



University of Jember
Faculty of Teacher Training and Education



UNIVERSITAS
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PROCEEDINGS

3rd
ICEGE 2020

**The Third International Conference on Environmental Geography
and Geography Education**

September 12th - 13th, 2020

at Faculty of Teacher Training and Education, University of Jember

PAPER • OPEN ACCESS

Preface

To cite this article: 2021 *IOP Conf. Ser.: Earth Environ. Sci.* **747** 011001

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The Electrochemical Society

Advancing solid state & electrochemical science & technology

The ECS is seeking candidates to serve as the **Founding Editor-in-Chief (EIC) of ECS Sensors Plus**, a journal in the process of being launched in 2021

The goal of ECS Sensors Plus, as a one-stop shop journal for sensors, is to advance the fundamental science and understanding of sensors and detection technologies for efficient monitoring and control of industrial processes and the environment, and improving quality of life and human health.

Nomination submission begins: May 18, 2021



The Third International Conference on Environmental Geography and Geography Education (ICEGE) 2020

Sumardi

Editor in Chief of International Conference on Environmental Geography and Geography Education 2020

E-mail: sumardi.fkip@unej.ac.id

We would like to express our gratitude to all participants joining “The International Conference on Environmental Geography and Geography Education” (ICEGE). The 3rd International conference held by the Department of Social Science Education held by FKIP-University of Jember on 12-13 September 2020. The participants of this ICEGE 2020 are research students, academicians and researchers, scholars, scientist, teachers and practitioners from many countries.

Due to Covid-19, this conference was held in dual-mode, namely online and face to face. For those invited speakers from abroad who have travel restrictions presented their research topics through zoom cloud meeting. Likewise, participants who stay outside Jember city joined the conference virtually. Meanwhile, participants from within Jember city joined conference in person by complying the Covid-19 protocol.

Two hundred forty-eight participants attended this conference. The number of submitted papers were 219 and papers sent to the reviewers were 198. Two reviewers reviewed one paper. Each reviewer reviewed maximum 8 papers. Based on reviewer recommendations, finally the number of accepted papers is 130. Thus, the acceptance rate is 59,4 %.

In the plenary season, each invited speaker presented their presentations for 1 hour and 15 minutes for Q/A session. In the parallel session, each participant made the presentation for maximum 15 minutes and 5 minutes for Q/A session. The technology used in the parallel session is zoom cloud meeting with 13 breakout rooms.

This conference becomes a dissemination forum for scientists working on theoretical and empirical research of environmental geography, transportation geography, geography education, social science and its application. This conference's mission is to become an annual international forum in the future, where civil society organization and representative research students, academics and researchers, scholars, scientists, teachers, and practitioners from all over the world could meet and exchange an idea to share and discuss about research. The aim of the second conference is to present and discuss the latest research that contributes to the new ontological, epistemological and axiological knowledge and



to a better understanding in the area as follows:(1) Environmental Geography; (2) Geography Information System and Remote Sensing; (3) Geomorphology; (4) Natural Disaster; (5) Economics; (6) History; (7) Education; (8) Humanities; (9) Social Sciences and (10) Global Science and Studies.

On behalf of the organizing committee, finally we gratefully acknowledge the support from the FKIP-University of Jember of this conference. We would also like to extend our thanks to all lovely participants who have been joining this unforgettable and valuable event.

Assoc. Prof. Dr. Sumardi, M.Hum



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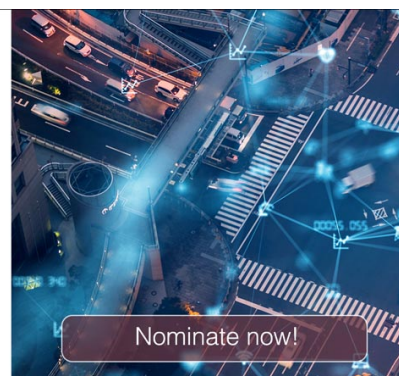
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Advancing solid state & electrochemical science & technology

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Nomination submission begins: May 18, 2021



Peer review statement

All papers published in this volume of IOP Conference Series: Earth and Environmental Science have been peer reviewed through processes administered by the Editors. Reviews were conducted by expert referees to the professional and scientific standards expected of a proceedings journal published by IOP Publishing.

- **Type of peer review:** Double-blind review. The authors and the reviewers do not know each other. The managing editor send the papers to the reviewers by hiding the authors' name and their affiliation.
- **Describe criteria used by Reviewers when accepting/declining papers. Was there the opportunity to resubmit articles after revisions?** There were 13 aspects of assessment for accepting/declining papers, i.e. Clarity of abstract, Significance of research, Sufficiency state of the art, Contribution to the field (novelty), Research objective, Appropriateness of the research method, Relevance and clarity of drawings, graphs and tables, Experimental/evidential support, Quality of data or findings, Discussion and conclusions, Direction for future research and recommendations, Clarity of English, Writing style (according to EES format). There are no opportunities to resubmit papers after rejection. For the revised papers regarding to reviewer comments, they should resubmit their papers.
- **Conference submission management system:**
<https://easychair.org/conferences/?conf=icege2020>
- **Number of submissions received:** 219
- **Number of submissions sent for review:** 198
- **Number of submissions accepted:** 130
- **Acceptance Rate (Number of Submissions Accepted / Number of Submissions Received X 100):** 59,4 %
- **Average number of reviewers per paper:** 2
- **Total number of reviewers involved:** 50
- **Any additional info on review process (ie. plagiarism check system):** We used TURNITIN software to check the plagiarism issue during the review process.



- **Contact person for queries:**
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Volume 747

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◀ Previous issue Next issue ▶

3rd International Conference on Environmental Geography and Geography Education, 12 September 2020, East Java, Indonesia

Accepted papers received: 12 April 2021

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<p>OPEN ACCESS</p> <p>New Normal in The Era of Pandemic Covid-19 in Forming Responsibility Social Life and Culture of Indonesian Society</p> <p>D Sundawa, D S Logayah and R A Hardiyanti</p> <p> + Open abstract View article PDF </p>	012068
<p>OPEN ACCESS</p> <p>Megalithic culture at the Suco Lor site Bondowoso</p> <p>H Periwati, K Swastika, Sumarjono, M Na'im and A R Pratama</p> <p> + Open abstract View article PDF </p>	012069
<p>OPEN ACCESS</p> <p>Teachers' ability analysis of developing innovative instructional design</p> <p>N Umamah, Sumardi, Marjono, R A Surya and E Mulfida</p> <p> + Open abstract View article PDF </p>	012070
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<p>OPEN ACCESS</p> <p>The Effectiveness of WhatsApp Mobile Learning Shows The Existence of Kamal Historical Site Towards Student Interest</p> <p>R W Hikmah, B Soepeno, R P N Puji and Sugiyanto</p> <p> + Open abstract View article PDF </p>	012073
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<p>OPEN ACCESS</p> <p>ASSURE Research and Development: The Documentary Video of Reog Dance to Enhance Learning Outcomes in History Learning</p> <p>M A Gusnissa, B Soepeno, R P N Puji and Sugiyanto</p> <p> + Open abstract View article PDF </p>	012075
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To cite this article: N Umamah *et al* 2021 *IOP Conf. Ser.: Earth Environ. Sci.* **747** 012094

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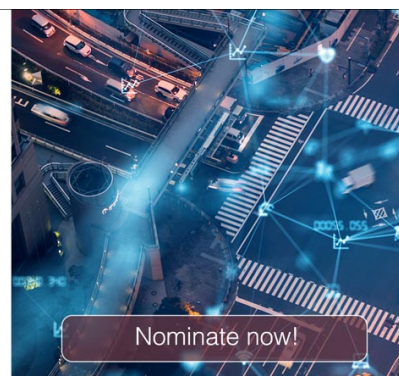
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Assessing Prior Knowledge and Needs Assessment for Virtual Laboratorium Development

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Abstract. The University of Jember as a centre for biotechnology research in Indonesia also has the responsibility of developing biotechnology research results for the public. The urgency in fostering public understanding of biotechnology needs attention. Based on the results of a survey conducted, it shows that 75% of Jember University students do not understand biotechnology and the superior biotechnology products of the University of Jember. One way of developing this biotechnology information to the public is through the use of learning media. The research objective was to analyze the virtual needs of biotechnology laboratories for agriculture and health. The results show that students in higher education ranks have standard knowledge of virtual laboratories. Students also need skills in developing virtual laboratories and providing laboratories in learning and practicum. This shows that the development of a virtual laboratory is required to develop effectiveness and improvement of students' skills in higher education.

1. Introduction

Educational media is defined as a tool for the learning process both inside and outside the classroom. This media is used in communication and interaction between educators and students in the learning process. Learning media is one of the supporting factors for the success of a learning process [4] [7] [8]. The optimal and effective use of learning media can be an appropriate means of informing the public about biotechnology.

Media is an intermediary between the message giver to the recipient of the message [5]. The media are also seen as forms of mass communication that involve symbol systems. Learning media is physical equipment for presenting learning to students. The definition of physical equipment emphasizes the equipment used to present learning such as textbooks, visual equipment, audio, computers, or other equipment classified as learning media. Education is expected to be able to take advantage of technological developments in all aspects such as media, learning resources, evaluation materials and other educational infrastructure [9] [13] [14]

Learning media has benefits in creating a conducive learning environment. The use of media in the learning process can arouse the desire and interest of students. In addition, learning media is also able to build motivation and stimulation so that it can have a psychological influence on students [4] [11] [12]. Learning media can overcome the limitations of space, time, energy, sensory power and increase student interest in learning. Learning media is expected to arouse stimulation of the senses of sight, hearing, touch, taste and smell. Learning media is also expected to be able to help students to understand learning material optimally.

There are several types of learning media including visual media, audio, video, computer-based media and multimedia [5]. Learning media is expected to be able to integrate technology in the teaching and learning process. This is in accordance with the demands of the 4.0 industrial revolution with a blue print for the use of technology in all aspects. One of the information technology-based learning media is virtual. Virtual Reality technology allows users to join a virtual environment as a whole. Educators together with students are directed in a virtual condition that has been designed in a system. Educators and students who have joined this environment will find a new environment that cannot be presented or has limitations presented in the real world.

Through virtual-based learning media, the real environment around us will interact in digital form [4]. Information about objects and the environment around us can be added to the virtual system. Virtual learning media has the potential to involve students in the teaching and learning process. Virtual



provides students with visualization skills. Virtual learning media are also proven to be able to make the learning process more active, effective.

The use of virtual as a learning medium is able to help students understand concepts and theories, stimulate students to think conceptually and feel a 3-dimensional form, increase the image (representation) and perception, increase understanding and learning outcomes of students and create an interactive and attractive learning atmosphere. as well as fun [5].

Virtual learning can also overcome the limitations of the size and existence of objects that cannot be presented directly in the classroom. It should be realized that conducting biotechnology research requires a laboratory facility. This is one of the fundamental needs in finding novelty related to biotechnology [10]. The process of conducting biotechnology research requires relatively long facilities, materials and facilities. This has created a stigma in society that biotechnology research is not easy to research. One alternative in overcoming this problem is through the development of a virtual laboratory. Virtual laboratories are able to present laboratory conditions virtually to students so that information about biotechnology is conveyed properly.

According to an empirical study conducted by Todt and Gotz 1998 regarding student interest in biotechnology, it was revealed that student interest in genetic engineering biotechnology increased at the age of around 16 years. Female students of this age tend to be more interested in the social and ethical aspects of the topic while male students are more interested in technical aspects and economic prospects. The student's interest in this matter encourages the academic community to develop innovations in helping to convey information effectively.

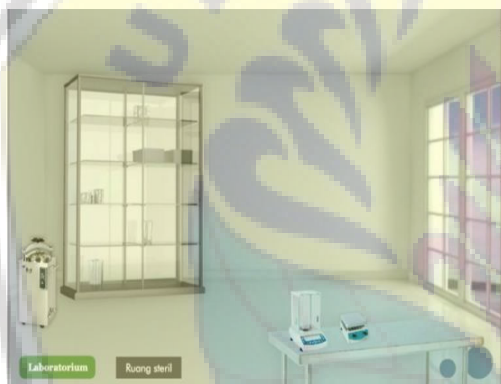


Figure 1. Virtual laboratory

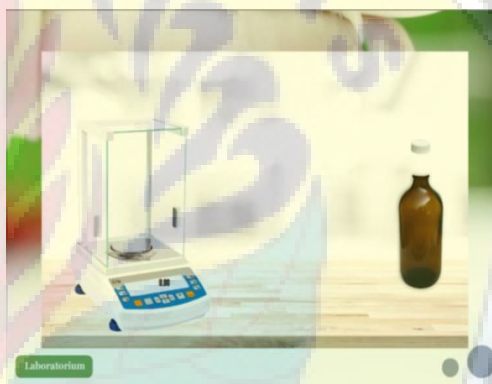


Figure 2. virtual laboratory practice

2. Methods

This research is a survey research using instruments in the form of a questionnaire distributed online. Survey research is a research approach that is generally used for large and extensive data collection. This research was conducted on large and small populations, but samples were taken from that population. For example, research on the tendency of people to elect national leaders. The purpose of survey research is to provide an overview of the characteristics of the population. Survey research is used to gather information in the form of opinions from a large number of people on a particular topic or issue.

There are three main characteristics of survey research, namely:

- information collected from a large group of people to describe certain aspects or characteristics,
- information is collected through the submission of questions both written and oral from a population,
- information is obtained through a sample that interprets the population.

The research used is in the form of a questionnaire distributed to students, lecturers and farming communities. The number of questionnaires is as many as ten questions which are distributed using the online form. The total number of respondents was 587. The following is the sample demographics in the study based on the faculty and respondent status.

Table 1. Respondents profile

No.	Demographic Data	amount	%
1	Faculty/subjects		
	<i>Education</i>	451	76,8
	<i>Social science</i>	18	3,1
	<i>Agriculture</i>	14	2,4
	<i>Economic and Bussines</i>	31	5,3
	<i>Cultural studies</i>	9	1,5
	<i>Agricultural technology</i>	1	0,2
	<i>Law</i>	16	2,7
	<i>Mathematics & Science</i>	9	1,5
	<i>Medical</i>	1	0,2
	<i>Public health</i>	7	1,1
	<i>Technic</i>	11	1,9
	<i>Pharmacy</i>	3	0,5
	<i>Nursing</i>	8	1,4
	<i>Information technology</i>	5	0,9
	<i>etc</i>	3	0,5
	Score total	587	100

3. Results and Discussion

3.1. Virtual laboratory

In teaching and learning activities, instructional media has a function as a tool for educators to deliver subject matter to students so that students can understand the material easily. The use of media in the learning process aims to increase students' strength in the information or learning material provided. Learning media apart from being able to replace part of the task of educators as material presenters, media also has unique potentials that can help students in learning. Media excellence can increase students' interest in lessons and media is very important to direct students' attention and increase students' responsibility to control their own learning. The development of creative learning media is useful for improving students' attractiveness to learn history needs to be developed. The use of instructional media enhances the learning of students and increases the level of knowledge of students. This shows the important role of media in learning History.

Virtual laboratories or can be referred to as Virtual Labs are a series of laboratory equipment in the form of interactive multimedia-based computer software operated by computers and can simulate activities in the laboratory as if the user were in a real laboratory. The potential virtual laboratory to provide a significantly enhanced and more effective learning experience. The development of this virtual laboratory is expected to solve learning problems experienced by students and overcome cost problems in the procurement of tools and materials used to carry out practicum activities for underprivileged schools.

The virtual laboratory that will be developed contains material in the form of life-based learning that is needed for students' development. Life-based learning can definitively be interpreted as real-world based learning, in the sense that the learning process is not limited to classrooms and the presence of teachers and students. Life based learning accommodates all forms of learning resources that allow increased opportunities to increase abilities. Life based learning substantively seeks to shift the view of professional development that can only be done with expert or professional orientation.

Life based learning is prepared to face the knowledge era of the 21st century, in which society experiences complexity, diversity, uncertainty, contradiction and change. This age of knowledge is characterized by impermanence, upheaval, competing agendas and priorities, ideological diversity, ambiguity, multiple roles, distraction, uncertainty, contradiction, and increased energy and creativity. This has gradually led to debates between existing mechanistic learning processes and processes that go with the flow (as they are); predictable results with emerging results; information gathering by formulating knowledge; the desire to do something in one way with ambiguity. Life based learning assumes that learning for work is not limited to learning in the world of work (learning for work is not restricted to learning at work). It is because life based learning has the premise that all learning activities are interconnected so that it will not be easy to distinguish learning in the world of work from other learning carried out by adults.

3.2. Prior knowledge Analysis

Table 2. Prior knowledge analysis

NO	TOPIC	VLK		VLCK		VLDK		IVLD		VLEK	
		F	%	F	%	F	%	F	%	F	%
1	Very low	196	33	394	67	491	83	524	90	527	90
2	Low	160	27	67	11	34	6	26	4	24	4
3	Moderate	121	21	63	11	35	6	31	5	32	5
4	High	103	18	62	10,9	26	4,9	2	0,3	3	0,9
5	Very high	7	1	1	0,1	1	0,1	4	0,7	1	0,1
Score total		587	100	587	100	587	100	587	100	587	100

VLK = Virtual laboratory knowledge

VLCK = Virtual laboratory criteria knowledge

VLDK = Virtual laboratory development knowledge

IVLD = Involvement of Virtual laboratory development

VLEK = Virtual laboratory effectiveness knowledge

The table above shows that 33% (196) of respondents answered that they had but there was no concern in understanding the term virtual laboratory. Besides, 27% (160) of respondents also answered that they had never heard the term virtual laboratory at all. This shows that students in higher education ranks have low knowledge of virtual laboratories. Identification of students' initial knowledge regarding virtual laboratory criteria showed 394 (67%) respondents answered that they did not know about virtual laboratory criteria. Respondents also have low knowledge in the development steps of a virtual laboratory. Students also have involvement in the development of virtual laboratories and in evaluating the effectiveness of virtual laboratories with the number of respondents 90% on both of the answering criteria, never having any involvement in them

3.3. Need Assesments Analysis

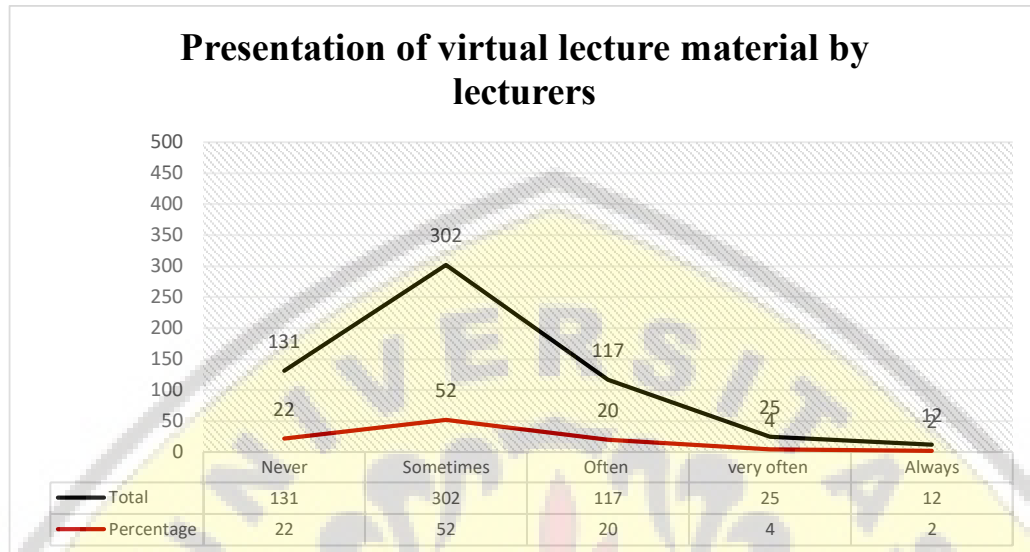


Diagram 1. Presentation of virtual lecture material by lecturers

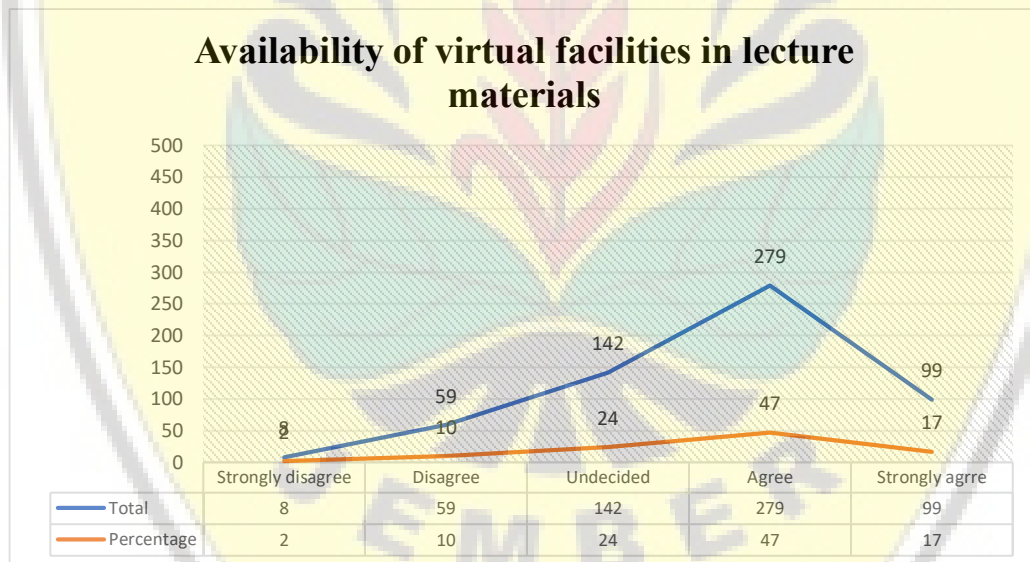


Diagram 2. Availability of virtual facilities in lecture materials

The use of virtual laboratories is implemented through the use of lecture materials and teaching materials by lecturers who have a quantity of 302 (52%) respondents answered sometimes. Students need the availability of a virtual laboratory in the course material indicated by the quantity of respondents of 279 (47%) who answered agree to be given facilities in the form of virtual lecture materials in learning. Students also need skills in developing virtual laboratories and providing laboratories in learning and practicum. This shows that virtual laboratory development is needed to develop effectiveness and improvement of students' skills in higher education.

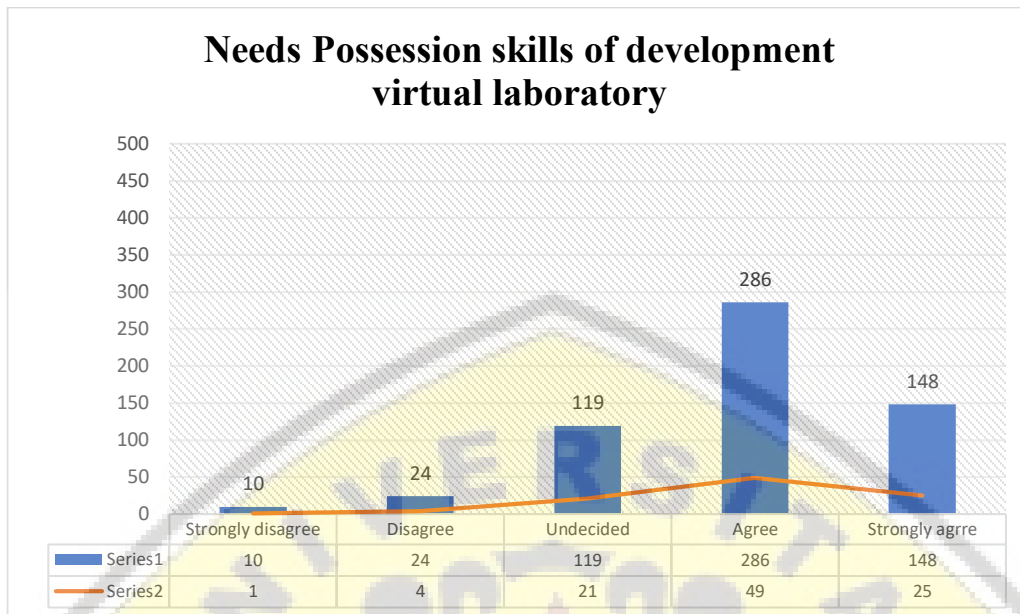


Diagram 3. Needs Possession skills of development virtual laboratory

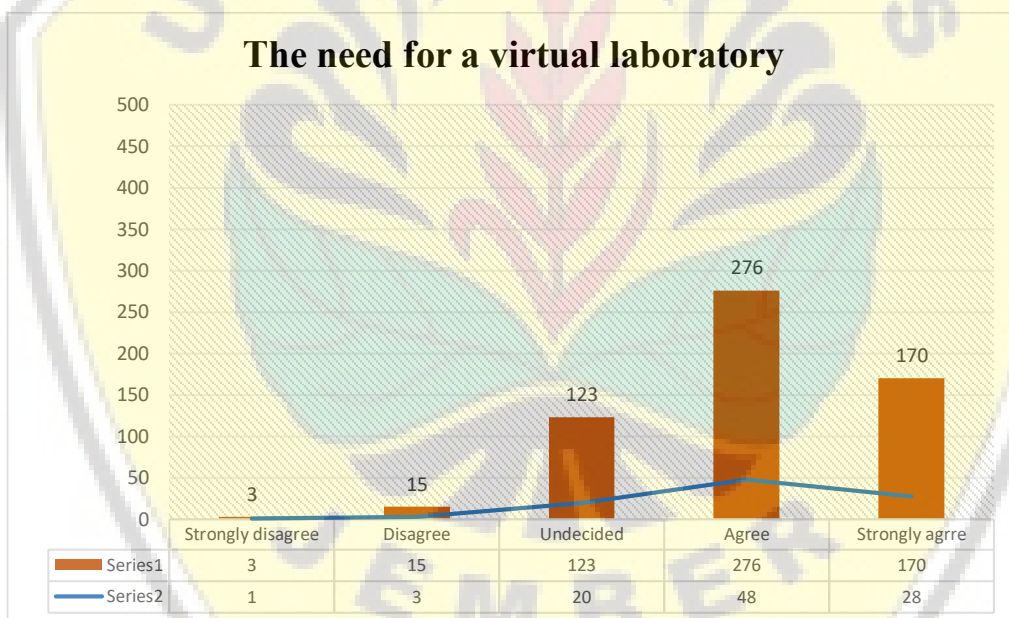


Diagram 4. The need for a virtual laboratory

Based on respondents' results, 286 (49%) answered agree to have skills in developing virtual laboratories. Respondents answered agree about their need for virtual laboratories (276 (48%). This shows that the development of virtual laboratories is very much needed by students. This is of course related to the demands of mastery of technology in the present. Students should be able to master technology to prepare for the 5.0 revolution, which requires a lot of challenges. The use of virtual laboratories is needed in the pursuit of the COVID 19 pandemic. Educators and students can optimally carry out the learning process even though they do not have the opportunity to meet in person in the classroom.

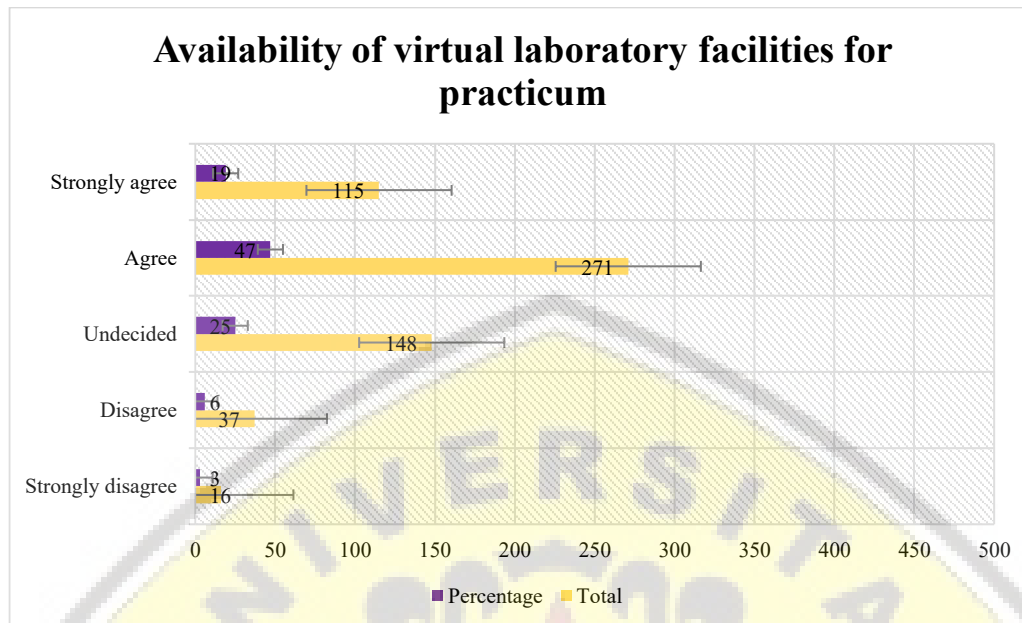


Diagram 5. Availability of laboratory facilities for practicum

Students need the development of a virtual laboratory in universities to support practicum facilities. The respondents indicate this as many as 271 (47%) answered agree and need a virtual laboratory to facilitate practicum. Science and medicine studies really need a virtual laboratory to streamline and streamline the learning process. Online learning during a pandemic has also been one of the factors driving the development of virtual laboratories. Based on a needs analysis of 587 students and the community, it shows that they need the development of a virtual laboratory. This becomes the basis for further research in developing virtual laboratories using a development model that suits your needs.

Conclusions

Pandemic conditions also have an impact on the implementation of the learning process in higher education. The COVID 19 pandemic has caused shifts and adjustments in various aspects of life. Analysis of the needs of students for a virtual laboratory shows a very high response. This shows that students need the development of a virtual laboratory to optimize learning well. This supports the technology-based learning process. Virtual laboratories also provide opportunities for students to improve skills in learning technology processing.

The limitations of online learning in the era of the COVID 19 pandemic require distance learning tools. Technical problems in distance learning are the uneven student internet network, limited hardware such as laptops, headsets, and the quota that each student has. These constraints directly or indirectly cause the lecture process to be less than optimal. This technical obstacle cannot be denied that it is a universal obstacle faced by almost all educational institutions today, thus it requires comprehensive cooperation of all existing elements. This program is expected to be an alternative in finding novelty in the development of learning resources, media and educational facilities in optimizing learning.

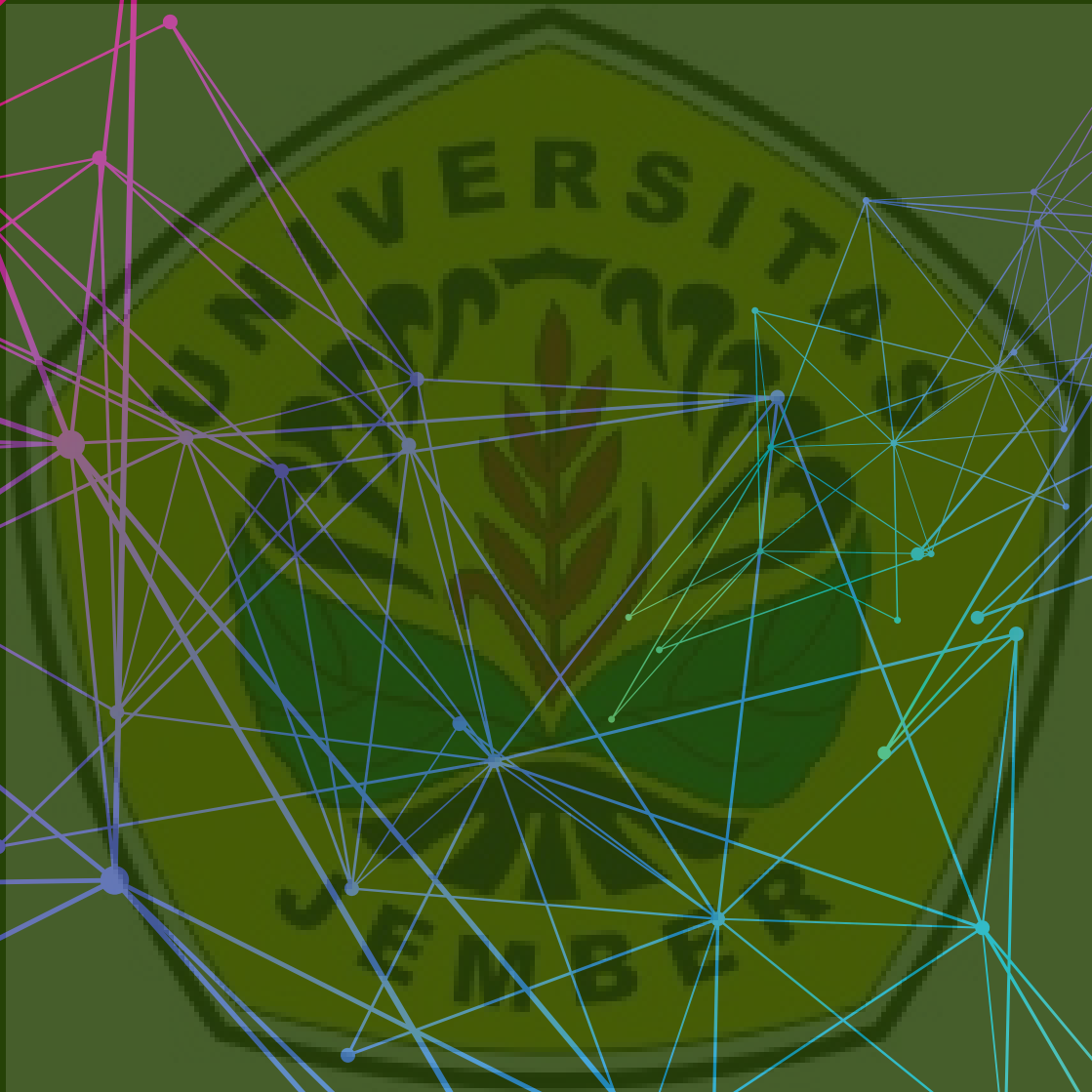
Acknowledgments

Researchers would like to thank the Jember University research and service institute for providing IDB support grants. In addition, researchers also would like to thank the entire team involved in improving this article.

References



- [1] Chawla, H.S 2004 Introduction to Plant Biotechnology 2nd Edition. New York. Science Publishers, pp. 28-29.
- [2] Neumann, K. H., Kumar, A., and Imani, J 2009 Plant Cell and Tissue Culture- A Tool Biotechnology : Basics and Application. Berlin. Springer, pp. 5-6.
- [3] Vejsadova, H 2006 Factors Affecting and Seedling Growth of Terrestrial Orchids Cultured in Vitro. ACTA Biologica Cracovensia Botanica. 48(1): 109-113.
- [4] Heinich, R. Dkk. 2002. Instructional Media and Technology for learning New Jersey. Practice Hall Inch
- [5] Lee, Siaw Li. 2017. Monitoring the disparity of teaching and learning process variability: a statistical approach". International Journal of Productivity and Quality Management. 21 (4).
- [6] Palazon, Maria. The Media and Transformative Learning. ERIC Database and Reproductions Supplied by EDRS. 2000.
- [7] Noviyanti, Magfiroh F, Wahyudi AN, Puji RPN 2020 Analysis of Changes in Student Activity and Learning Patterns During the Pandemic: Case Study of High School Students in Jember Regency. Pancaran Pendidikan. 9 3 10.25037/Pancaran.v9i3.297
- [8] Subchan W, Puji RPN, Pratama AR and Lestari RD 2020 Education environment society buffer forest Wonoasri Betiri Meru National Park through approach participatory IOP Conf Series: Earth And Environmental Science 485 012139 doi:10.1088/1755-1315/485/1/ 012139
- [9] Alamsyah M R B, Puji RPN and Soepeno B 2020 Information media on historical tourism: probing into public perspectives in Jember regency IOP Conf. Ser.: Earth Environ. Sci. 485 012138
- [10] A R Pratama, Subchan W, Puji RPN, Ramadani RD 2020 Empowered Communities: Increasing The Role of Communities in Management and Conservation in Meru Betiri National Park IOP Conf. Ser.: Earth Environ. Sci. 485 012141
- [11] Puji RPN et al 2020 The Students' Prior Knowledge at The Department of History Education within Tertiary Education IOP Conf Series: Earth And Environmental Science 485 012041
- [12] Hidayah B, Na'im M, Puji RPN 2020 Technological content knowledge of history teachers in Jember IOP Conf Series: Earth And Environmental Science 485 012132
- [13] Puji RPN and Umamah N 2018 Edmodo Multimedia: Supporting Technology for Media Learning at Higher Education International. Journal of English. Literature and Social. Sciences 3 2456 <https://dx.doi.org/10.22161/ijels.3.1.9>
- [14] Priskilla M et al 2018 Interactive Multimedia Based on Computer Assisted Instruction: Development Efforts on the Learning Interest and Effectiveness in the History Learning International Journal of Humanities and Social Science 5 43

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