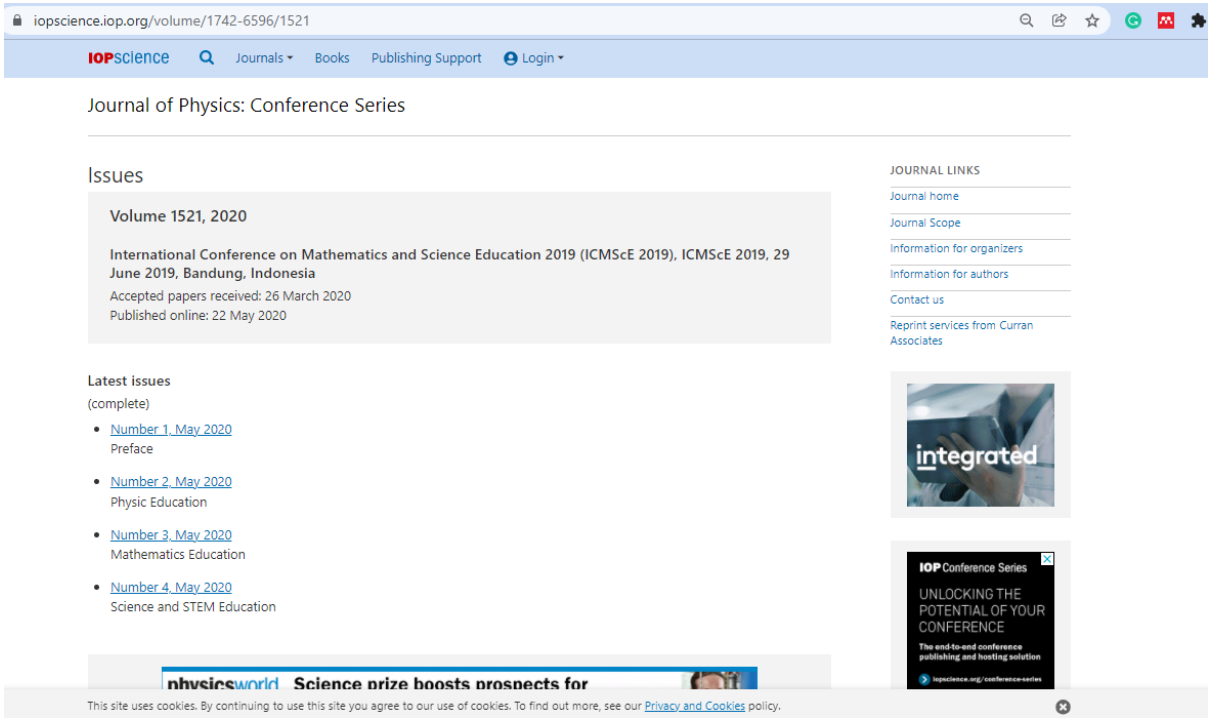
Halaman Awal Prosiding



Daftar Isi Prosiding (Khusus yang Terdapat Nama Penulis)

Journal of Physics: Conference Series

Table of contents

Volume 1521
2020
Previous issue Next issue
Physic Education
Accepted papers received: 26 March 2020
Published online: 22 May 2020

Open all abstracts

Physic Education

Train the computational thinking skill using problem-based learning worksheet for undergraduate physics student in computational physics courses
D Muliyati, A S Tanmalaka, D Ambarwulan, D Kirana and H Permana
+ Open abstract View article PDF

OPEN ACCESS 022025
The effect of project based learning-STEM on problem solving skills for students in the topic of electromagnetic induction
Parno, L Yuliati, N Munfaridah, M Ali, F U N Rosyidah and N Indrasari
+ Open abstract View article PDF

OPEN ACCESS 022026
Impact of the *EduPlasa* interactive media on reducing misconceptions of static fluid in high school students
A Halim, E Mahzum, Zanaton and H Humairah
+ Open abstract View article PDF

OPEN ACCESS 022027
Higher order thinking skills (HOTS)-oriented e-module in electric circuit
I Yusuf, S W Widyaningsih, Z K Prasetyo and E Istiyono
+ Open abstract View article PDF

OPEN ACCESS 022028
Development of measuring instrument based on microcontroller for physics laboratory
M Yakob, A Wahyuni, Sofyan, Nuraini, H Saputra, R A Putra and D Mustika
+ Open abstract View article PDF

OPEN ACCESS 022029
Pre-service teacher's physics attitude towards physics laboratory in Aceh
H Saputra, A Suhandi, A Setiawan and A Permanasari
+ Open abstract View article PDF

OPEN ACCESS 022030
Development of testlet instruments to measure science process skills on static fluid
O W Indri, Sarwanto and F Nurosvid

Informasi Seminar

INTERNATIONAL CONFERENCE ON MATHEMATICS AND SCIENCE EDUCATION (ICMScE)

AND

INTERNATIONAL CONFERENCE ON SCIENCE EDUCATION (ICoSEd)

THEME:

"MATHEMATICS AND SCIENCE EDUCATION RESEARCH FOR SUSTAINABLE DEVELOPMENT"

BANDUNG, June 29th, 2019

Editorial Team:

Erwin

Muhammad Satriawan

Ma'ruf

Kadek Dwi Hendratma Gunawan

Saprudin

Evi Roviati

Ike Festiana

Yulianti Yusal

Maulidiya

Didit Ardianto

THE COMMITTEE OF ICMScE 2019

CONFERENCE CHAIR:
Dr. Ahmad Mudzakir, M.Si.

LEADER EXECUTIVE:
- Erwin
- Muhammad Satriwan

SECRETARY:
- Fitri Khoerunnisa, M.Si., Ph.D
- Rika Rafikah Agustin
- Muhammad Syaipul Hayat
- Ari Syahidul Shidiq

FINANCE:
- Dr. Hernani, M.Si
- Dr. Winny Liliawati, M.Si
- Jumrodah

SECTION PROGRAM:
- Tuszie Widhiyanti, M.Pd., Ph.D
- Anisa
- Arini Rosa Sinensis
- Annida Melia Z
- Meida Prastiwi Putri
- Satriadi
- Ari Permana
- Noviani Utami
- Ervina
- Latifah Adelina Dammayanti

SECRETARIAT:
- Heli Siti Halimatul M., M.Si., Ph.D
- Saprudin
- Theresia Florentina
- Ike Festiana
- Indah Karina Yulina
- Evi Roviati
- Yulianti Yusal
- Ma'ruf
- Aditya Prihandhika
- Delisma
- Maulidiya

ARTICLE PUBLICATION:
- Dr. Galuh Yuliani, M.Si
- Lukman
- Muhammad Daut Siagian
- Asri Ode Samura
- Aya Sovia
- Juli Firmansyah
- Tri Isti Hartini
- Siti Julaeha
- Rahayu Puspa Hadiyati
- Devita Marlina

PUBLIC RELATIONSHIPS AND DOCUMENTATION:
- Dr. Elah Nurlaelah, M.Si
- Thoha Firdaus
- I Nyoman Tri Upayogi
- Ade Irma
- Rini Sulastri
- Resy Nirawati
- Ineu Cahyati
- Wiwik Dwi Rahayu
- I Made Hermanto
- Dian Mustikasari

FOOD:
- Dr. Soja Siti Fatimah, M.Si
- Rosmiati
- Wulansary Kartika Hayati WP
- Lia Ardiansari
- Septiani Yugni Maudy
- Ayu Aristika
- Kamiliyatul Wardiyah
- Rini Fath Marsya
- Dessi Nur Adiska
- Anna Zikrina

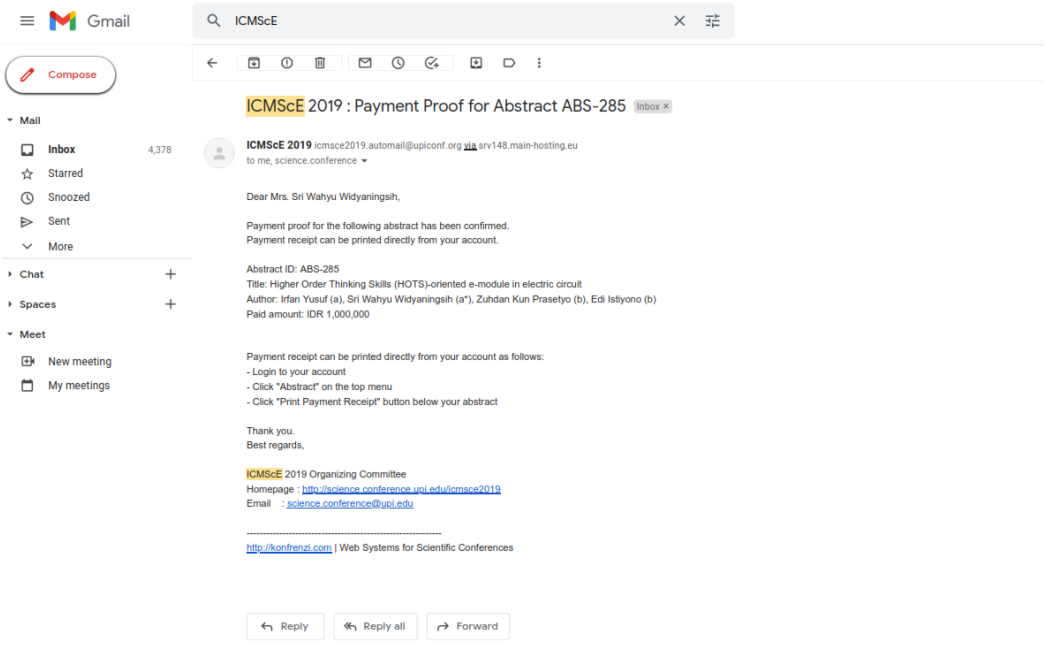
TRANSPORTATION AND ACCOMMODATION:
- Dr. Yayan Sanjaya, M.Si
- Kadek Dwi Hendratma Gunawan
- Al Faris Putra Alam
- Hendri Saputra
- Adi Nurjaman
- Habibi Ratu Perwira Negara
- Elza Rachman P. Priyanda
- Salman Alfarisi
- Rizal Adimayuda
- Yushak Rohman Nurhakim

STEERING COMMITTEE:
a. Prof. Dr. Anna Permanasari, M.Si (Ketua PPII)
b. Prof. Dr. Sudarmin, M.Si (Wakil Ketua PPII)
c. Dr. Bibin Rubini, M.Pd (Pembina PPII)
d. Dr. Parmin, M.Pd (Sekjen PPII)

ADVISORY BOARD:
1. Prof. David Treagust (Curtin University of Technology, Australia)
2. Prof. Hans-Dieter Barke (University of Münster)
3. Prof. Dr. Muslimin Ibrahim (Universitas Negeri Surabaya)
4. Prof. Dr. Anna Permanasari (Universitas Pendidikan Indonesia)
5. Prof. Dr. Ari Widodo (Universitas Pendidikan Indonesia)
6. Prof. Sudarmin (Universitas Negeri Semarang)
7. Prof. I Wayan Redhana (Universitas Pendidikan Ganesha)
8. Dr. Hadi Suwono (Universitas Negeri Malang)
9. Dr. Suciati. (Universitas Sebelas Maret)
10. Dr. Riandi (Universitas Pendidikan Indonesia)
11. Dr. Parmin (Universitas Negeri Semarang)
12. Dr. Erman (Universitas Negeri Surabaya)

ORGANIZING COMMITTEE:
a. Chairman : Prof. Dr. Ari Widodo, M.Ed (PPII JABAR)
b. Vice Chairman : Dr. Riandi, M.Si (Sekretaris PPII JABAR)
c. Secretary :
   1. Didit Ardianto
   2. Ikmanda Nugraha
d. Treasure:
   1. Dr. Hernani, M.Si
   2. Annisa Nurramadhani
e. Secretariat & Publication:
   1. Dr. Indarini Dwi P
   2. Irvan Permana
   3. Dr. Dadang Jaenudin, M.Pd
   4. Desti Herawati
   5. Juanda
f. Information and Technology :
   1. Dr. Eka Cahya Prima, M.T
   2. Thoha Firdaus, M.Pd

Proses Submit dan Revisi oleh Korespondensi Sri Wahyu Widyaningsih



Gmail ICMScE

Compose

Mail
Inbox 4,378
Starred
Snoozed
Sent
More
Chat
Spaces
Meet
New meeting
My meetings

ICMScE 2019 : Payment Proof for Abstract ABS-285 Inbox ×

ICMScE 2019 icmsce2019.automail@upiconf.org via srv148.main-hosting.eu
to me, science.conference

Dear Mrs. Sri Wahyu Widyaningsih,

Payment proof for the following abstract has been confirmed.
Payment receipt can be printed directly from your account.

Abstract ID: ABS-285
Title: Higher Order Thinking Skills (HOTS)-oriented e-module in electric circuit
Author: Irfan Yusuf (a), Sri Wahyu Widyaningsih (a*), Zuhdan Kun Prasetyo (b), Edi Istiyono (b)
Paid amount: IDR 1,000,000

Payment receipt can be printed directly from your account as follows:
- Login to your account
- Click "Abstract" on the top menu
- Click "Print Payment Receipt" button below your abstract

Thank you.
Best regards,

ICMScE 2019 Organizing Committee
Homepage : http://science.conference.upi.edu/icmsce2019
Email : science.conference@upi.edu

---
http://konfrenzi.com | Web Systems for Scientific Conferences

Reply Reply all Forward

	ICMScE 2019 MANUSCRIPT EVALUATION FORM	**PAPER CODE: abs-285**

Title : Higher Order Thinking Skills (HOTS)-oriented e-module in electric circuit

No	Evaluation	Yes	No
1.	The article has a considerable contribution to a certain area of research	☐	☐
2.	The title clearly expresses the content of the article	☐	☐
3.	The abstract clearly describes the research	☐	☐
4.	The method used is clear and sufficient	☐	☐
5.	The data and statistic used are sufficient	☐	☐
6.	The graphs, figures and tables clearly illustrate the discussed subject	☐	☐
7.	The results and discussion are clear and accurate	☐	☐
8.	The references are sufficient and correctly formatted	☐	☐

B. Final Decision

No	Decision	Yes	No
1.	Accepted to be published without revision	☐	☐
2.	Accepted with minor revision (to be revised and resubmitted)	☐	☐
3.	Accepted with major revision (to be revised and resubmitted)	☐	☐
5.	Rejected	☐	☐

Higher order thinking skills (HOTS)-oriented e-module in electric circuit

Higher order thinking skills (HOTS)-oriented e-module in electric circuit

I Yusuf[1], S W Widyaningsih[1*], Z K Prasetyo[2], and E Istiyono[2]

[1]Jurusan Pendidikan Fisika, Universitas Papua, Jl. Gunung Salju Amban, Manokwari 98314, Indonesia
[2]Jurusan Pendidikan Fisika, Universitas Negeri Yogyakarta, Jl. Colombo No.1, Karang Malang, Caturtunggal, Kec. Depok, Kab. Sleman, Daerah Istimewa Yogyakarta 55281, Indonesia

[*]corresponding author: s.widyaningsih@unipa.ac.id

Abstract. This study is aimed at developing a Higher Order Thinking Skills (HOTS)-Oriented e-module in a valid, effective, and practical electric circuit topic. This HOTS-oriented e-module used the ADDIE model, which consisted of Analyse, Design, Development, Implementation, and Evaluation stages. The trial subject in this study was 13 students of Physics Education Department at Universitas Papua who enrolled in basic physics subject in the second semester of 2018-2019. The instrument used to test the validity of this HOTS-oriented e-module was evaluation sheet of the e-module validated by seven validators, which consisted of expert validators and practitioner validators. Meanwhile, effectiveness and practicality instrument for this developed e-module was the questionnaire of students' responses following the implementation of HOTS-oriented e-module learning. The data analysis for the validators' assessment was V Aiken formula, and students' responses were measured using the Rasch model. This study showed that the V Aiken value for the developed HOTS-oriented e-module was larger than 0.76 and was valid for each aspect. Rasch model on students' responses showed logit person larger than 0.00 or that the students agreed with the utilization of the HOTS-oriented e-module in learning. Therefore, it can be concluded that the HOTS-oriented e-module obtained valid, effective, and practical results for use in learning on the topic of electrical circuits.

1. Introduction

Electronic learning or e-learning is no longer a new thing in education. The existence of e-learning has provided an enormous impact on the shifting of education paradigm that was largely held directly in the classroom [1, 2]. Through the utilization of e-learning, students can learn anywhere anytime [3]. Development of e-learning content demands creativity of the educators to prepare learning resources for their students. One of the learning resources that could potentially be developed as the content of e-learning is an electronic module or e-module.

E-module is the development of a printed module into a digital module, which mostly adapted from the printed module [4]. The advantages of e-module compared to the printed module is its interactive nature that eases the navigation, enable the display of pictures, audio, videos, and animations as well as the practice questions which enable automatic feedback [5]. Another advantage of the e-module in the learning process is on its problem-based learning, the problems that oriented on learners, organize

them to study, guide them to carry out individual and group investigation, develop and present their creations, and analyze and evaluate problem-solving process [6]. E-module development could be combined with the expected ability as the main objective in learning [7, 8]. Utilization of e-module in learning could develop the Higher Order Thinking Skills (HOTS) of the students [9]. In this study, a HOTS-oriented e-module was developed. HOTS is an important skill for the students, especially students of higher education institution, to prepare them for the job world [10, 11]. Students need to be actively involved in learning to develop their HOTS [12, 13]. Lecturer acts as a facilitator who facilitates learning activity and provides feedback on the students' tasks [14–16]. Learners are given opportunities to develop their thinking skills through various available learning resources

Students' HOTS can be developed through the training process within the learning activities [17], [18]. Learners can be trained through the utilization of technology, such as Computer Assisted Instruction (CAI) in learning [19, 20]. CAI is a development of information technology, that integrates contents, such as pictures, audios, or videos called multimedia technology. CAI covers the utilization of computer that directly connected with learners and teacher [21]. The models within CAI are tutorials, drills, simulations, practices, games, and problem-solving scenarios. CAI has been lately developed and has been proven effective to assist students in learning and assist teacher in teaching. This study used CAI model by utilizing the Learning Management System (LMS) of e-learning developed using Moodle application. The content of the developed e-module is combined into Moodle e-learning, thus the learning process can be systematically carried out and well-controlled.

2. Methods

The method used in the development of this HOTS-oriented e-module was the ADDIE model, which consisted of five stages, namely: 1) analysis, 2) design, 3) development, 4) implementation, and 5) evaluation as presented in Figure 1 [22].

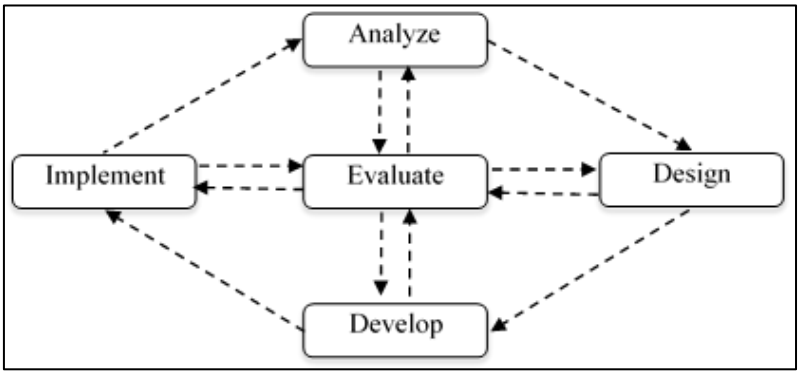


Figure 1. ADDIE Model Stages

Within the analysis stage, analysis related to the need of the system and learning accomplishment of the basic physics subject, especially in electric circuit topic based on its syllabus was carried out. In the design stage, the design of the HOTS-oriented e-module was developed as well as the system, database, and interface designs. Further, in the development stage, the follow up from what has been designed in the design stage were carried out such as, compiling the e-module content according to the syllabus and create Computer Assisted Instruction (CAI) system. In this case, the Learning Management System (LMS) used was Moodle. In this development stage, the validation test that involved seven experts and practitioners from Universitas Negeri Yogyakarta and Universitas Papua was also carried out. The validators validated the developed e-module using validation sheets on the aspects of content appropriateness, presentation aspect, language aspect, and graphic aspect [23]. The data from the validators were analyzed using V Aiken formula, and the result was compared with the V Aiken table for seven validators with four options [24, 25]. The validators' assessment items consist of four options, such as in the Likert Scale: Highly Agree, Agree, Less Agree, and Disagree. Implementation stage was carried out by inserting the content of the e-module into Moodle

application. The trial subject in this study was 13 students of Physics Education Department at Universitas Papua who enrolled in basic physics subject in the second semester of 2018-2019. Evaluation stage was the utilization of the e-learning module. In this stage, the evaluation was obtained from the students' responses regarding the implemented learning. Students' responses also used to assess the effectiveness and practicality of the developed e-module. The instrument used to assess the students' responses was an online questionnaire through the e-learning. Data analysis of students' responses used Rasch modeling through Winstep software application. The students' responses are presented in Table 1 [26], [27].

Table 1. Aspects and statements student responses to the e-module.

Aspect	Statement	Code
Effectiveness	a. Utilization of e-module could increase students' learning spirit.	+R1
	b. The e-module assist students to gain information on the physics topic learned.	+R2
	c. The e-module used can stimulate curiosity.	+R3
	d. The e-module create an atmosphere of self-learning.	+R4
	e. The e-module helps develop critical analysis skill.	+R5
	f. The e-module assist in developing analysis skill.	+R6
	g. The e-module could assist in creative ability.	+R7
Practicality	a. Presentation of the materials in e-module interesting.	+R8
	b. Text in e-module is hard to read.	-R9
	c. Pictures, illustration, or graphic within the module are attractive.	+R10
	d. Materials within the module were presented in sequence.	+R11

3. Result and Discussion

The description of this study is as follow. On the analysis stage, there was two analysis carried out, i.e., content need analysis and software need analysis. In the content need analysis, analysis of the subject such as adjustment with the syllabus was carried out. The developed materials within the e-module are basic physics materials on an electric circuit. This topic covers themes, such as the electric battery, the strength of the current, resistance of the resistor, electric power, resistor and capacitor circuit, Electromotive force, Kirchoff law, and RC circuit. The presentation of the HOTS-oriented e-module consists of the approval page, introductory page, materials, and examples of HOTS-oriented problem-solving in physics and practice tests on HOTS-oriented electric circuit.

Implementation of the e-module in basic physics subject was carried out fully online; thus, it needs integration with the currently available resource through e-learning. Utilization of Moodle e-learning supports the implementation of fully online learning [28]. Before the online learning was implemented, an orientation through a demo on how to use e-learning to introduce the e-learning media to students was carried out. Hence, they could carry out learning properly. On software need analysis, the functional and non-functional analysis was carried out, as well as the system analysis needed as an e-learning platform, Moodle. Moodle is more appropriate to be used as an e-learning platform as it has utilities and additional contents that can be easily applied [29–31]. Integration of e-module with Moodle e-learning is very effective due to the completion of its features [32]. Students are expected to utilize various e-learning facilities to develop their HOTS.

Within the design stage, the e-module design was carried out. In this stage, the development of CAI system was carried out using LMS Moodle by inserting the content of e-module into the Moodle e-learning media; thus, it can be accessed online. Moodle completeness as a learning media has made

the developed e-module can be easily accessed, and it is also equipped with supporting features such as upload feature for online assignment and discussion forum [32, 33].

In this development stage, the compilation of e-module materials, which consisted of main materials, HOTS problems, and HOTS exercises was carried out. The output of this stage is the e-module product which has been structured according to the syllabus and learning achievement as well as an evaluation sheet to measure its validation and students' responses. E-module was also validated in this stage. The validation involved seven validators, expert from Universitas Negeri Yogyakarta and practitioner from Universitas Papua. The result of this developed e-module is presented in Table 2.

Table 2. Results of validator assessment

No.	Aspects and statements	V Aiken	Category
1.	Aspect of Content Feasibility		
	a. The suitability of the materials with learning objectives	0.81	Valid
	b. The appropriateness of the material's structure	0.76	Valid
	c. The accuracy of the material content	0.81	Valid
	d. Encourage curiosity	0.81	Valid
	e. Develop HOTS	0.81	Valid
2.	Presentation Aspect		
	a. Presentation technique is attractive	0.76	Valid
	b. Support presentation of materials	0.76	Valid
	c. Can support the implementation of learning	0.76	Valid
3.	Language aspects		
	a. Grammatical correctness	0.86	Valid
	b. Spelling correctness	0.76	Valid
	c. Term appropriateness	0.81	Valid
	d. Punctuation correctness	0.81	Valid
4.	Integrity aspect		
	a. Text clarity	0.76	Valid
	b. Illustration clarity (picture/table)	0.76	Valid

The next stage in this study was the implementation of the developed e-learning module. The e-module was implemented on Physics Department students of Universitas Papua who enrolled in Basic Physics subject in the second semester of the 2018-2019 academic year. In this implementation stage, students' active involvement in learning was obvious. Their active participation was evident in their frequency to open the e-module, which was observed from the e-learning program. Independently, students were motivated to learn as the e-module can be accessed anytime anywhere [32]. Utilization of e-module in learning can increase students' independence in learning [34].

The final stage in this study was evaluation. In this stage, formative evaluation was carried out to collect the data on the effectiveness and practicality of the developed e-module. The data were intended to improve and to revise the developed e-module. The evaluation was not only limited to the design, development, and implementation of the product but also all the stages in the ADDIE model. Students' responses in using HOTS-oriented e-module were also assessed. Figure 2 shows the result of analysis from the students' responses using Rasch modeling.

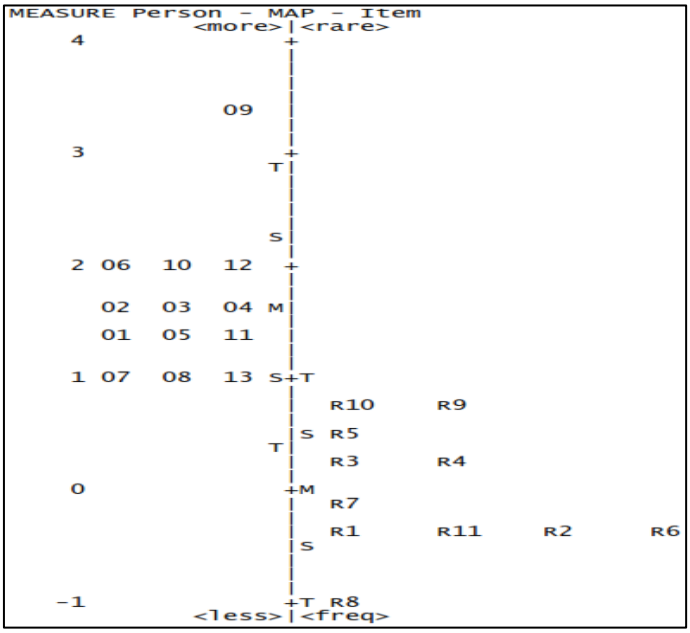


Figure 2. Students' responses in using HOTS-oriented e-module

In Figure 2, the left column is the person column, and the right column is the statement column. Items with logit value above the average logit value (+0.00 logit) imply that the respondents found it relatively easy to agree with the statement, whereas items below the average of the logit value mean that it is difficult for the respondents to agree with the statement. Based on the analysis of the person map distribution in Figure 2, it is concluded that all respondents (13 people) were above the average logit item (+0.00 logit) (100%) and that the person measure based on the measurement was +1.63 which was larger than 0.00. It shows that the students' agree with the usage of e-module in learning.

In Figure 2, there were statements with relatively low agreement compared to other items, items number R10 and R9. Statements numbers R10 and R9 were both related to the illustration display of the e-module content. This showed that the illustration quality within the e-module needed to be improved by increasing the resolution or readability of the content. Content readability of the module depends on the equipment used if it was accessed using the android phone, then the resolution level or the readability would be relatively low compared to when this e-module was accessed through a computer. Utilization of e-module in learning, in general, can increase good responses from students. Thus they will be interested and felt assisted in learning [35]. Through good responses from the learners, it is expected that their HOTS would increase.

4. Conclusion

Development of HOTS-oriented e-module integrated with Moodle e-learning is one of the learning media that could be applied in learning. The result from the validators resulted that it is valid form all aspects such as content appropriateness, presentation aspect, language aspect, and graphic aspect. Students' responses to the implemented learning also showed that the students agreed with the implemented learning. Development of HOTS-oriented e-module was valid, effective, and practical; hence, appropriate to be further tested with larger test subject and its utilization can be broadened into various subjects.

5. References

[1] Hamar J Funato H Ogasawara S Dranga O and Tse C K, 2005 Multimedia based e-learning tools for dynamic modeling of DC-DC converters in *2005 IEEE International Conference on Industrial Technology* p. 17–22.

[2] Saeed F A, 2013 Comparing and Evaluating Open Source E-learning Platforms *Int. J. Soft Comput. Eng.* **3**, 3 p. 244–249.
[3] Costa C Alvelos H and Teixeira L, Jan. 2012 The Use of Moodle e-learning Platform: A Study in a Portuguese University *Procedia Technol.* **5** p. 334–343.
[4] Istuningsih W Baedhowi B and Sangka K B, 2018 The Effectiveness of Scientific Approach Using E-Module Based on Learning Cycle 7E to Improve Students ' Learning Outcome *Int. J. Educ. Res. Rev.* p. 75–85.
[5] Lim J Yunos J M and Spahat G, 2005 Development and evaluation of e-module for pneumatics technology *Malaysian Online J. Instr. Technol.* **2**, 3 p. 25–33.
[6] Perdana F A Sarwanto S Sukarmin S and Sujadi I, 2017 Development of e-module combining science process skills and dynamics motion material to increasing critical thinking skills and improve student learning motivation senior high school *Int. J. Sci. Appl. Sci. Conf. Ser.* **1**, 1 p. 45.
[7] Serevina V Sunaryo Raihanati Astra I M and Sari I J, 2018 Development of E-Module Based on Problem Based Learning (PBL) on Heat and Temperature to Improve Student ' s Science Process Skill *TOJET Turkish Online J. Educ. Technol.* **17**, 3 p. 26–36.
[8] Pratono A Sumarti S S and Wijayati N, 2018 Journal of Innovative Science Education Contribution of Assisted Inquiry Model of E-Module to Students Science Process Skill *J. Innov. Sci. Educ.* **7**, 1 p. 62–68.
[9] Kaniraras D A Karyanto P and Kusumawati L, 2015 The Application of E-module Using Problem Based Learning To Increase Higher Order Thinking Skill And Decrease Misconception In Ecosystem of The Tenth Grade Students of Science 1 Class of Karanganyar 2 State Senior High School In Academic Year 2014-2015 *Proceeding Biol. Educ. Conf.* **12**, 1 p. 186–192.
[10] Yusuf I Widyaningsih S W and Br.Sebayang S R, 2018 Implementation of E-learning based-STEM on Quantum Physics Subject to Student HOTS Ability *Turkish Sci. Educ.* **15**, December p. 67–75.
[11] Tanujaya B Mumu J and Margono G, 2017 The Relationship between Higher Order Thinking Skills and Academic Performance of Student in Mathematics Instruction *Int. Educ. Stud.* **10**, 11 p. 78.
[12] Winarti Cari Widha Sunarmo and Istiyono E, 2015 Analysis of Higher Order Thinking Skills Content of Physics Examinations In Madrasah Aliyah in *International Conference on Mathematics, Science, and Education 2015 (ICMSE 2015)* **2015** p. 32–38.
[13] Yusuf I and Widyaningsih S W, 2019 HOTS profile of physics education students in STEM-based classes using PhET media in *Journal of Physics: Conference Series* **1157**, 3 p. 32021.
[14] Masruroh A N and Prasetyo Z K, 2018 Effect of E-Module with Guided Inquiry Approach Containing Nature of Science to Student's Science Literacy *E-Journal Pend. IPA* **7**, 3 p. 165–171.
[15] Widyaningsih S W and Yusuf I, 2019 Influence of RMS model (reading, mind mapping, and sharing) on student learning outcomes in school laboratory course *J. Phys. Conf. Ser.* **1157**, 032024 p. 1–6.
[16] Damopolii I Nunaki J H Nusantari E and Kandowangko N Y, 2019 Integrating Local Resources Into Inquiry-based Teaching Materials to Training Students' Science Process Skills *AIP Conf. Proc.* **2120**, July p. 1–6.
[17] Istiyono E Dwandaru W S B Megawati I and Ermansah M, 2018 Application of Bloomian and Marzanoian Higher Order Thinking Skills in the Physics Learning Assessment: an Inevitability **164**, Icli 2017 p. 136–142.
[18] Yusuf I and Widyaningsih S W, 2018 Profil Kemampuan Mahasiswa dalam Menyelesaikan Soal HOTS di Jurusan Pendidikan Fisika Universitas Papua *J. Komun. Pendidik.* **2**, 14 p. 42–49.
[19] Suana W Maharta N Nyeneng I D P and S W, 2017 Design and implementation of schoology-

based blended learning media for basic physics i course *J. Pendidik. IPA Indones.* **6**, 1 p. 170–178.
[20] Damopolii I and Kurniadi B, 2019 The Development of Android-based Mobile Learning Supported by Problem-based Learning Strategy for Students' Learning Success *Int. J. Sci. Technol. Res.* **8**, 7 p. 190–193.
[21] Kurniawan R B Mujasam M Yusuf I and Widyaningsih S W, 2019 Development of physics learning media based on Lectora Inspire Software on the elasticity and Hooke's law material in senior high school *J. Phys. Conf. Ser.* **1157**, 032022 p. 1–7.
[22] Aldoobie N, 2015 ADDIE Model *Am. Int. J. Contemp. Res.* **5**, 6 p. 72.
[23] Pudji Muljono, 2007, Kegiatan Penilaian Buku Teks Pelajaran Pendidikan Dasar dan Menengah, *Buletin BSNP Media Komunikasi dan Dialog Standar Pendidikan*, **II**, 1, p. 1–24.
[24] Aiken L R, Mar. 1985 Three Coefficients for Analyzing the Reliability and Validity of Ratings *Educ. Psychol. Meas.* **45**, 1 p. 131–142.
[25] Aiken L R, Dec. 1980 Content Validity and Reliability of Single Items or Questionnaires *Educ. Psychol. Meas.* **40**, 4 p. 955–959.
[26] Lee J and Martin L, 2017 Investigating students' perceptions of motivating factors of online class discussions *Int. Rev. Res. Open Distance Learn.* **18**, 5 p. 148–172.
[27] Saxon D P, 2013 Student responsibility and self-directed learning: an interview with Christine McPhail *J. Dev. Educ.* **36**, 3 p. 14–17.
[28] Limongelli C Sciarrone F and Vaste G, Jan. 2011 Personalized e-learning in Moodle: the Moodle_LS System *J. e-Learning Knowl. Soc.* **7**, 1 p. 49–58.
[29] Martín-Blas T and Serrano-Fernández A, Jan. 2009 The role of new technologies in the learning process: Moodle as a teaching tool in Physics *Comput. Educ.* **52**, 1 p. 35–44.
[30] Alier M F Guerrero M J C Gonzalez M A C and Penalvo F J G, Jan. 2010 Interoperability for LMS: the missing piece to become the common place for e-learning innovation *Int. J. Knowl. Learn.* **6**, 2–3 p. 130–141.
[31] Kumar S Gankotiya A K and Dutta K, 2011 A comparative study of moodle with other e-learning systems in *2011 3rd International Conference on Electronics Computer Technology* **5** p. 414–418.
[32] Pombo L Smith M Abelha M Caixinha H and Costa N, Mar. 2012 Evaluating an online e-module for Portuguese primary teachers: trainees' perceptions *Technol. Pedagog. Educ.* **21**, 1 p. 21–36.
[33] Venuti M Z Welzer T and Ward A E, 2010 Key Issues Concerning the Simultaneous Development of Technical and Linguistic Competences in a Single E-module in *2010 Developments in E-systems Engineering* p. 127–130.
[34] Lee M F and Zainal N A, 2017 Development of needham model based E-module for electromagnetic field & wave in *2017 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM)* p. 120–124.
[35] Irwansyah F S Lubab I Farida I and Ramdhani M A, 2017 Designing Interactive Electronic Module in Chemistry Lessons *J. Phys. Conf. Ser.* **895** p. 12009.

Acknowledgments
We would like to acknowledge the contribution of the Ministry of Research and Higher Education in funding this study through Inter Higher Education Institution Cooperation scheme with the contract number: 198/SP2H/LT/DRPM/2019.

CERTIFICATE

This certificate is awarded to

Sri Wahyu Widyaningsih

has participated as

Presenter

in the International Conference on Mathematics and Science Education (ICMScE)
in conjuction with International Conference on Science Education (ICoSEd)
Titled:
"Mathematics and Science Education Research for Sustainable Development"

Bandung, June 29th, 2018

Prof. H. Yaya S. Kusumah, M.Sc., Ph.D.
Director of School of Postgraduate Studies
Universitas Pendidikan Indonesia

Prof. Dr. Anna Permanasari, M.St.
President of Association of Indonesian Science Educators

12	Physics Education	Miratun Nisyah (a), Gunawan Gunawan (b*), Ahmad Harjono (b), Mahesti Kusdiastuti (a)	[ABS-14] Inquiry learning model with advance organizers to improve students understanding on physics concepts
13	Physics Education	R. Permana*	[ABS-17] Measuring creative thinking skills of vocational high school students on dynamic electricity: a case study
14	Physics Education	Aris Doyan, Susilawati, Kosim, Zamrizal Wardiawan, Syamsul Hakim, Lalu Muliyadi, Hamidi	[ABS-19] The Development of Physics Module Oriented Generative Learning to Increase the Cognitive Learning Outcomes and Science Process Skills of the Students
15	Physics Education	Parno1,*, Lia Yuliati1, Febi Mufidah Hermanto1, and Marlina Ali2	[ABS-25] The Enhancement of Students' Scientific Literacy through Problem Based Learning Integrated STEM in the Topic of Optical Instrument
16	Physics Education	Slamet Maulana, Yetti Supriyati, I Made Astra	[ABS-32] Development of Physics Problems for the Final Assessment in High School Level with Rasch Model Analysis
17	Physics Education	A Halim(a), A Wahyuni(a), Melvina(b), E Yani(c)	[ABS-35] Impact of the Use of the Internet on the Learning Outcomes in Physics for High School Student in Banda Aceh, Indonesia
18	Physics Education	Sri Wahyu Widyaningsih (a*), Irfan Yusuf (a), Zuhdan Kun Prasetyo (b), Edi Istiyono (b)	[ABS-36] Higher Order Thinking Skills (HOTS)-oriented student worksheet of e-learning model in electric circuit topic
19	Physics Education	Mustika Sari (b) and Saeful Karim (c)	[ABS-42] The Effectiveness of Using Physics Electronic Book for Senior High School Based on Scientific Approach in Temperature and Heat Topics
20	Physics Education	A S Arota1, Mursalin2, and A H Odja2*	[ABS-45] The effectiveness of e-learning-based innovative learning sets with edmodo to improve students' critical thinking skills in optical instruments material in SMA
21	Physics Education	A P Sahrain1, , Mursalin2, dan A H Odja2	[ABS-49] EVECTIVITY OF ASSISTED LEARNING DEVICES SOCIAL MEDIA TO INCREASE SKILLS SCIENCE COMMUNICATION STUDENT'S WAVE CONCEPT
22	Physics Education	I Ketut Mahardika (a), Rizquna Erliez Delftana (a*), I Gede Rasagama (b), Suprianto (c), Ahmad Nanang Rasyid (d), I Wayan Sugiartana (e)	[ABS-52] Practicality of Physics Module Based on Contextual Learning Accompanied by Multiple Representations in Physics Learning on Senior High School