

Judul Artikel : Development of Digital Portable Auto Design Microscope Learning Media to Increase the Understanding of Concepts and Problem-Solving Abilities of Students

Penulis : Aris Doyan, Susilawati, Adi Hardiyansyah

Nama Seminar/Konferensi/Simposium/Jurnal : Preceedings of the 7th International Conference on Research, Implementation, and Education of Mathematics and Sciences (ICRIEMS 2020)

Penyelenggara/Penerbit : Atlantis Press

Halaman : 465-470

Volume : 528

ISBN/ISSN : 978-94-6239-348-6/2352-5398

Web Prosiding : <https://www.atlantis-press.com/proceedings/icriems-20>

URL Dokumen : <https://www.atlantis-press.com/proceedings/icriems-20/125953624>

DOI : <https://doi.org/10.2991/assehr.k.210305.068>

Tanggal/Waktu : Maret 2021

Satuan : 1 Makalah/Tahun

Volume Kegiatan : 1

Profil dari Proceeding dan Publisher

- ABOUT
- COMPANY PROFILE**
- EXECUTIVE DIRECTORS
- ADVISORY BOARD
- PUBLISHING TEAM
- PRODUCTION TEAM
- SALES & MARKETING TEAM
- IT & PROJECTS TEAM
- CAREERS

Company Profile

Atlantis Press – now part of Springer Nature – is a global open access publisher of scientific, technical and medical (STM) content which was founded in Paris in 2006. Our mission is to support the advancement of scientific, technical and medical research by contributing to a more efficient and effective dissemination and exchange of knowledge both for the research community and society at large.

Since its inception Atlantis Press has launched and developed several book series containing more than 120 books (co-published with Springer-Nature), 17 proceedings series with over 1,200 proceedings and 20 open access journals across various STM disciplines. Currently, our content platform contains more than 140,000 published articles which are all open access (and hence freely accessible) and which generate more than 25 million downloads every year.

Besides our headquarters in Dordrecht, Atlantis Press also has offices in Paris, Hong Kong, Beijing and Zhengzhou. Over the years the company has attracted a global and experienced

- ABOUT
- COMPANY PROFILE**
- EXECUTIVE DIRECTORS
- ADVISORY BOARD
- PUBLISHING TEAM
- PRODUCTION TEAM
- SALES & MARKETING TEAM
- IT & PROJECTS TEAM
- CAREERS

Company Details

Website

<https://www.atlantis-press.com>

Headquarters

Dordrecht, The Netherlands

Year founded

2006

Company type

Privately Held

Company size

11-50 employees

Specialties

Publishing, STM Publishing, Digital Publishing, Open Access, Publishing Services, Publishing Consultancy, Science, Technology, Medicine, Health, Books, Proceedings, Journals, Copyright, Publishing Standards, Publishing Technology, Publishing Ethics, Data Analytics, Content Metrics, Conferences

News Archive

Atlantis Press Acquired by Springer Nature

March 10th, 2021

It was announced earlier today that Atlantis Press has been acquired by Springer Nature, the largest STM open access publisher and largest STM books publisher in the world. This transaction was officially concluded yesterday on Tuesday 9 March 2021. [Read full article](#)

2019 Impact Factors and CiteScores for Atlantis Press Journals

July 6th, 2020

Every year in June all STM publishing companies, societies and institutions which own STM journals eagerly await the publication of the new impact factors from Clarivate and CiteScores from Scopus. This year these show a mixed performance for the AP journals. [Read full article](#)

New Partnership Journal in Intensive Care Medicine for Atlantis Press

June 26th, 2020

Activate Windows
Go to Settings to activate Windows.

 ATLANTIS PRESS
Part of **SPRINGER NATURE**

[ABOUT](#) [NEWS](#) [PRODUCTS & SERVICES](#) [POLICIES](#) [INDUSTRY AFFILIATIONS](#) [CONTACT](#)

[PROCEEDINGS](#) [JOURNALS](#) [BOOKS](#) 

Atlantis Press Acquired by Springer Nature

March 10th, 2021

It was announced earlier today that Atlantis Press has been acquired by **Springer Nature**, the largest STM open access publisher and largest STM books publisher in the world. This transaction was officially concluded yesterday on **Tuesday 9 March 2021**.

With the acquisition of Atlantis Press, **Springer Nature** strengthens its position as the leading conference proceedings publisher and its leadership position in open access publishing in general. **Springer Nature** currently already publishes more than 1800 conference proceedings per year and their acquisition of Atlantis Press adds more than 1200 open access proceedings with a running pipeline of more than 200 open access proceedings a year to this tally, as well as a portfolio of 20 open access journals and more than 115 book titles which were already co-published between the two companies.

"As the largest OA publisher, the largest publisher of academic books, and a leader in the publication of conference proceedings, I am delighted to welcome Atlantis Press into the Springer Nature family. With our global distribution networks and discoverability platforms

Activate Windows
Go to Settings to activate Windows.

2019 Impact Factors and CiteScores for Atlantis Press Journals

July 6th, 2020

Every year in June all STM publishing companies, societies and institutions which own STM journals eagerly await the publication of the new **Impact Factors** from **Clarivate** and **CiteScores** from **Scopus**. This year these show a mixed performance for the AP journals.

The **Journal of Epidemiology and Global Health** is the star performer in the AP portfolio this year coming in with a first impact factor of **2.200** ranking it in the 70th percentile of its JCR category *Public, Environmental & Occupational Health*. The **International Journal of Computational Intelligence Systems** sees its impact factor decline by 15% to a still healthy **1.838**, while the impact factor for the **Journal of Nonlinear Mathematical Physics - a co-publication with Taylor & Francis which will be moving back to Atlantis Press as a fully open access journal in 2021** - remains fairly stable at **0.978**. **Artery Research** recorded a steeper drop of 46% to **0.519** although most of this data still largely stems from a measurement period prior to the journal transfer from Elsevier to Atlantis Press. Overall, the 2019 impact factor performance of the AP portfolio can be summarized as follows:

- **Artery Research: 0.519** (down 46.4% from 0.969 in 2018)
- **International Journal of Computational Intelligence Systems: 1.838** (down 14.6% from 2.153 in 2018)
- **Journal of Epidemiology and Global Health: 2.200** (first impact factor)
- **Journal of Nonlinear Mathematical Physics: 0.978** (down 7.4% from 1.056 in 2018)

Activate Windows
Go to Settings to activate Windows.

The CiteScores (for which the calculation methodology changed this year and was retrospectively applied to historical values as well to enable better comparison) show a similar though slightly more stable pattern. **Artery Research** (at **1.40**), the **International Journal of Networked and Distributed Computing** (at **0.76**), the **Journal of Epidemiology and Global Health** (at **3.07**) and the **Journal of Nonlinear Mathematical Physics** (at **2.14**) all remain fairly stable compared to their adjusted 2018 scores. The **International Journal of Computational Intelligence Systems** records a 20% drop to a still healthy **3.59**. Overall, the 2019 CiteScore performance of the AP portfolio can be summarized as follows:

- **Artery Research: 1.40** (up 0.7% from 1.39 - adjusted value - in 2018)
- **International Journal of Computational Intelligence Systems: 3.59** (down 20.4% from 4.51 - adjusted value - in 2018)
- **International Journal of Networked and Distributed Computing: 0.76** (down 2.6% from 0.78 - adjusted value - in 2018)
- **Journal of Epidemiology and Global Health: 3.07** (up 1.0% from 3.04 - adjusted value - in 2018)
- **Journal of Nonlinear Mathematical Physics: 2.14** (down 5.7% from 2.27 - adjusted value - in 2018)

It should be noted that the **Journal of Robotics, Networking and Artificial Life** and the **Journal of Statistical Theory and Applications** were recently accepted in **Scopus** and will therefore receive their first CiteScore in **June 2021**.

Activate Windows

Artikel Tulisan Author yang Terbit di Atlantis Press

Series: *Advances in Social Science, Education and Humanities Research*

Proceedings of the 7th International Conference on Research, Implementation, and Education of Mathematics and Sciences (ICRIEMS 2020)

HOME

PREFACE

ARTICLES

AUTHORS

SESSIONS

ORGANIZERS

PUBLISHING INFORMATION

< PREVIOUS ARTICLE IN VOLUME

NEXT ARTICLE IN VOLUME >

Development of Digital Portable Auto Design Microscope Learning Media to Increase the Understanding of Concepts and Problem-Solving Abilities of Students

Authors

Aris Doyan, Susilawati, Adi Hardiyansyah

Corresponding Author

Aris Doyan

Activate Windows
Go to Settings to activate Windows

ARTICLES

AUTHORS

SESSIONS

ORGANIZERS

PUBLISHING INFORMATION

DOI

<https://doi.org/10.2991/assehr.k.210305.068> [How to use a DOI?](#)

Keywords

Digital portable, Auto Design Microscope, Understanding of Concepts, Problem-solving abilities

Abstract

The purpose of this research is to develop learning media in the form of portable digital auto microscope design to improve understanding of concepts and problem-solving abilities. The results showed that the learning media in the form of portable digital microscope auto design is very feasible to use in learning. This can be seen from the results of expert validation 97.78%. After getting the results of validation then the effectiveness of this media is tested on the understanding of concepts and problem-solving abilities. The results of the effectiveness test showed that this media was very effective in increasing the understanding of the concepts and abilities of students in two schools namely SMP IT Putra and SMP IT Putri Mataram. The effectiveness test results show that there is an increase in the score of students in pre-test and post-test.

Open Access

This is an open access article distributed under the [CC BY-NC license](#).

HOME
PREFACE
ARTICLES
AUTHORS
SESSIONS
ORGANIZERS
PUBLISHING INFORMATION

Volume Title	Proceedings of the 7th International Conference on Research, Implementation, and Education of Mathematics and Sciences (ICRIEMS 2020)
Series	Advances in Social Science, Education and Humanities Research
Publication Date	8 March 2021
ISBN	978-94-6239-348-6
ISSN	2352-5398
DOI	https://doi.org/10.2991/assehr.k.210305.068 How to use a DOI?
Open Access	This is an open access article distributed under the CC BY-NC license .



Advances in Social Science, Education and Humanities Research, volume 528
 Proceedings of the 7th International Conference on Research, Implementation, and
 Education of Mathematics and Sciences (ICRIEMS 2020)

Development of Digital Portable Auto Design Microscope Learning Media to Increase the Understanding of Concepts and Problem-Solving Abilities of Students

Aris Doyan^{1,2*}, Susilawati^{1,2}, Adi Hardiyansyah¹

¹ Master of Science Education Program, University of Mataram, Lombok, West Nusa Tenggara, Indonesia

² Physics Education, FKIP, University of Mataram, Lombok, West Nusa Tenggara, Indonesia

*Corresponding author. Email: aris_doyan@unram.ac.id

ABSTRACT

The purpose of this research is to develop learning media in the form of portable digital auto microscope design to improve understanding of concepts and problem-solving abilities. The results showed that the learning media in the form of portable digital microscope auto design is very feasible to use in learning. This can be seen from the results of expert validation 97.78%. After getting the results of validation then the effectiveness of this media is tested on the understanding of concepts and problem-solving abilities. The results of the effectiveness test showed that this media was very effective in increasing the understanding of the concepts and abilities of students in two schools namely SMP IT Putra and SMP IT Putri Mataram. The effectiveness test results show that there is an increase in the score of students in pre-test and post-test.

Keywords: Digital portable, Auto Design Microscope, Understanding of Concepts, Problem-solving abilities.

1. INTRODUCTION

The development of education in the world is also inseparable from the development of the industrial

Development of Digital Portable Auto Design Microscope Learning Media to Increase the Understanding of Concepts and Problem-Solving Abilities of Students

Aris Doyan^{1,2*}, Susilawati^{1,2}, Adi Hardiyansyah¹

¹ Master of Science Education Program, University of Mataram, Lombok, West Nusa Tenggara, Indonesia

² Physics Education, FKIP, University of Mataram, Lombok, West Nusa Tenggara, Indonesia

*Corresponding author. Email: aris_doyan@unram.ac.id

ABSTRACT

The purpose of this research is to develop learning media in the form of portable digital auto microscope design to improve understanding of concepts and problem-solving abilities. The results showed that the learning media in the form of portable digital microscope auto design is very feasible to use in learning. This can be seen from the results of expert validation 97.78%. After getting the results of validation then the effectiveness of this media is tested on the understanding of concepts and problem-solving abilities. The results of the effectiveness test showed that this media was very effective in increasing the understanding of the concepts and abilities of students in two schools namely SMP IT Putra and SMP IT Putri Mataram. The effectiveness test results show that there is an increase in the score of students in pre-test and post-test.

Keywords: Digital portable, Auto Design Microscope, Understanding of Concepts, Problem-solving abilities.

1. INTRODUCTION

The implementation of education in Indonesia refers to the national education system contained in Law Number 20 Year 2003 concerning the National Education System, Article 1 number 1 states that education is a conscious and planned effort to create an atmosphere of learning and learning process so that students actively develop potential himself to have spiritual strength, self-control, personality, intelligence, noble character, and the skills needed for himself, society, nation and state [1]. The development of education is inseparable from the important efforts to form a qualified young generation by increasing the quality of education. Good education is education with the availability of qualified educators in terms of planning and implementing learning and evaluating learning outcomes [2].

The development of education in the world is also inseparable from the development of the industrial revolution that occurred in the world, because indirectly changes in the economic order also change the educational order in a country. The industrial revolution began with the Industrial Revolution 1.0 occurring in the 18th century through the invention of the steam engine, allowing for mass production of goods. Around 1970 through the use of computerization, and the 4.0 Industrial Revolution itself occurred in around 2010 through intelligence engineering and the internet of things as the backbone of the movement and connectivity of humans and machines [3].

Facing the Era of the Industrial Revolution 4.0 in the field of education, motivation alone is not enough in realizing the ideals of making Indonesia 4.0, there must be concrete form and hard work for the Indonesian

government and all of us in welcoming the era of digitalization [4]. One concrete effort to deal with this era is to improve the quality of education [5].

Education in Indonesia is still relatively low and has not yet succeeded optimally, even more so for learning science. The main problem in education in Indonesia is the low learning outcomes in schools. Learning outcomes are meant not only in the aspect of cognitive abilities but also in aspects of attitude or attitude towards science [6].

Survey results at the Integrated Islamic Junior High School Putra and Putri Mataram (SMP IT Mataram) that many of them do not like even afraid of some lessons, especially science and mathematics lessons [7]. This is due to several factors, among which are the media and scenarios that are less innovative in the learning process, which means that the teaching and learning process that is held is generally based on material (content based) [8]. In the learning process, students are less encouraged to develop thinking skills. The learning process in the classroom is directed at the child's ability to memorize information. Children's minds are forced to understand the information they remember to connect it with everyday life [9].

The development of science and technology has brought very significant changes to various dimensions of human life, both in terms of economics, socio-culture, and education. Rapid changes in all sectors of life must be a driving force for schools and colleges to be able to adapt and innovate in order to keep up with changes and developments very quickly in the global arena [10]. Mobile lately known as smartphones or gadgets can be a supporting medium for the creation of creative learning. Utilization of a smartphone equipped with a camera that produces high Image Quality will be a medium that will facilitate learning activities.

The existence of this gadget with various features in it can provide convenience in teaching various science learning materials in schools. One of them is light material and optical devices, the existence of this gadget will be a supporter of learning activities, given the availability of instructional media that is still very minimal, such as a microscope. Microscopes available in schools now have many drawbacks, some of which can only work well if used in a luminous room. So, it takes innovation to design a portable digital auto design microscope that can be used in a variety of circumstances.

Talking about global challenges, of course many bills and homework must be met by students. Among them is the ability to understand a material concept and the ability to solve problems [11]. In science there is a request to process ways of thinking, conducting investigations, building knowledge and its relation to technology and society. This becomes a basic supplement in studying

science to develop scientific processes so that students' mindset is formed [12].

Science learning activities must involve students in their investigations and be able to integrate skills, attitudes, and knowledge to understand the science concepts [13]. Science learning activities emphasize direct learning to develop students' competencies in exploring and understanding nature scientifically [14]. Furthermore, the purpose of science education is to create students who master the concepts and their relationships to solve problems in everyday life [15].

The importance of problem-solving skills is in line with the opinion issued by the National Council of Teachers of Mathematics (NCTM) in 2000 which states that the problem-solving ability must be possessed by every student to support the quality of human resources. Students who are trained to have the ability to solve problems will be able to compete globally because they are able to integrate these abilities to solve real problems in the real world [16].

This skill is one of the intellectual properties or the ability to produce or produce products. Therefore, a development research entitled "development of portable auto design digital microscope learning media to remind students of the concept understanding and problem-solving ability of junior high school students on light material and optical devices".

2. METHOD

This research is a research and development that uses the Dick and Carey development model. The Dick and Carey development model has ten stages of development: (1) Formulating Specific Learning Objectives; (2) Student and Context Analysis; (3) Instructional Analysis; (4) Identification of Learning Objectives; (5) Developing Tools or Instruments; (6) Developing Learning Strategies; (7) The use of teaching materials; (8) Designing and carrying out formative evaluations; (9) Revise the draft learning program; (10) Designing and developing summative evaluations [17].

The product developed is a portable auto design digital microscope learning media to improve understanding of concepts and problem-solving abilities of students of grade VIII junior high school in light material and optical devices. The data used are data obtained from the results of the validation of the media experts, then analysed using component percentages based on the Likert scale in Table 1.

Table 1. Scoring instrument questionnaire

Answer	Score
Very good	5
Good	4
Enough	3
Minus	2
Very Poor	1

Then the score is calculated to determine the percentage of components with the following equation:

$$P_{(k)} = \frac{S}{N} \times 100\% \quad (1)$$

Where:

$P_{(k)}$ = Percentage of components

S = Total component score of research results

N = Maximum number of scores

The percentages obtained are then transformed into intervals as in Table 2.

Table 2. Range of percentages and qualitative criteria

Percentage (%)	Criteria
85-100	Very Worthy
69-84	Feasible
53-68	Enough
37-52	Inadequate
20-36	Very Poor

The effectiveness of the product developed can be seen from tests of concept understanding and problem-solving abilities. The results obtained in the form of pretest and posttest values, which are then calculated the value of N-Gain to see an increase in the achievement of the concept understanding and problem-solving ability. To see the improvement of students' creativity and problem-solving ability, the N-Gain formula is used as follows:

$$N\text{-Gain} = \frac{S_{\text{post}} - S_{\text{pre}}}{S_{\text{max}} - S_{\text{pre}}} \times 100\% \quad (2)$$

The table of N-Gain score criteria can be seen in the following Table 3:

Table 3. Gain score criteria [18]

Gain score classification.	Category
$0.7 < g \leq 1$	Height
$0.3 < g \leq 0.7$	Medium
$g \leq 0.3$	Low

3. RESULT AND DISCUSSION

3.1. Validation Results of Learning Media Digital Portable Auto Microscope Design

The media validation developed was carried out by three media and material expert validators. Validation is based on 3 main components, namely general appearance, special appearance, and media presentation. In general, comments from the validator are that there needs to be a change in the colour of the microscope, the microscope box, the light holes, the number of lenses from 1 lens to 2 lenses, and the rotator to adjust the focus. The results of the final validation from the validator can be seen in Table 4 below:

Table 4. Recording of portable auto design microscope validation results

Assessment Aspect	Score (%)
General Display	98.09
Custom Views	97.78
Presentation of Media	97.33
Average	97.78
Criteria	Very Eligible

Table 4. shows that the average result of the validation of learning media in the form of a portable auto design microscope is 97.78% with very feasible criteria. This shows that this learning media is suitable for use in learning. The following is an image of the portable auto design microscope learning media that has been developed (Figure 1a) and an example of the resulting Ant image (Figure 1b).

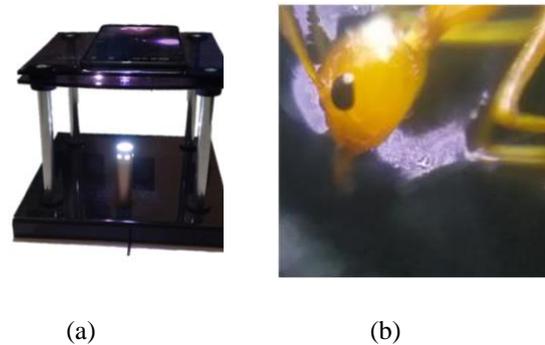


Figure 1 (a) Digital microscope portable auto design developed, (b) Ant image.

The picture above is a portable auto design digital microscope image that was developed as a science learning medium on Light material and Optical Devices in class VIII. This media is a simple media designed using a laser lens. This digital microscope has the same function as light microscopy in general, which is to see objects or small objects. The fundamental difference with a light microscope is that this microscope uses a smartphone application to see the anatomy of the object being observed, so its use is simple, and can be displayed on an LCD screen. Another advantage is that the object being observed can be taken pictures or videos, so that students can easily study the anatomy of the observed animals and plants because they can be seen repeatedly.

3.2. The results of the effectiveness test of the Portable Auto Design Digital Microscope learning media

To see the effectiveness of the media and tools developed, it was carried out through tests of students' abilities on the variables to be measured, namely understanding of concepts and problem-solving abilities. The results of the concept mastery test can be seen in Figure 2 below.

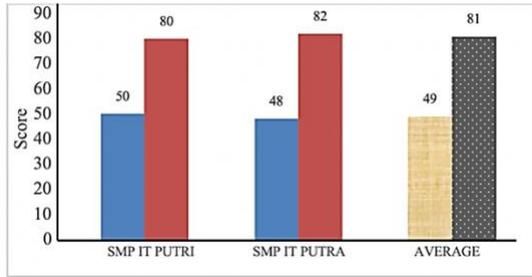


Figure 2 Value of the pretest and posttest mastery of the concept.

The picture above is the result of the pretest and posttest in two schools, namely SMP IT Putra and SMP IT Putri Mataram. The graph shows that there is a significant difference between the pretest and posttest scores. This shows that the learning media developed are effective in increasing students' understanding of concepts and at the same time being able to attract students' interest.

Interest is the first capital to form learning motivation. Students who have an interest in learning will definitely be sincere so that they can achieve achievements [19]. Likewise, on the contrary, students who do not have a request to learn tend not to pay attention to the lesson [20].

The results showed that the learning motivation of students had an effect of 48 % on the learning achievement of students [21]. The results also show that students who have higher learning motivation will find it easier to follow the learning process [22]. Conversely, students with low learning motivation have difficulty understanding the concept and cause a learning process that is less conducive. The results also show that to overcome this, a fun learning process is needed and students can be actively involved in the learning process [23].

This has influenced student learning outcomes to increase because learning is presented using modern media so that students' interest in learning and curiosity are high. The results of the problem-solving ability test can be seen in Figure 3 below.

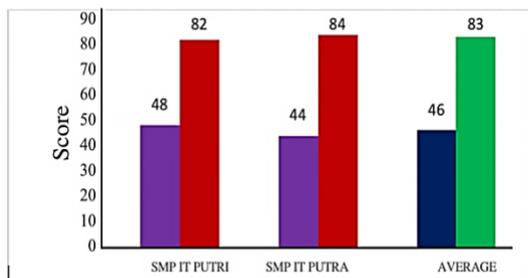


Figure 3 The value of pre-test and post-test of problem-solving abilities.

Figure 3 above shows the average pre-test and post-test scores tested at the schools that were the research subjects, namely SMP IT Putra and SMP IT Putri Mataram. This graph shows that there is a very significant increase between the pre-test and post-test scores. This shows that the portable auto design digital microscope is effective for improving the problem-solving abilities of students in schools that are the research subjects.

Students who are taught using instructional media tend to have good problem-solving skills [24, 25]. This is because the use of instructional media is able to attract students' learning interest so they are focused and have high curiosity. There is a significant difference between students who learn to use learning media and do not use learning media [26, 27, 28]. This is because students are facilitated by the media making it easier to understand the material and tend to be able to improve problem solving well.

4. CONCLUSION

The portable auto design digital microscope learning media developed is very suitable for use based on the validation results. The portable auto design digital microscope learning media developed effectively improves students' understanding of concepts and problem-solving abilities. This can be seen from the difference in the results of the pre-test and post-test.

AUTHORS' CONTRIBUTIONS

Aris Doyan has contributed to making articles and data analysis. Susilawati contributed to the data analysis. Adi Hardiyansyah has contributed to data collection and data processing for making complete articles.

ACKNOWLEDGMENTS

We would like to thank the Indonesian Ministry of Research and Higher Education who has provided funding for the Master's Thesis Research. We would also like to thank the SMP IT Putra and SMP IT Putri Mataram who has given us support in doing this research.

REFERENCES

- [1] Permendikbud No. 22 Tahun 2016 tentang Standar Proses Untuk Satuan Pendidikan Dasar dan Menengah
- [2] Sugihartono, 2013. *Psikologi Pendidikan* Yogyakarta: UNY Press
- [3] Prasetyo, B., & Trisyanti, U. 2018. Revolusi Industri 4.0 Dan Tantangan Perubahan Sosial. *In Prosiding SEMATEKSOS 3 "Strategi Pembangunan Nasional Menghadapi Revolusi Industri 4.0."*

- [4] Subekt, H., Taufiq, M., Susilo, H., Ibrohim, I., Suwodo, H. 2018. Mengembangkan Literasi Informasi Melalui Belajar Berbasis Kehidupan Terintegrasi Stem Untuk Menyiapkan Calon Guru Sains Dalam Menghadapi Era Revolusi Industri 4.0: Review Literatur. *Education and Human Development Journal*, **3**(1)
- [5] Ibda, Hamidulloh. 2018. Penguatan Literasi Baru Pada Guru Madrasah Ibtidaiyah Dalam Menjawab Tantangan Era Revolusi Industri 4.0. *JRTIE: Journal of Research and Thought of Islamic Education*, Vol. 1, No. 1
- [6] Rohwati, M. 2012. Penggunaan Education Game untuk Meningkatkan Hasil Belajar IPA Biologi Konsep Klasifikasi Makhluk Hidup. *Jurnal Pendidikan IPA Indonesia JPPI* **1**(1) 75-81
- [7] Lee, M. K. dan I. Erdogan. 2007. The Effect of Science Technology Society on Students' Attitudes Toward Science and Certain Aspects of Creativity. *International Journal of Science Education*
- [8] Nurhaeni, Y. 2011. Meningkatkan Pemahaman Siswa pada Konsep Listrik Melalui Pembelajaran Kooperatif Tipe Jigsaw Pada Siswa Kelas IX SMPN 43 Bandung. *Jurnal Penelitian Pendidikan*, **12**(1)
- [9] Lie. 2002. *Cooperative Learning: Mempraktikkan Cooperative Learning di Ruang-Ruang Kelas*. Jakarta: Gramedia Widiasarana Indonesia
- [10] Sitompul, H. dan Astuti, R. 2012. Pengaruh Media Pembelajaran dan Kecerdasan Ganda Terhadap Hasil Belajar Teknologi Informasi dan Komputer (TIK) Mahasiswa PGSD Universitas Negeri Medan. *Jurnal Teknologi Pendidikan*, Vol. 5 No. 2
- [11] Shaw, Rajib, Oikawa, dan Yukihiko. 2014. *Education for Sustainable Development and Disaster Risk Reduction*. Springer: Japan
- [12] Aryani, Pramita, S., Akhlis, Isa., dan Subali, Bambang. 2013. Penerapan Model Pembelajaran Inkuiri Terbimbing Berbentuk Augmented Reality pada Peserta Didik untuk Meningkatkan Minat dan Pemahaman Konsep IPA. *Unnes Physics Education Journal Terakreditasi SINTA 3 UPEJ* **8**(2)
- [13] Khan, M. S., Muzaffar., & Iqbal, M. Z. 2011. Effect of Inquiry Method on Achievement of Students in Chemistry At Secondary Level. *International Journal of Academic Research*, **3**(1): 955–960
- [14] Jannati, Edelweis, D. 2013. *Model Pembelajaran Eksperimental Kolb untuk Meningkatkan Pemahaman Konsep dan Kemampuan Menjelaskan Fenomena Fisis Fisika Siswa Kelas X pada Konsep Alat Optik*. Skripsi. Bandung: Universitas Pendidikan Indonesia
- [15] Purwantoko, R. A. 2010. Keefektifan Pembelajaran dengan Menggunakan Media Puzzle terhadap Pemahaman IPA Pokok Bahasan Kalor pada Siswa SMP. *Jurnal Pendidikan Fisika Indonesia*, **6**: 123
- [16] Hertavi, M. A., Langlang, H., dan Khanafiyah, S. 2010. Penerapan Model Pembelajaran Kooperatif Tipe Jigsaw Untuk Peningkatan Kemampuan Pemecahan Masalah Siswa SMP. *Jurnal Pendidikan Fisika Indonesia* **6** 53-57
- [17] Sugiyono. 2017. *Statistika untuk Penelitian*. Bandung: Alfabeta
- [18] Arikunto, S. 2013. *Prosedur Penelitian, Suatu Pendekatan Praktik* Edisi Refisi VI. Jakarta: Rineka Cipta
- [19] Puspitorini, R., Prodjosantoso, A.K., & Subali, B. 2014. Penggunaan Media Komik Dalam Pembelajaran IPA Untuk Meningkatkan Motivasi Dan Hasil Belajar Kognitif Dan Afektif. *Jurnal Cakrawala Pendidikan*, **3**(3): 413–420
- [20] Akhlis, A. 2009. Keefektifan Pembelajaran Berbantuan Multimedia Menggunakan Metode Inkuiri Terbimbing Untuk Meningkatkan Minat Dan Pemahaman Siswa. *Jurnal Pendidikan Fisika Indonesia*, **6**: 58–62
- [21] Hamdu, G. & Lisa, A. 2011. Pengaruh Motivasi Belajar Siswa terhadap Prestasi Belajar IPA di Sekolah Dasar. *Jurnal Penelitian Pendidikan*, **12**(1): 81-86
- [22] Pramadi, I. P. W. Y., Suastra, I.W., & Candiasa, I.M. 2013. Pengaruh penggunaan komik berorientasi kearifan lokal bali terhadap motivasi belajar dan pemahaman konsep fisika. *E-Journal Program Pascasarjana Universitas Pendidikan Ganesha*, **3**
- [23] Amalia, S., Rusilowati, A., & Supriyadi. 2011. Penerapan Physics Communication Games dengan Pendekatan SETS untuk meningkatkan Pemahaman Kebencanaan dan Minat Belajar Sains Fisika Siswa SMP. *Jurnal Pendidikan Fisika Indonesia*, **7**:101-105
- [24] Haryanto, Urip. 2016. Peningkatan Kemampuan Memecahkan Masalah Melalui Media Komputer Dalam Pembelajaran Matematika Pada Siswa SMKN 1 Ngawen. *Media Neliti Publication*
- [25] Doyan, A., Jufri, A. W., Susilawati, Hardiyansyah, A., Auliya, K., Hakim, S., and Muliyadi, L. 2020. Development of Learning Media of Microscope Portable Auto Design to Increase Student's Problem-Solving Ability in Light and Optical Tools Topic. *Atlantis Press: Advances in Social Science, Education and Humanities Research*, volume 438: 300-302

- [26] Ambarwati, Marisa. 2019. Efektivitas Media Pembelajaran Berbasis Web Game Untuk Meningkatkan Kemampuan Pemecahan Masalah Pada Pembelajaran Matematika SD. *Mimbar PGSD Undiksha* Vol: 7 No: 2
- [27] Rohwati, M. 2012. Penggunaan Education Game untuk Meningkatkan Hasil Belajar IPA Biologi Konsep Klasifikasi Makhluk Hidup. *Jurnal Pendidikan IPA Indonesia JPPI* 1(1) 75-81
- [28] Sugianto, S., Fitriani, A., Anggraeni, S., and Setiawan W. 2019. Media needs of plant anatomy practicum on digital microscope blended learning system on student naturalist intelligence. *Journal of Physics: Conference Series* 1280 (2019) 032010. DOI: 10.1088/1742-6596/1280/3/032010

Corresponding Authors dengan Pihak ICREAMST



This is to certify that

Aris Doyan

has participated in

The 7th International Conference on Research, Implementation, and Education of Mathematics and Science 2020

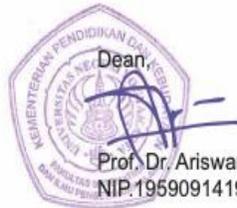
organized by Faculty of Mathematics and Natural Sciences, Universitas Negeri Yogyakarta on September, 25th - 26th, 2020

as a

Presenter

with the paper entitled :

Development of Digital Portable Auto Design Microscope Learning Media to Increase the Understanding of Concepts and Problem-Solving Abilities of Students



Prof. Dr. Ariswan, M.Si.
NIP.195909141988031003

Yogyakarta, September, 25, 2020
The Head of Committee



Dr. Supardi, S.Si., M.Si.
NIP 197110151998021001



7th ICRIEMS

**International Conference on Research, Implementation and
Education of Mathematics and Science**

Universitas Negeri Yogyakarta

Jumat – Sabtu, 25-26 September 2020

KUITANSI

No : 16

Nama : Aris Doyan
Asal Instansi : Mataram University
Terbilang : Lima Ratus Ribu Rupiah
Pembayaran Sebagai : Presenter
Jumlah Uang : Rp 500000,00

Yogyakarta, 25 September 2020

Yang menerima,



ICRIEMS
FMIPA UNY

Nur Fitriyana, M.Pd.

- ### 7TH ICRiems
- Conference Venue
 - Keynote Speaker
 - Author Guideline
 - Non Presenter Guideline
 - Instructions for Presentations
 - Visa Information
 - Publication Options
 - Contact us
 - City Tour

- ### PARTICIPANT
- List Speaker Participant
 - Non Speaker
 - Co Author

Aris Doyan

TITLE OF PAPER:

Development of Digital Portable Auto Design Microscope Learning Media to Increase the Understanding of Concepts and Problem-Solving Abilities of Students

FULL PAPER:

Attachment	Size
FULL-Aris Doyan.docx	652.62 KB
LoA-Aris Doyan.pdf	
Zoom-Meeting-Link-Aris Doyan.pdf	
Kuitansi-Aris Doyan.pdf	

Revised Full Paper:

RevFull-Aris Doyan.docx

Full Paper Final Result

Certificate-Aris Doyan.pdf

To upload Camera ready paper/Turnitin check, Click -->> [edit](#)

[PRESENTER FORM](#)



UNIVERSITAS NEGERI YOGYAKARTA
Faculty of Mathematics and Natural Science
International Conference on Research, Implementation and
Education of Mathematics and Science (ICRIEMS)

Jl. Colombo 1 Karangmalang Yogyakarta 55281, Phone +62 274 586168
<http://seminar.uny.ac.id/icriems>, e-mail: icriems@uny.ac.id



No : 16 /ICRIEMS-7.UNY/VIII/2020
Re : Acceptance Letter

August 24, 2020

Author (s) : A Doyan, Susilawati, and A Hardiyansyah

Dear Author (s)

On behalf of the 7th ICRIEMS Committee, Faculty of Mathematics and Natural Science and I would like to thank you for submitting your **full paper** for ICRIEMS 2020 with the theme “*Science, Technology, and Education in The Global Era for Virtuous and Competitive Generation*”. This seminar will be held virtually on September 25th – 26th, 2020 therefore, I am pleased to inform you that your initial **paper** entitled:

Development of Digital Portable Auto Design Microscope Learning Media to Increase the Understanding of Concepts and Problem-Solving Abilities of Students

is accepted to be presented in this conference.

This Letter of Acceptance is for your Presentation only. Your paper will be reviewed before publication and assigned to its appropriate platform by the board of reviewers. For this purpose, any suggestion during your presentation as well as the result of the reviews must be included in the final revision of your paper.

Thank you for participating in 7th ICRIEMS 2020. Kindly read the following important information about your participation in the conference in our website: <http://seminar.uny.ac.id/icriems>. We are looking forward to seeing you in this conference.

Yogyakarta, August 24, 2020

Conference Chair,



Dr. Supardi, M.Si
NIP. 197110151998021001



UNIVERSITAS NEGERI YOGYAKARTA
Faculty of Mathematics and Natural Science
International Conference on Research, Implementation and
Education of Mathematics and Science (ICRIEMS)



Jl. Colombo 1 Karangmalang Yogyakarta 55281, Phone +62 274 586168
<http://seminar.uny.ac.id/icriems>, e-mail: icriems@uny.ac.id

No : 23 / ICRIEMS-7.UNY/ IX / 2020

Yogyakarta, 22 September 2020

Dear Participants,

We would like to invite you to join the 7th ICRIEMS virtual seminar on :

Day, Date : **Friday - Saturday, September 25th – 26th 2020**

Waktu : 07.00 – end WIB (Western Indonesian Time)

For this occasion, we are going to use Zoom Webinar as our platform. The link can be seen as follow:

<https://uny-ac-id.zoom.us/join>

Plenary Session	Day 1	Webinar ID : 970 5100 6591 Passcode : 341892
	Day 2	Webinar ID: 997 8384 5 187 Passcode: 324726
Parallel Session	Meeting ID: 247 219 2696 Passcode: icriems	

Thank you for your participation in this seminar. We wish you to have fruitful and insightful discussion.

Conference Chair of 7th ICRIEMS 2020


Dr. Supardi, M.Si
NIP. 197110151998021001