Leony Sanga Lamsari Purba (Analysis Of Students' Perceptions Of Differences Based On Gender In The Use Of Virtual Reality Laboratories)

by Library Referensi

Submission date: 21-May-2024 04:49PM (UTC+0700)
Submission ID: 2384762526
File name: 1._AnalysisOfStudentsPerceptionsOfDifferences.pdf (510.22K)
Word count: 4303
Character count: 23658

IOSR Journal of Research & Method in Education (IOSR-JRME)
e-ISSN: 2320–7388, p- ISSN: 2320-737x Volume 13, Issue 3 Ser. IV (May. – June. 2023), 34-44
www.iosrjournals.org

Analysis Of Students' Perceptions Of Differences Based On Gender In The Use Of Virtual Reality Laboratories

Elferida Sormin[1], Nova Irawati Simatupang [2], Leony Sanga Lamsari Purba[3], Nelius Harefa[4]
[1,2,3,4](Chemistry Education Department,Universitas Kristen Indonesia Indonesia)

Abstract:
Background*: Using a VR laboratory requires skill or skill in moving your hands to press buttons or other available tools, as is done by someone in general when playing a game. So this is also suspected to affect someone's desire or interest in operating this VR laboratory. From experience in the field when conducting trials using VR laboratories, someone who is used to playing games tends to find it easier to operate a VR laboratory compared to people who rarely play games. Based on the research results on the factors that influence a person's addiction to games, data obtained from comparing the number of game users between men and women are dominated by men at 59% and women at 41%.[30]. Seeing the phenomenon that there is a difference between the number of men and women in terms of using this game encourages the desire to conduct a deeper study of how men and women perceive when asked about the implementation of a VR laboratory which, in fact, uses almost the same as using a game. Thus this study aims to analysis of students' perceptions of differences based on gender in the use of virtual reality laboratories as one of the initial studies became the basis for developing virtual reality laboratories for several types of chemistry practicum*
Materials and Methods*: This descriptive quantitative research aims to determine students' perceptions of the implementation of virtual reality (VR) laboratories. The population in this study were students of public and private high schools in Jakarta, using a random sampling technique of 150 students consisting of 75 female students and 75 male students. The data collection technique in this study used a questionnaire instrument with temporary understanding indicators, views, and concerns with a total of 15 statement items with a scoring system based on a Likert scale of 1 to 5, which an expert validator has validated. The validated perception questionnaire instrument was used in this study and then analyzed.*
Results*: The results of data analysis using a 3 x 2 manova with a significance level of 5% showed that there were differences in students' perceptions of the Virtual Reality (VR) Laboratory in terms of gender differences (sig. <0.05). From the results of research on the analysis of gender-based differences in students' perceptions of the use of virtual reality laboratories, it can be concluded that: there are significant differences between male and female perceptions of the use of virtual reality laboratories, which can be seen from the acquisition of a two-tailed significance value of 0.934 > Sig 0.05. Significant differences in perceptions between women and men regarding the implementation of the VR laboratory are increasingly evident from the average score of men's answers (mean score is 3.36), which is greater than the average score of women's answers (mean score of 2.37).*
Conclusion: *From the results of research on the analysis of gender-based differences in students' perceptions of the use of virtual reality laboratories, it can be concluded that: there are significant differences between male and female perceptions of the use of virtual reality laboratories, which can be seen from the acquisition of a two-tailed significance value of 0.934 > Sig 0.05. Significant differences in perceptions between women and men regarding the implementation of the VR laboratory are increasingly evident from the average score of men's answers (mean score is 3.36), which is greater than the average score of women's answers (mean score of 2.37). This means that men's perceptions of the implementation of the VR laboratory are more positive or more acceptable than women's*
Key Word*: virtual laboratory, perception, gender, learning, chemistry.*

Date of Submission: 11-06-2023 Date of Acceptance: 21-06-2023

I. Introduction

Technology has always been and will continue to grow along with current development. More and more, various new technologies are emerging. The emergence of increasingly sophisticated technology impacts various sectors of human life, including education. Virtual Reality is one form of technology adaptable to the field of education [1,3,7,9]. The world, in general, is facing the coronavirus pandemic, known as COVID-19 (Corona Virus Disease 2019). So that many activities must be Soceled or changed to the online form (in the network). Ministry of Education and Culture enacted circular letter No. 4 of 2020 concerning Implementing

Education Policies in the Emergency Period of the Spread of Corona Virus Disease (Covid-19). Based on this circular, the education unit decided to work from home (Work From Home) to carry out the learning process online or through distance learning. This is undoubtedly for practicum courses. The main points of the practicum learning process are activities in the laboratory, where students are trained to develop skills as an application of the knowledge they have acquired in class. Conducting laboratory practicum has traditionally been considered an integral part of a chemistry degree [2,4,5].

Laboratory infrastructure is part which is often the main obstacle. Procurement infrastructure is not only a matter of cost and time but also a good continuation of management complex, especially for colleges with limited resources (land, labor, funds, and time). Several other things are seen to be problems in laboratory management among others, such as [1] Laboratory Resources: including practicum equipment, worker technician laboratories, supervisors, practicum assistants, practicum places, [2] Laboratory Management: How to manage practicum times, both from the manager's side and from the side laboratory users (students). How students maximize the use of hours practicum, [3] Practicum Fee: How to reduce practicum costs to a minimum, given the price of practicum materials that continue has increase, of course, with no reduce the quality of practicum results, and [4] Improving the quality/competence of students with limited resources in the laboratory[6,7]. The absence of a practicum process in learning in the laboratory requires alternative solutions so that the skills transfer process can still take place. This alternative form uses Virtual Reality-based Virtual Laboratories as teaching media. This method was chosen so that students can still feel the atmosphere of offline practicums so that the process of learning higher-order thinking skills that are beneficial for character building, strengthening literacy, increasing competence, and enriching the curriculum continues. Apart from that, the Visual Laboratory is also relatively more accessible and cheaper than conventional laboratories and can reach many people in many places[6,8]. Practicum activities are the primary learning media for training student skills. This activity trains students to realize the theories in the book and visualize the workings of the practicum guidebooks and research journals. This teaches concentration and stimulates students' motoric and analytic abilities. Along with technological developments, practicums can be carried out in physical laboratories and virtual laboratories based on Virtual Reality [5,7].

Virtual Reality (VR) is an artificial environment that uses visual and auditory stimulation to make it seem like the user is in a natural setting. This technology provides a sensation close to reality, which is beneficial for transferring skills such as practicum. This technology sometimes creates false memories as if the user has done the real thing. The use of VR as a Virtual Laboratory helps provide a real practical experience even at home. Apart from that, another advantage of virtual laboratories is that they are cheaper and safer than actual practice in the field. With a virtual laboratory, exploring phenomena that only occur briefly or dangerous wonders is possible by modifying existing variables. Of course, the implementation of this VR laboratory cannot be immediately implemented, of course, an initial study is needed about the readiness of the required facilities and infrastructure, even the readiness of the users (in this case, students) in the context of implementing this VR laboratory. The readiness in question is readiness physically and psychologically. Using a VR laboratory requires skill or skill in moving your hands to press buttons or other available tools, as is done by someone in general when playing a game. So this is also suspected to affect someone's desire or interest in operating this VR laboratory. From experience in the field when conducting trials using VR laboratories, someone who is used to playing games tends to find it easier to operate a VR laboratory compared to people who rarely play games. Based on the research results on the factors that influence a person's addiction to games, data obtained from comparing the number of game users between men and women are dominated by men at 59% and women at 41%.[30]. Seeing the phenomenon that there is a difference between the number of men and women in terms of using this game encourages the desire to conduct a deeper study of how men and women perceive when asked about the implementation of a VR laboratory which, in fact, uses almost the same as using a game. Thus this study aims to analysis of students' perceptions of differences based on gender in the use of virtual reality laboratories as one of the initial studies became the basis for developing virtual reality laboratories for several types of chemistry practicum

II. Material And Methods

This descriptive quantitative research aims to determine students' perceptions of the implementation of virtual reality (VR) laboratories. The population in this study were students of public and private high schools in Jakarta, using a random sampling technique of 150 students consisting of 75 female students and 75 male students

Study Design: descriptive quantitative research

Study Location: students of public and private high schools in Jakarta

Study Duration: July to November 2022.

Sample size: 150 students.

Sample size calculation: The population in this study were students of public and private high schools in Jakarta, using a random sampling technique of 150 students consisting of 75 female students and 75 male students
Subjects & selection method: using a random sampling technique of 150 students consisting of 75 female students and 75 male students.

Inclusion criteria:
1. Sex Male and Female
2. Aged ≤ 18 years,
3. Attend school in Jakarta
4. Public and Private High Schools

Exclusion criteria:
1. School outside Jakarta
2. Aged ≥ 18 years

Procedure methodology
Compile a questionnaire instrument

The instrument is a questionnaire to determine students' perceptions of using virtual reality laboratories. The perception questionnaire instrument consists of 15 closed questions with five types of answer choices with a Likert scale score distribution: strongly agree, agree, undecided, disagree, and strongly disagree. The perception questionnaire instrument was adjusted based on three perception indicators, including understanding, views, and attention [25-27]

1. Understanding
   For indicators of understanding, there are five questions, among others
   1. I have heard about Virtual Reality (VR) Laboratory
   2. I've seen a Virtual Reality (VR) Laboratory in person
   3. I've seen a Virtual Reality (VR) Laboratory through social media
   4. I have used a virtual reality (VR) laboratory at school.
   5. I have used a Virtual Reality (VR) Laboratory

2. Views
   For indicators of views, there are five questions, among others.
   1. Virtual Reality (VR) Labs are exciting.
   2. Using the Virtual Reality (VR) Laboratory can increase my interest in learning.
   3. Virtual Reality (VR) Laboratory can add insight and knowledge to me.
   4. Virtual Reality (VR) Laboratory is a learning medium that is easy to use.
   5. The Learning Model of the Virtual Reality (VR) Laboratory can make it easier for me to understand the concept of learning at school

3. Attention
   For indicators of views, there are five questions, among others.
   1. I often looser formation about Virtual Reality (VR) Laboratories.
   2. I have a high h curiosity about Virtual Reality (VR) Laboratories.
   3. I am more focused on carrying out practicums and can take advantage of the Virtual Reality (VR) Laboratory
   4. I don't want any distractions when doing practicum using the Virtual Reality (VR) Laboratory.
   5. I am very serious when about practicums using the Virtual Reality (VR) Laboratory.

Perception questionnaire instrument validation

The validation of the perception questionnaire instrument that was carried out was construct validation with the help of experts, and 15 questions were declared valid as perception questionnaire instruments which were then compiled in a google form for further distribution to students.

Distribution of perception questionnaire instruments

The perception questionnaire instrument was distributed to 150 students consisting of 75 male students and 75 other female students using Google Forms.

Data Processing

Data processing was carried out using a statistical test, namely a different test with the help of SPSS which then looked at the results of the acquisition of significance. where if the sig value > o.o5, it can be concluded that there is a significant difference between men's perceptions of using virtual reality laboratories and women's perceptions of using virtual reality laboratories.

The following shows the google form, which is distributed and contains 15 closed questions as an Fig 1 below.

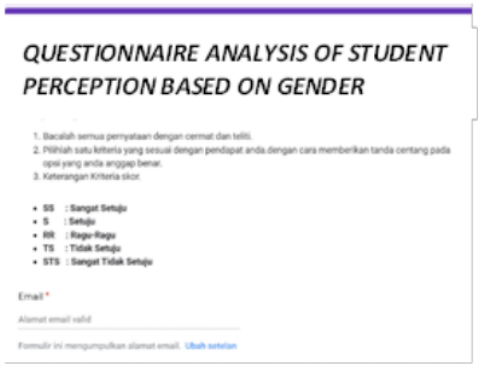

Fig.1. View Of Distributed Google Form And Contains 15 Closed Questions

III. Result

Summary of student responses

The following is a summary of student responses presented in diagram form for each question

1. Question 1: I have heard about Virtual Reality (VR) Laboratory. The summary of student responses presented in the diagram as an Fig 2 below:

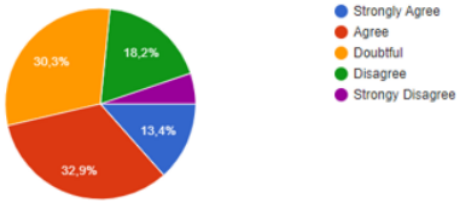

Fig.2. Diagram Of Student Responses To Questions 1

from the diagram above, it can be seen that the total number of students who gave responses agreeing with strongly agreeing was as much as 46.3 %, and quite a lot of people who gave a doubtful response, namely as much as 30.3 %

2. Question 2: I've seen a Virtual Reality (VR) Laboratory in person. The summary of student responses is presented in the diagram an Fig 3 below

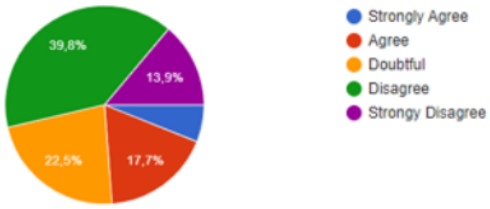

Fig.3. Diagram Of Student Responses To Question 2

3. Question 3: I've seen a Virtual Reality (VR) Laboratory through social media. The summary of student responses is presented in the diagram in Fig 4 below

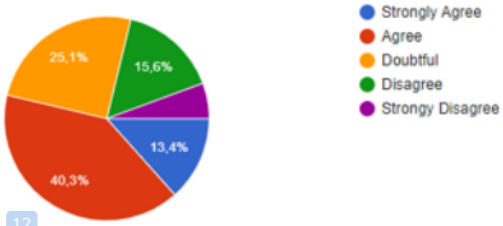

Fig.4. Diagram Of Student Responses To Question 3

4. Question 4: I have used a virtual reality (VR) laboratory at school. The summary of student responses is presented in the diagram in Fig 5 below

\

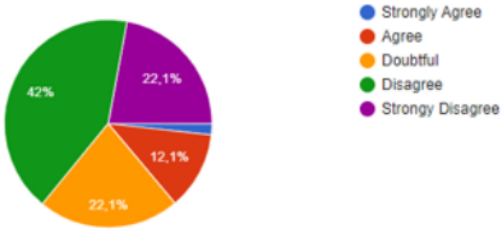

Fig.5. Diagram Of Student Responses To Question 4

5. Question 5: I have used a Virtual Reality (VR) Laboratory. The summary of student responses is presented in the diagram in Fig 6 below

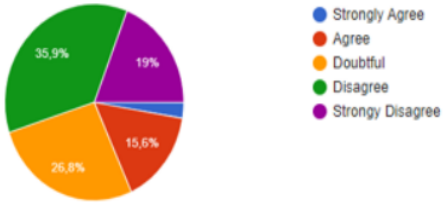

Fig.6. Diagram Of Student Responses To Question 5

6. Question 6: Virtual Reality (VR) Labs are exciting. The summary of student responses is presented in the diagram in Fig 7 below

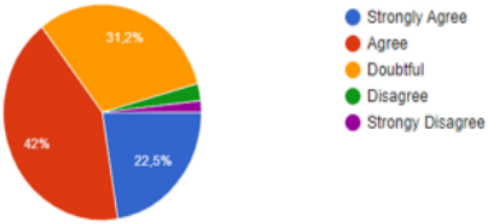

Fig.7. Diagram Of Student Responses To Question 6

7. Question 7: Using the Virtual Reality (VR) Laboratory can increase my interest in learning. The summary of student responses is presented in the diagram in Fig 8 below

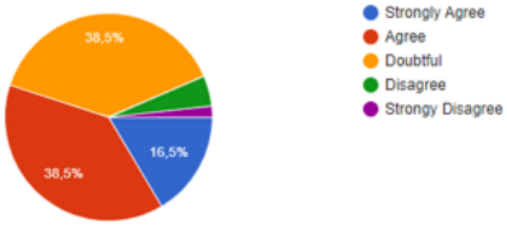

Fig.8. Diagram Of Student Responses To Question 7

8. Question 8: Virtual Reality (VR) Laboratory can add insight and knowledge to me. The summary of student responses is presented in the diagram in Fig 9 below

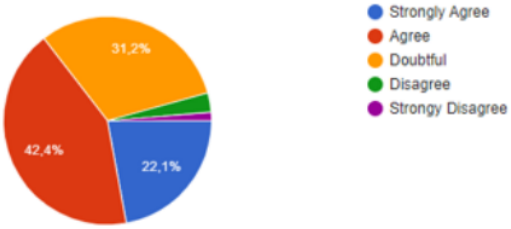

Fig.9. Diagram Of Student Responses To Question 8

9. Question 9: Virtual Reality (VR) Laboratory is a learning medium that is easy to use. The summary of student responses is presented in the diagram in Fig 10 below

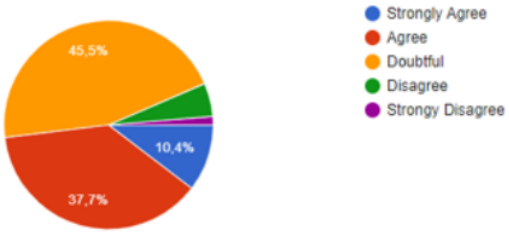

Fig.10. Diagram Of Student Responses To Question 9

10. Question 10: The Learning Model of the Virtual Reality (VR) Laboratory can make it easier for me to understand the concept of learning at school. The summary of student responses is presented in the diagram in Fig 11 below

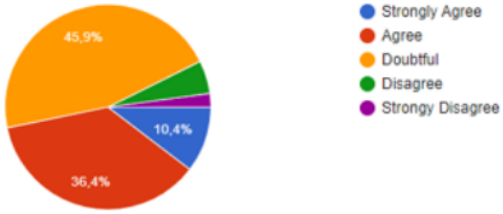

Fig.11. Diagram Of Student Responses To Question 10

11. Question 11: I often looser formation about Virtual Reality (VR) Laboratories. The summary of student responses is presented in the diagram in Fig 12 below

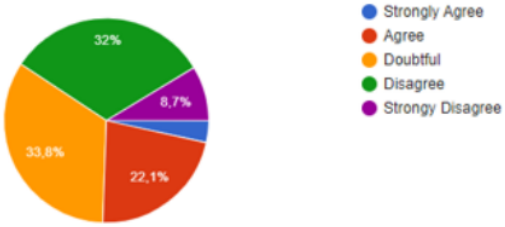

Fig.12. Diagram Of Student Responses To Question 11

12. Question 12: I have a high h curiosity about Virtual Reality (VR) Laboratories. The summary of student responses is presented in the diagram in Fig 13 below

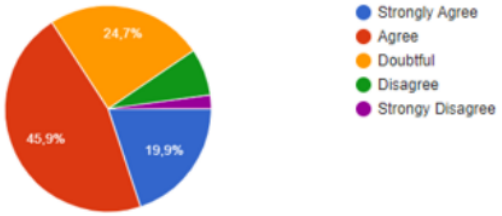

Fig.13. Diagram Of Student Responses To Question 12

13. Question 13: I am more focused on carrying out practicums and can take advantage of the Virtual Reality (VR). The summary of student responses is presented in the diagram in Fig 14 below

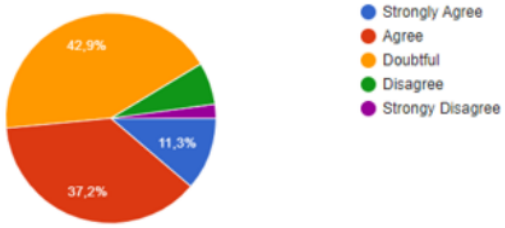

Fig.14. Diagram Of Student Responses To Question 13

14. Question 14: I don't want any distractions when doing practicum using the Virtual Reality (VR) Laboratory. The summary of student responses is presented in the diagram in Fig 15 below

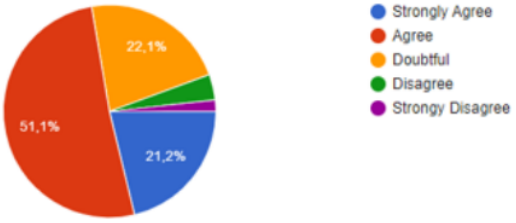

Fig.15. Diagram Of Student Responses To Question 14

15. Question 15: I am very serious when about practicums using the Virtual Reality (VR) Laboratory. The summary of student responses is presented in the diagram in Fig 16 below

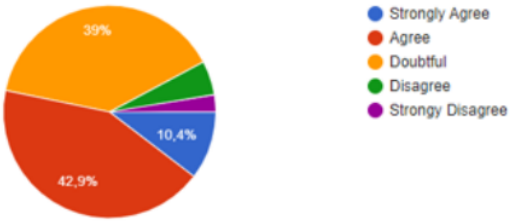

Fig.16. Diagram Of Student Responses To Question 15

IV. Discussion

Data Analysis

From student responses, tabulation is then carried out, then proceed with statistical data processing to see tests of different perceptions of male students and female students regarding the use of virtual reality laboratories. The results of statistical tests on the respondent's data are as presented in the following table of different test results for aall of question The results of the statistical analysis of student response data are shown in table 1 and table 2 below:

Table 1. Descriptive statistical test results

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
Score	Male	75	3.36	.70791	.08174
	Female	75	2.37	.52056	.06011

Table 2. Independent Samples Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Score	Equal variances assumed	4.304	.040	-.083	148	.934	-.00840	.10146	-.20890	.19210
	Equal variances not assumed			-.083	135.923	.934	-.00840	.10146	-.20905	.19225

From the results of statistical tests, it was obtained data with a sig two-tailed value of 0.934 which means greater than 0.05 (Sig value > 0.05); it can be stated that there are significant differences in the perceptions of men and women about the use of virtual reality laboratories. This is reinforced by the acquisition of an average score of male respondents 3.36 and an average of 2.37 for women (meaning that men's perceptions of using virtual reality laboratories are more favorable than women's perceptions of using virtual reality laboratories). From the data obtained by the standard deviation rate, it can be seen that the standard deviation of male student responses (0.71) is greater than the standard deviation of female responses (0.52), which means that female responses are almost even and the same response. This is in line with more men who like to play games than women.

IV. Conclusion

From the results of research on the analysis of gender-based differences in students' perceptions of the use of virtual reality laboratories, it can be concluded that: there are significant differences between male and female perceptions of the use of virtual reality laboratories, which can be seen from the acquisition of a two-tailed significance value of 0.934 > Sig 0.05. Significant differences in perceptions between women and men regarding the implementation of the VR laboratory are increasingly evident from the average score of men's answers (mean score is 3.36), which is greater than the average score of women's answers (mean score of 2.37). This means that men's perceptions of the implementation of the VR laboratory are more positive or more acceptable than women's.

References

[1]. Georgiou, J., Dimitropoulos, K., & Manitsaris, A. (2007). A virtual reality laboratory for distance education in chemistry. International Journal of Social Sciences, 2(1), 34-41.
[2]. Reeves, S. M., Crippen, K. J., & McCray, E. D. (2021). The varied experience of undergraduate students learning chemistry in virtual reality laboratories. Computers & Education, 175, 104320.
[3]. Janonis, A., Kiudys, E., Girdžiūna, M., Blažauskas, T., Paulauskas, L., & Andrejevas, A. (2020, October). Escape the lab: Chemical experiments in virtual reality. In International Conference on Information and Software Technologies (pp. 273-282). Springer, Cham.
[4]. Su, C. H., & Cheng, T. W. (2019). A sustainability innovation experiential learning model for virtual reality chemistry laboratory: An empirical study with PLS-SEM and IPMA. Sustainability, 11(4), 1027.
[5]. Ferrell, J. B., Campbell, J. P., McCarthy, D. R., McKay, K. T., Hensinger, M., Srinivasan, R., ... & Schneebeli, S. T. (2019). Chemical exploration with virtual reality in organic teaching laboratories. Journal of Chemical Education, 96(9), 1961-1966.
[6]. Dunnagan, C. L., Dannenberg, D. A., Cuales, M. P., Earnest, A. D., Gurnsey, R. M., & Gallardo-Williams, M. T. (2019). Production and evaluation of a realistic immersive virtual reality organic chemistry laboratory experience: infrared spectroscopy.
[7]. Agbonifo, O. C., Sarumi, O. A., & Akinola, Y. M. (2020). A chemistry laboratory platform enhanced with virtual reality for students' adaptive learning. Research in Learning Technology, 28..
[8]. organic chemistry laboratories. Journal of Chemical Education, 97(9), 3060-3063.
[9]. Morozov, M., Tanakov, A., Gerasimov, A., Bystrov, D., & Cvirco, E. (2004, August). Virtual chemistry laboratory for school education. In IEEE International Conference on Advanced Learning Technologies, 2004. Proceedings. (pp. 605-608). IEEE.
[10]. Williams, N. D., Gallardo-Williams, M. T., Griffith, E. H., & Bretz, S. L. (2021). Investigating Meaningful Learning in Virtual Reality Organic Chemistry Laboratories. Journal of Chemical Education, 99(2), 1100-1105.
[11]. Broyer, R. M., Miller, K., Ramachandran, S., Fu, S., Howell, K., & Cutchin, S. (2020). Using virtual reality to demonstrate glove hygiene in introductory chemistry laboratories.
[12]. Ali, N., Ullah, S., Rabbi, I., & Alam, A. (2014, September). The effect of multimodal virtual chemistry laboratory on students' learning improvement. In International conference on augmented and virtual reality (pp. 65-76). Springer, Cham..
[13]. Lu, Y., Xu, Y., & Zhu, X. (2021). Designing and Implementing VR2E2C, a Virtual Reality Remote Education for Experimental Chemistry System.
[14]. Ramírez, J. Á., & Bueno, A. M. V. (2020, October). Learning organic chemistry with virtual reality. In 2020 IEEE International Conference on Engineering Veracruz (ICEV) (pp. 1-4). IEEE.
[15]. Tüysüz, C. (2010). The Effect of the Virtual Laboratory on Students' Achievement and Attitude in Chemistry. International Online Journal of Educational Sciences, 2(1).
[16]. Lau, K. W., Kan, C. W., & Lee, P. Y. (2017). Doing textiles experiments in game-based virtual reality: A design of the Stereoscopic Chemical Laboratory (SCL) for textiles education. The International Journal of Information and Learning Technology.
[17]. Herga, N. R., Čagran, B., & Dinevski, D. (2016). Virtual laboratory in the role of dynamic visualisation for better understanding of chemistry in primary school. Eurasia Journal of Mathematics, Science and Technology Education, 12(3), 593-608.
[18]. Amador, C., Liu, F. W., Johnson-Glenberg, M. C., & LiKamWa, R. (2020, June). Work-in-Progress—Titration Experiment: Virtual Reality Chemistry Lab with Haptic Burette. In 2020 6th International Conference of the Immersive Learning Research Network (iLRN) (pp. 363-365). IEEE.
[19]. T. Andronikos, A. Sirokofskich, K. Kastampolidou, M. Varvouzou, K. Giannakis and A. Singh, "Finite Automata Capturing Winning Sequences for All Possible Variants of the PQ Penny Flip Game," Mathematics, vol. 6, no. 2, p. 20, 2018.
[20]. M. Utesch, A. Hauer, R. Heininger and H. Krcmar, "The Finite State Trading Game: Developing a Serious Game to teach the Application of Finite State Machines in a Stock Trading Scenario," in REV2017 – 14th International Conference on Remote Engineering and Virtual Instrumentation, 2018.
[21]. Maksimenko, N., Okolzina, A., Vlasova, A., Tracey, C., & Kurushkin, M. (2021). Introducing atomic structure to first-year undergraduate chemistry students with an immersive virtual reality experience.
[22]. R. D. Hun and J. Y. Kook, game system and method of implementing artificial intelligence of game character by user setting, 2018.
[23]. M. Hulden, Finite-State Technology, 2018.
[24]. M. Kopel and T. Hajas, "Implementing AI for Non-player Characters in 3D Video Games," in Asian Conference on Intelligent Information and Database Systems, 2018.
[25]. M. S. El-Nasr, A. Drachen and A. Canossa, Game Analytics : Maximizing the Value of Player Data, 2013.
[26]. N. Shaker, J. Togelius and M. J. Nelson, Procedural Content Generation in Games, 2016.

[27]. D. Mackay, Multimedia Environmental Models: The Fugacity Approach, 2020.
[28]. R. Drner, S. Gbel, W. Effelsberg and J. Wiemeyer, Serious Games: Foundations, Concepts and Practice, 2016.
[29]. J.S. Surung, I. Agung Bayupati and G. Agung Ayu Putri, "The Implementation Of ERP In Supply Chain Management On Conventional Woven Fabric Business", International Journal of Information Engineering and Electronic Business, vol. 12, no. 3, pp. 8-18, 2020. Available: 10.5815/ijieeb.2020.03.02.

Leony Sanga Lamsari Purba (Analysis Of Students' Perceptions Of Differences Based On Gender In The Use Of Virtual Reality Laboratories)

ORIGINALITY REPORT

17%	11%	7%	4%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Krista Brucker, Nash Whitaker, Zachary S. Morgan, Katie Pettit, Erynn Thinnes, Alison M. Banta, Megan M. Palmer. "Exploring Gender Bias in Nursing Evaluations of Emergency Medicine Residents", Academic Emergency Medicine, 2019 Publication	3%
2	www.atlantis-press.com Internet Source	2%
3	Submitted to Tarumanagara University Student Paper	2%
4	jurnal.univpgri-palembang.ac.id Internet Source	2%
5	garuda.kemdikbud.go.id Internet Source	1%
6	repository.iainkediri.ac.id Internet Source	1%

Submitted to Wawasan Open University

7	Student Paper	1 %
8	ijer.ftk.uinjambi.ac.id Internet Source	1 %
9	docplayer.net Internet Source	1 %
10	lcu.edu.ng Internet Source	1 %
11	Almer Gungor, Denise Kool, May Lee, Lucy Avraamidou et al. "The Use of Virtual Reality in A Chemistry Lab and Its Impact on Students' Self-Efficacy, Interest, Self-Concept and Laboratory Anxiety", Eurasia Journal of Mathematics, Science and Technology Education, 2022 Publication	1 %
12	"Mobility for Smart Cities and Regional Development - Challenges for Higher Education", Springer Science and Business Media LLC, 2022 Publication	1 %
13	ijashss.com Internet Source	1 %

Exclude quotes	On	Exclude matches	< 1%

Exclude bibliography On