economics, social sciences, language and arts for improving human life. It is expected that this conference will reach its declared objectives successfully as a strategic forum to yield recommendations on the improving the human life through research, education, and innovation.

To conclude, let me wish you a fruitful discussion during the conference and an enjoyable stay in Yogyakarta.

Thank you very much for your attention.

Wassalamu’alaikum warrahmatullah wabarakatuh.
May peace and God’s blessings be upon you all

Yogyakarta, 11 May 2016
Rector,

Prof. Dr. Rochmat Wahab, M.Pd., M.A.
MESSAGE FROM THE ORGANIZING COMMITTEE

His Excellency General Director of Research & Development, Ministry of Research and Technology and Higher Education,
Rector of Yogyakarta State University,
Vice Rectors and Deans of all faculties,
Honourable Heads of Institutes of Research and Community Service of the surrounding universities,
Distinguished all invited speakers and all other speakers,
Distinguished guests,
All participants,
Ladies and gentlemen,

Assalamu’alaikum warrahmatullah wabarakahut.
May peace and God’s blessings be upon you all.
Good morning.

First of all allow me to extend my warmest greetings and welcome to you all to the 4th International Conference on Educational Research and Innovation, held by Yogyakarta State to celebrate its 52nd anniversary.
Raising the theme – Research, Education, and Innovation for Developing High Quality and Humane People - this conference is designed to discuss the papers on the research findings related to aspects of education, research and innovation, and discuss the practical challenges encountered and the solutions adopted to develop humanity and the quality of human life.. Hopefully, all discussions in this conference can be inspiring and useful for us to improve the quality of education and educational research.

Ladies and gentlemen,
For your information, we will proudly present one keynote speech, four plenary presentation sessions and four parallel presentation sessions. Eight outstanding speakers in the field of character education and educational research have been invited. They are Dr. Ir. Muhammad Dimyati, M. Sc., General Director of Research & Development, Ministry of Research and Technology and Higher Education as the keynote speaker, Rachel Parker, Ph.D. from Australian Council of Educational Research (ACER), Derek W. Patton, Ph.D. from Asia Pacific Network for Moral Education (APNME), Prof. Drs. Toho Cholik Thohir, Mutohir, M.A., Ph.D. from IKIP Mataram, Prof. Suwarzih Madya, M.A., Ph.D. from Yogyakarta State University, Hardi Julendra, S.Pt, M.Sc., from Research Centre for Technology of Natural Materials, Ana R. Otero, Ph. D. From AMINEF, USA, and Megat Ahmad Kamaluddin Megat Daud, Ph.D. from University of Malaya, Malaysia.

Ladies and gentlemen,
We have done our best to prepare for this conference. So, my highest appreciation and heartfelt thanks to all committee members. As to err is human, shortcomings may occur here and there. On behalf of the committee, I would therefore like you all to accept our apologies.
At the end of my speech, I would like to kindly request the Rector of Yogyakarta State University to officially open the conference.

To conclude, let me wish you a productive discussion and a fruitful conference. Thank you very much for your attention.

Wassalamu’alaikum warrahmatullah wabarakatuh. 
May peace and God’s blessings be upon you all

Yogyakarta, 11 May, 2016
Head of Research Institute and Community Service of Yogyakarta State University

Dr. Suyanta, M.Si.
# TABLE OF CONTENT

MESSAGE FROM THE RECTOR OF ................................................................. iii
MESSAGE FROM THE ORGANIZING COMMITTEE ....................................... v
TABLE OF CONTENT ....................................................................................... vii

AT RISK AND VULNERABLE CHILDREN IN SCHOOL: TOWARDS SOLUTIONS
Derek Patton ...................................................................................................... 1

RESEARCH AND DEVELOPMENT ON THE QUALITY OF PHYSICAL EDUCATION AND SPORT FOR IMPROVING HEALTH AND WELL-BEING
Prof. Toho Cholik Mutohir, Drs. MA., Ph.D. ...................................................... 8

SHYNES, PROSOCIALITY AND AGGRESSION STABILITY IN CHILDREN AGE 6 TO 11 (A LONGITUDINAL STUDY WITH TURKISH SAMPLE)
Serdal Seven ..................................................................................................... 20

THE EFFECT OF SITUATIONAL FACTORS AND PSYCHOLOGICAL FACTORS OF STUDENTS IN THE CHOICE OF THE MECHANICAL ENGINEERING EXPERTISE PROGRAM IN VOCATIONAL HIGH SCHOOLS IN THE YOGYAKARTA SPECIAL TERRITORY
Dwi Rahdiyanta ............................................................................................... 24

THE SELECTION DECISION SUPPORT SYSTEM OF STUDENTS ELIGIBLE FOR SCHOLARSHIPS WITH SIMPLE ADDITIVE WEIGHTING METHOD (CASE: SMK MAHADHIKA 2 JAKARTA)
Bay haqi, Jonser Sinaga ................................................................................... 33

EXPLORING ONLINE SOCIAL CAPITAL AND GENERALISED SOCIAL CAPITAL AMONG YOUTHS
Sheau Tsuey Chong, Denise Koh Choon Lian, Fauziah Ibrahim, Samsudin A.Rahim, Fatin Nabilah Abu Hassan ................................................................. 40

BRIDGING QUALIFIED HUMAN DEVELOPMENT: PROSPECTS AND CHALLENGES OF INTERNATIONAL CLASS PROGRAM
Dewi Nur Suci, Mulyono .................................................................................. 46

DEVELOPMENT STRATEGY OF TEACHER PROFESSIONALISM ON ACTION CLASS RESEARCH AND RESEARCH PUBLICATION IN HULU SUNGAI SELATAN REGENCY, SOUTH KALIMANTAN
Deasy Arisanty, Ellyn Normelani ..................................................................... 55
CONTEXT, INPUT, PROCESS AND PRODUCT EVALUATION OF THE INCLUSIVE EDUCATION PROGRAM IN PUBLIC ELEMENTARY SCHOOL
Bambang Suteng Sulasmono, Tri Sulistyowati ................................................................. 64

EMPLOYEE ENGAGEMENT: DRIVING THE EMPLOYEES’ ORGANIZATIONAL QUALITY OF LIFE
Roberto M. Arguelles and Danica Jane Madarang .............................................................. 71

“TIP-EX” AS AN EDUCATIONAL AND TRAINING MODEL TO ENHANCE THE QUALITY OF EDUCATORS IN THE ERA OF GLOBAL COMPETITION
Surya Jatmika, Alfriots Roul Sinadia, Kriswantoro, Maryatul Qibtiyah.............................. 80

BENEFITS MATHEMATICAL MINDSET OF MANAGEMENT EDUCATION
Lusi Rachmiazasi Masduki; Eem Kurniasih ........................................................................... 86

AUDIOVISUAL LEARNING MEDIA AND SOCIAL LEARNING: GENERATING ENGINEERING STUDENTS’ SOCIAL AWARENESS THROUGH TEAMWORK LEARNING DURING THE PROCESS OF VIDEO PRODUCTION
Adi Suryani .......................................................................................................................... 92

TUTORS QUALITY ANALYSIS AND BACKGROUND DIFFERENCES AT FACULTY OF MEDICINE UNIVERSITAS MUHAMMADIYAH SURAKARTA
N. Juni Triastuti , Efryaim Suryadi, Harsono ...................................................................... 100

THE DETERMINANT FACTORS INFLUENCING METACOGNITIVE ASPECT OF THE ICT-BASED DISTANCE LEARNING GRADUATES
Slameto .................................................................................................................................. 107

DEVELOPING MEASURING TECHNIQUE TEXT BOOK TO INCREASE THE STUDENT’S ACHIEVEMENT IN MUHAMMADIYAH UNIVERSITY OF PURWOREJO
Suyitno .................................................................................................................................... 117

THE ACTION FOR IMPROVING SCIENCE PROCESS SKILL OF STUDENTS’ THROUGH SCIENTIFIC APPROACH AND THE USE ICT SUPPORT IN VOLUMETRIC ANALYTICAL CHEMISTRY AT SMK – SMAK BOGOR
Jaslin Ikhsan, Septi Riyanningsih, and Sulistio wati ................................................................. 121

ONLINE QUIZZES FOR E-LEARNERS: THE STUDENT FEEDBACKS .................................. 126
Zulnaidî Yaacob ...................................................................................................................... 126

THE AUTISTIC INDIVIDUALS’ STATUS OF COMPLIANCE WITH SOCIAL RULES
Abdurrahman MENGİ ............................................................................................................ 130
BIOLOGY MODULE USING THINK PAIR SHARE STRATEGY TO IMPROVE THE LEARNING MOTIVATION OF THE VOCATIONAL HIGH SCHOOL STUDENTS IN MALANG
Husnul Chotimah\textsuperscript{1)}, Herawati Susilo\textsuperscript{2)}, Mimien Henie Irawati\textsuperscript{3)}, and Ibrohim\textsuperscript{4)} ....................................... 136

PERFORMANCE OF THE BASIC EDUCATION PROGRAM IN THE IMPLEMENTATION OF EDUCATION FOR ALL SALATIGA CENTRAL JAVA - INDONESIA
Dr. Bambang Ismanto, M.Si............................................................... 143

THE IMPLEMENTATION OF INTER-RELIGIOUS EDUCATION FOR SUPPORTING STUDENTS’ INTER-RELIGIOUS TOLERANCE IN HIGHER EDUCATION
Alexander Hendra Dwi A. ............................................................ 150

PEDAGOGICAL PARADIGM OF REFLECTION AS A METHOD OF LEARNING TO BUILD CHARACTER
Dr. B.A. Rukiyanto, S.J. ................................................................. 157

IMPROVING TRAINEE’S CHARACTER THROUGH SOFT SKILLS PROGRAM IN VOCATIONAL TRAINING CURRICULUM
Cahyani Windarto................................................................. 165

AN INTEGRATED LOCAL WISDOM LEARNING AS A MODEL OF DEVELOPING MORAL CHARACTER
Badeni .................................................................................. 172

CHARACTER EDUCATION IN SINGAPORE INDONESIAN SCHOOL
Akhmad Fakhruroji and Dwi Sri Wahyu Amalika ........................................ 182

THE EFFECT OF PROBLEM- BASED LEARNING ON CRITICAL THINKING AND STUDENT ACHIEVEMENT IN THE 1 BANTUL SENIOR HIGH SCHOOL
Rizqa Devi Anazifa ................................................................. 190

DEVELOPMENT OF LEARNING MATERIAL ON THE SUBJECT OF SOUND WITH ARTICATION LEARNING MODEL
Syubhan An’nur, Mastuang, and Lonesti Agussesy Sandan ......................... 194

EFFECTIVENESS PHYSICS MODULE CLASS X USING COOPERATIVE LEARNING MODEL WITH A PEER ASSESSMENT
Misbah, Mustika Wati, and Putrie Aprilia Lestari ................................... 199

THE VALIDITY OF PHYSICS MODULE CLASS X ACCOMPANIED PEER ASSESSMENT PEER IN TOPIC CIRCULAR MOTION
Mustika Wati, Misbah, and Putrie Aprilia Lestari .................................... 203

SELF- DEVELOPMENT PROGRAM BASED ON HYBRID LEARNING TO INCREASE CHEMISTRY TEACHER ABILITY OF RESEARCH AND SCIENTIFIC PAPERS WRITING
Antuni Wiyarsi, Sukisman Purtadi .................................................. 207
EFFECTIVENESS PHYSICS MODULE CLASS X USING COOPERATIVE LEARNING MODEL WITH A PEER ASSESSMENT

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Abstract

The aims of this study is that to describe the effectiveness of physics module developed using cooperative learning model with peer assessment. The teaching materials physics examined in chapter circular motion. This type of study is quantitative description with pre experimental design. The subject of this study is class XB SMA Muhammadiyah 1 Banjarmasin. Data were collected achievement test. The data analysis technique is descriptive quantitative analysis. The results showed that the physics module class X using cooperative learning with peer assessment is effective in term of student learning outcomes.

Keywords: Effectiveness, physics module, cooperative, peer assessment.

1. Introduction

The task of educators in based on UU RI No.14 Tahun 2005 on teachers and lecturer define the teachers are professional educators with the primary task of educating, teaching, guiding, directing, train, assess and evaluate students on formal education, basic education and middle education. In accordance with the demands of the legislation on UU No. 20 Pasal 40 Ayat 2 tahun 2003 mentions Teachers and educational staff are obliged to create an atmosphere of meaningful education, fun, creative, dynamic and dialogical. Of the two laws can be concluded a teacher duty in of educating, teaching with fun, creative, dynamic and dialogical as well as assessing and evaluating students in a professional manner to improve the quality of education. In fact, there are a lot of learning that takes place in school does not correspond to the expectations of both the law.

Based on observations in SMA Muhammadiyah 1 Banjarmasin obtained lack of student interest in physics visible from the participation and activity of students in the learning that takes attention distracted by things that are not related to instructional. This happens because the instructional is centered on the teacher rather than the student. Learning is still centered on the teacher to make students use the lecture method passive because during the learning of students just listen and record science teacher who transferred to him. The lecture method is selected because the target material contained in the curriculum is reached.

Another problem particular to the tenth grade students in the school have a high sense of individualism and the difference in speed of study of each student. During the absence of teaching materials that support learning physics in groups conducted in schools and the use of feedback (assessment) apart from the teacher. In addition, the student does not have its own handbook to be able to learn independently with or without the help of a teacher other than a notebook containing teaching materials acquired during the learning of the teacher's explanation. Student handbook is necessary so that students better understand the material, hone and develop the student's ability itself.

The module is a means of organizing the subject matter is concerned about the function of education. Organizing strategies of learning materials containing squencing which refers to the making of the order of presentation of the subject matter, and synthesizing that refers to an effort to show learner the link between facts, concepts, procedures and principles contained in learning materials. The components of the module include (1) the introduction, (2) Learning Activities section, and (3) references. Introductory section contains (1) a general explanation of the module, (2) indicator of learning. Learning Activities section contains (1) a description of the content of learning, (2) summary, (3) test, (4) the answer key, and (5)
feedback (Indriyanti, 2010)[1]. Learning materials that will be discussed on the module developed contains the subject of the circular motion is one of the subjects of the lessons in high school physics class X in odd semester.

Learning using module effectively will be change conception students to the scientific concepts, so that in turn their learning outcomes can be improved as optimal as possible in terms of both quality and quantity. On the use of this module must be supported by a learning model that is appropriate to the purpose and characteristics of teaching materials. Cooperative learning model is a series of learning activities conducted by students in certain groups to achieve learning objectives have been formulated. Slavin (2010)[2] describes cooperative learning is a learning model in which students learn and work in small collaborative groups whose members 5 with a heterogeneous group structure. In a cooperative class, students are expected to help each other, each other to discuss, and argue to hone the knowledge they control the time and closed the gap in the understanding of each. Moreover, a thing done together will be easier than done alone. As the saying goes “bear the same weight and the same lightweight portable united we stand divided we fall”.

Cooperative learning model is a model of learning by way of a group to work together to help each other construct concepts and solve problems (Shoimin, 2014)[3]. In addition, teachers realize that students need to learn to think, solve problems, and integrating and applying the capabilities and knowledge through group learning (Slavin, 2010)[3] The model of cooperative learning is based on the cognitive-constructivist theory and social psychological theories (Utomo, 2002)[4].

Good quality of learning should be followed by a strategy assessments good , for information from the assessments beneficial for the efforts in improving the quality of learning , similarly on the other hand. Wolf (Badmus, 2007)[5] and Djemari Mardapi (2008)[6] argued that the assessment of students is an important part of teaching and that good teaching can not succeed without a good student assessment. The opinion indicated that any effort to improve the quality of education should include efforts to further improve the assessment system used. According to Popham (2005)[7] reasons for conducting the assessment, is to: (1) diagnose the strengths and weaknesses of students, (2) monitor the progress of learning, (3) to give the attribute grading, and (4) determine the effectiveness of teaching. Stecher et.al (1997)[8] states that there are three objectives which all three relevant educational assessment by technology and vocational education, namely (a) to develop learning and teaching, (b) certify the ability of individuals, and (c) evaluating the success of the program. So far, the only assessment done by teachers. Forms of assessment such as this, do not give space for students to reflect on their own performance results. The form of assessment gives students the chance to get feedback, not only from the teachers but also of themselves as well as the group's friends.

Keaten, Richardson, & Elizabeth (1993)[9] defines peer assessment as a process in which students assess other students; students assess and comment on the job or other students; Students assess how much they contribute to the group, and students can reflect on the strengths and weaknesses of the group. Rate peers is a strategy development and improvement of assessment used in the workplace to improve the quality of performance. In applying this kind of assessment of students are trained to be fair and accurate in providing peer member. Johnson & amp; Johnson (2002)[10] said that reasons involving students in the assessments , among other: (1) will increase the quality of the decision about assessments due to use resources students , (2) may be to step up their commitment students to apply way assessments the best , (3) can reduce attitude resistant students to unpanbalik and the need for change , (4) may this amount of increase , (5) to encourage the motivation great learning and build a studied attitude a positive and assessments , and (6) can increase assessments yourself ( self assessment ) students. A peer assessment is necessary because it can change the paradigm in which students when the students do something as a group then only partially working, while others escape from its responsibilities. In addition, the assessment can improve the quality of the cooperation between the students themselves.

Based on the above conditions, it would require an alternate module using learning models to be applied in increasing interest in learning, and social skills in particular cooperate and may reflect the ability of students to learn the results obtained in accordance with the purpose of education. Then the common problems in this research is how the effectiveness of the physics module class X using cooperative learning with peer assessment in the subject matter circular motion.
2. Method

Research conducted at SMA Muhammadiyah 1 Banjarmanis class XB academic year 2015/2016. This type of this study is quantitative description with pre experimental design forms One group pretest posttest, the experiments conducted without a comparison group. In this test done twice, ie before the experiment and after the experiment. Tests conducted before the experiment (O₁) called pretest and post test experiment (O₂) is called the post-test. Research design:

\[ O_1 \times O_2 \] (Arikunto, 2009)\(^{[11]}\)

Information:

\( O_1 = \text{Pre-test}, \) to record the results of students' prior learning module using cooperative learning model with peer assessment applied.

\( X = \) apply learning module using cooperative learning model with peer assessment.

\( O_2 = \text{Post-test}, \) to record the learning outcomes of students after learning module using cooperative learning module with peer assessment applied.

Learning effectiveness is measured on the test results of learning by doing pretest and posttest, to determine the increase achievement test for students' understanding of the concept then determined using the equation normalized gain (N-gain) by Hake (1998)\(^{[12]}\)

Furthermore, from the results of n-gain calculation is then converted to the following criteria:

<table>
<thead>
<tr>
<th>Scores N-Gain</th>
<th>Criteria Normalized Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.70 ≤ N-Gain</td>
<td>High</td>
</tr>
<tr>
<td>0.30 ≤ N-Gain &lt; 0.70</td>
<td>Average</td>
</tr>
<tr>
<td>N-Gain &lt; 0.30</td>
<td>Low</td>
</tr>
</tbody>
</table>

(Hake, 1998)\(^{[12]}\)

3. Results

The effectiveness of the modules developed can be determined through student learning outcomes in this study, measured from the pretest and posttest essay tests shaped as 6 matter and is calculated by using the N-gain with the number of students 25 people, can be seen in Table 2 as follows:

<table>
<thead>
<tr>
<th>interval Values</th>
<th>Category</th>
<th>The number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.70 ≤ N-Gain</td>
<td>High</td>
<td>7</td>
</tr>
<tr>
<td>0.30 ≤ N-Gain &lt; 0.70</td>
<td>Average</td>
<td>17</td>
</tr>
<tr>
<td>N-Gain &lt; 0.30</td>
<td>Low</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 2 shows that student learning outcomes were calculated using gain the test through a pretest and posttest is of 25 students total, there are 28.00% or 7 students high category, 68.00% or 17 students were categorized medium, and there is 4.00% or one student that low category.

Knowing the effectiveness of the learning process using the module can be seen from the results of student learning through the pretest and posttest were calculated by the gain test. The student learning outcomes as indicators of the expected goals of learning objectives. In the gain test were classified into three categories: less effective, effective, and very effective. Based on the calculation results by using test of cognitive learning gain can be seen in Table 2, it appears that students are included in the category of very effective are 28.00% or 7 peoples, wherein the percentage level by using the gain score, the results obtained exceed 0.70. Students are included in the effective category No 68.00% or 17 peoples with a percentage rate of less than 0.70 and more than 0.30. Students are included in the low category there are 4.00% or 1 people with percentage rate of less than 0.30. Based on analysis of the effectiveness of the use of the modules obtained can be graphed which can be seen in Figure 1 beside below as follows.

The results of the analysis are presented through graphs, it is known that the category is less effective coined the lowest percentage is 4.00% or there is one student, because the student is not mastering the material, the difficulty in understanding the material circular motion and incomplete in answering the question post-test. The student learning outcomes to achieve effective and highly effective can not be separated from the students master and understand the material circular motion with the good, the implementation of lesson plan very well, students who are active and positive response in the learning process by using the
module, as well as full students' answers according posttest assessment criteria for the matter.

Based on the above presentation, modules used in the learning experience can be effective. This is in accordance with the opinion of Daryanto (2013)[13] that the effective use of the module if it reaches the intended learning objectives. It was also supported by the theory put forward Shoimin (2014)[3] that students are learning with cooperative learning increases academic achievement and show a more positive attitude towards learning (Shoimin, 2014). The achievement is in line with the use of valuation techniques peer assessment, because students can find out answers to questions like what is desired from the assessor. In accordance with the opinion of Daryanto (2013)[13] about the advantages peer assessment which give an overview to the students about the assessment criteria used to assess learning outcomes (Daryanto, 2013).

4. Conclusion

The physics module class X using cooperative learning with peer assessment is effective in term of student learning outcomes.

ACKNOWLEDGMENT

All praise and gratitude to Allah SWT researchers, because thanks to His grace and guidance I can finish the study. On this occasion the researchers thank to SMA Muhammadiyah 1 Banjarmasin which has contributed a lot in research both in research licensing, giving feedback, and cooperation in data collection for the study. Thank you also do not forget to be delivered to all parties who contributed to the smooth running of this research that can not be enumerated.

REFERENCES