



Development of Virtual Reality-Based Learning Media Tefa SMUD'S In Improving Public Speaking Skills at SMK Muhammadiyah 2 Malang

Nurul Aida Ramadhani¹, Nurul Zuriah², Moh. Mahfud Effendi³

¹Master of Pedagogy, University of Muhammadiyah Malang, Indonesia

^{2,3}University of Muhammadiyah Malang, East Java, Indonesia

ABSTRACT

Published Online: June 23, 2025

The purpose of this study is to develop Virtual Reality-based learning media in improving public speaking skills at SMK Muhammadiyah 2 Malang. This research and development resulted in Virtual Reality (VR)-based learning media at Tefa Smuds, which is designed to improve students' public speaking skills at SMK Muhammadiyah 2 Malang. This media is implemented in the business management department, which consists of three concentrations of expertise: Office Management and Business Services, Institutional Financial Accounting, and Retail Business. This VR media allows students to experience a simulation of a virtual environment that resembles SMUD'S Mart, as well as face cases that hone public speaking skills. The development model used is the ADDIE model which has 5 stages, namely Analyze, Design, Development, Implementation and Evaluation. The trial subjects were 54 students at SMK Muhammadiyah 2 Malang, the analysis used quantitative and qualitative data. Product validation was carried out by 6 practitioners and academics who obtained results above 90% (very feasible) with the results of the normality test showing normally distributed data (pretest significance value 0.412 and posttest 0.172). In addition, the Paired T-test produced a significance value of 0 (below 0.05), indicating a significant improvement in students' public speaking skills after the use of VR media. These results indicate the effectiveness of Tefa Smuds VR media as an innovative learning tool to develop students' communication skills at SMK Muhammadiyah 2 Malang.

KEYWORDS:

Public Speaking,
Virtual Reality,
Learning Media

1. INTRODUCTION

The development of technology or media is one of the fields that has a considerable role in the development of education in Indonesia. Maryunita, (2017) said that since childhood they have been familiar with technology and are familiar with sophisticated gadgets so that it will indirectly affect their personality. Technology can improve quality when used in the world of education and student training. Therefore, it is hoped that all teachers and lecturers will be able to utilize technology to support their teaching and maximize learning activities such as: Creating intermediaries that can be used as learning resources anytime and anywhere. Therefore, the presence of learning media is expected to complement and improve the quality of teaching and learning activities.

Corresponding Author: Nurul Aida Ramadhani

***Cite this Article: Nurul Aida Ramadhani, Nurul Zuriah, Moh. Mahfud Effendi (2025). Development of Virtual Reality-Based Learning Media Tefa SMUD'S In Improving Public Speaking Skills at SMK Muhammadiyah 2 Malang. International Journal of Social Science and Education Research Studies, 5(6), 633-640**

Virtual reality technology is used in a variety of industries including manufacturing, education, healthcare, aviation, and gaming. Virtual reality is a technology that refers to simulations that can be created using computer processes. VR is one of the many technologies that are quite promising, VR innovation can help improve the performance and also the quality of product (Setiawan Riyadi & Munengsih Sari Bunga products, (2017)). Virtual Reality is able to transform users as if they leave the real world and enter several places in the virtual world. One of the advantages of Virtual Reality is that users can experiment with artificial environments that seem to be real. With this Virtual Reality technology, it is hoped that it can streamline time and make it easier for students to be able to explore the existing situation.

The use of Virtual Reality media in the world of education has opportunities to improve students' public speaking skills. VR designed in such a way is expected to increase innovation in student development. Ifanov et al (2023) stated that virtual reality is able to create immersion for its users that makes them feel as if they are really in the simulated reality. Students

Nurul, A.R. et al, Development of Virtual Reality-Based Learning Media Tefa SMUD'S In Improving Public Speaking Skills at SMK Muhammadiyah 2 Malang

are invited to enter the meeting room in which there are several customers so that they are expected to enter the atmosphere of the meeting. Educational media that utilizes the usefulness of Virtual Reality technology has unique things that can increase interest when used and can stimulate students to be more interested in the discussion of the material provided. So that not only public speaking skills increase, but also increase students' motivation to learn. Creating VR-based content requires knowledge of laptop specifications and programming languages, which can be very difficult for teachers to understand. One platform that helps teachers develop VR-based content is Millealab. (A I Agusty, 2020). Muhammadiyah 2 Vocational High School (SMK) Malang is one of Muhammadiyah's charitable institutions engaged in education. This vocational school is located on Jl. Baiduri Sepah Number 27, Lowokwaru District, Malang City. Based on the initial study, SMK Muhammadiyah 2 Malang is a SMK PK (Center of Excellence). Based on an interview that has been conducted with the Chairman of the Special Job Exchange of SMK Muhammadiyah 2 Malang in January 2024, several agencies are still complaining about the public speaking skills possessed by students, so that this has an impact on the lack of absorption of existing graduates to be withdrawn to the industry. The amount of input provided by school partner agencies requires every teacher to always hone public speaking skills in students. In fact, Brewer (2001) found that problems related to fear in public speaking are a problem that is often encountered in students in America. Thus the researcher also conducted an interview to be able to draw conclusions about the problems that can be overcome, the researcher conducted an interview with the Principal of SMK Muhammadiyah 2 Malang that vocational school graduates are expected to be able to work and be absorbed in the industry to the maximum. However, with these problems, it is hoped that there will be educators who can maximize students' abilities in public speaking skills. With the facilities from the school, namely VR (Virtual Reality), the reality in the field is still minimal that can maximize these facilities. So that researchers are given full assistance for the development of the media which is expected to be useful for students so as to improve students' public speaking skills and have an impact on the number of students who can be absorbed in the industrial world

Based on the background of the problems described above, the researcher is interested in conducting a research entitled "Development of VR-Based Learning Media (Virtual Reality) to Improve Public Speaking Skills at SMK Muhammadiyah 2 Malang"

The first previous research that is relevant to this study is a study from Sifa' et al., (2019) entitled Development of Virtual Reality (VR)-Based Learning Media on Circulatory System Materials. With the results of validation by media experts getting a score with a percentage of 90.91% and validation by material experts getting a score with a percentage of 95.24%,

which means it is very valid. The product trial with a sample of 14 people, got a score with a percentage of 86.20% (very valid), while the use trial was carried out with a sample of 18 people got a score with a percentage of 85.10% (very valid). From the results of this trial, it can be interpreted that this learning media is very feasible and can be implemented into actual learning.

The second is research from A I Agusty, (2020) entitled Millealab Virtual Reality-Based Learning Media to Teach Global Warming Topics. With the results that Millealab as a physics learning medium can provide a sensation that is in accordance with the meaning of VR, which can represent the world of imagination as it is. Better practice and ideas are needed to be able to present VR content using Millealab properly so that students can have a good understanding and understanding of the concept of global warming so that they can help prevent the issue of global warming.

Third, namely research from Jasuli & Fitriani, (2018) entitled Development of Public Speaking Learning Media Based on Virtual Reality (VR) Technology in IKIP Budi Utomo Malang Students. As a result, this VR technology-based media produces HD resolution video quality and allows student users to use this media independently. The limitation of this study is that it was not tested on the research subject due to failure in the field.

The theory that audiovisuals can improve speech skills and help individuals to obtain richer and deeper learning experiences is put forward by (Kolb, David 1984) entitled *Experiential Learning Experience As The Source Of Learning And Development*.

Some of the similarities in similar research can be concluded that the results of the three studies that have been mentioned are: First, the implementation and interest of respondents in Virtual Reality learning media is higher so that it can improve learning outcomes. Second, there is a sensation that is in accordance with the purpose of Virtual Reality media, which is to make it a real or real environment, so that students can have a better understanding and interest in the material being taught. In addition to the similarities that have been explained, there are differences that can be seen from each of the studies that have been carried out. There are differences in satisfaction from respondents, to learning outcomes and motivation generated by utilizing the media used.

II. METHODS

The type of research used in this research is the ADDIE Model. This Development Model was developed by Dick and Carry (Analysis, Design, Development or Production, Implementation, Evaluation). The method used is a process or step taken to develop a product that has novel value or improve a product that has existed before by using the latest innovations that can be accounted for by the researcher. In order to hopefully later the research and development carried out can produce a product that can be used in research that is

Nurul, A.R. et al, Development of Virtual Reality-Based Learning Media Tefa SMUD'S In Improving Public Speaking Skills at SMK Muhammadiyah 2 Malang

a needs analysis, and can test the effectiveness of a research and development that focuses on testing the effectiveness of a product or innovation that has been carried out.

To obtain accurate research results and data, the selected research subjects can also be adjusted to the needs and objectives of the research, the research subjects are students of SMK Muhammadiyah 2 Malang, especially majoring in Business Management (Office Management, Retail Business) which totals 54 students. The data taken came from field notes, questionnaires or questionnaires, photo documentation, interviews and several literature related to this research and development.

The stages contained in the development of Virtual Reality-based learning media to improve public speaking skills can be explained as follows:

a. Analysis

The first step taken by the researcher in making this development is to conduct an interview with the head of BKK (Special Job Exchange) which handles the problems of students when carrying out Field Work Practice (PKL). During the interview, it was found that many industries still complain about students' public speaking skills when making presentations in front of consumers. This has a great impact on the absorption of students, especially vocational school graduates. Vocational school graduates are expected to be accepted for employment even before graduation, with this problem many industries still have to weigh the public speaking skills possessed by students.

b. Design

The product design stage is where a researcher will start designing learning media in the form of Virtual Reality that will be used in the product. The concepts that will be created and designed by the researcher to produce a media that suits the needs of the students. The software used in designing learning media is using Vintero VR. The design of a product must be realized in the form of a rough sketch or rough description of the product to be made, so that later it can be used as a handle to assess and make it easier for other parties to understand the design concept to be used. A learning media design used must include learning objectives and research objectives. Therefore, at this stage of product design, extra focus is needed to be able to produce an appropriate product design. As for the creation of learning media design using Vinter VR with the following appearance:

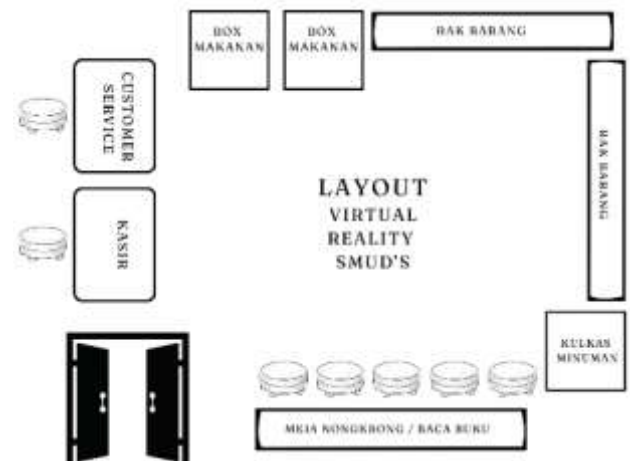


Fig 3. 1 Design Layout Virtual Reality before development

c. Development

After the product design is validated by academics and practitioners, it can be known by the researcher where the weak points in the design and product being developed are. From the weaknesses obtained, the researcher will make revisions that are adjusted to criticism and suggestions from academics and practitioners amounting to 3 each. For the future, it can be tested or implemented

d. Implementation

At this implementation stage, the researcher will conduct a trial on students. Before conducting the trial, the researcher will validate the design to practitioners and academics to subsequently be given revisions to the design that has been made. Small group and large group trials. The trial was carried out on students majoring in Business Management of SMK Muhammadiyah 2 Malang, consisting of 54 students in class XI. Of these 54 students, they have the same ability. As for the large group, the trial was carried out by the Management Business class.

e. Evaluation

At this evaluation stage, the researcher will collect existing data, so that it can be compared with the results of the evaluation of the use of Virtual Reality learning media that has been carried out.

III. RESULTS

1. Product Description of Development Results

The results of research and development activities carried out by the researcher are in the form of Virtual Reality (VR) Tefa Smuds-based learning media, which has a purpose, namely to improve the public speaking skills of students of SMK Muhammadiyah 2 Malang. As for the background, students' public speaking skills still need to be honed so that later when participating in the Field Work Practice program, it can be done optimally. This learning

Nurul, A.R. et al, Development of Virtual Reality-Based Learning Media Tefa SMUD'S In Improving Public Speaking Skills at SMK Muhammadiyah 2 Malang

media is implemented in the business management department. Which business management includes 3 concentrations of expertise, namely; Office Management and Business Services, Institutional Financial Accounting, and Retail Business. The development of this Virtual Reality-based learning media can be used as a new product and tested for the effectiveness of the development that has been developed.

Virtual Reality-Based Learning Media can be accessed through VR that has been owned by SMK Muhammadiyah, which later students will feel in a real virtual environment so that it is the same as what is in SMUD'S Mart. The use of this media can help teachers who are currently worried about the public speaking skills possessed by students. Teachers can provide cases that students will solve through existing Virtual Reality. The validity of this learning media development product will be validated by 6 validators, consisting of; 3 academics and 3 practitioners. From the validator, criticism and suggestions will be obtained that will be used as reference materials in improving the products that have been developed at SMK Muhammadiyah 2 Malang.

The initial appearance and steps in the development of this virtual reality-based learning media can be seen in figures 4.1 to 4.7

1. Students are given a briefing to turn on VR and access the Vinterovr website



Figure 4.1
Students turn on according to the button circled in red

2. After that, students select "Stationary" to access Virtual Reality and create a circle around them.



Figure 4.2
Create a vr usage arena by selecting the stationary option to form a circle in the place where you want to use vr

3. The Virtual Reality display that students encounter is as follows, just like the display on a laptop, after which they can access the VR website.



Figure 4.3
Select Menu in the right corner of the home screen button bar, then open a browser and it will access the web media developed.

4. The display menu that students will encounter can be accessed through the teacher's mobile phone or tablet, so that students can monitor what they are doing



Figure 4.4
Click the search bar, then type <https://app.vinterovr.com/tour/smdsmarket> to open 360 virtual tours that have been made. Click the search bar, type app.vinterovr.com then enter to go to the vinterovr editor

5. After being able to access the website directed to enter their password. All passwords have been set so that they will not be entered one by one. Students can directly press the Log In menu to access the media used.



Figure 4.5
Log in with the account that has been provided by vinterovr. The password has been set so that students only press the Log In menu.

6. Next, you will press the play button in the upper right corner, and you can find out how the virtual environment of SMUD'S Mart is in VR and the cases in it.



Figure 4.5
Students can press the play button and encounter many cases in it

7. After that, students can find the display below and solve the cases in it. So that they no longer need to go to the location, with the existence of a virtual environment they can find out the reality in the field in real life.



2. Data Presentation and Analysis

The presentation and analysis of data results from the validation of expert practitioners and academics as well as the results of trial data on research subjects will be discussed in the following sub-chapters. In addition to the results of improving the public speaking ability of students of SMK Muhammadiyah 2 Malang, it will also be discussed. The instrument for measuring student learning outcomes will be measured through the results of the Pretest and Posttest on each student so that the accuracy and validity of the data obtained can be known. And a student response questionnaire will be distributed to find out how this learning media is implemented in public speaking learning. The following data and their analysis are presented in each section according to the research.

3. Validation and Trial Result Data

The validation data obtained from 6 validators consisted of; 3 academic validates, and 3 practitioner validations. And the data from the Virtual Reality learning media trial are students of class XI of the Department of Business Management, Concentration of Office Management and Business Services Expertise, Financial Accounting Institutions and Retail Business of SMK Muhammadiyah 2 Malang. This data is used to determine the feasibility of the learning media that has been developed.

a) Quantitative Data

This quantitative data is obtained from the scores that have been filled in on the questionnaire that has been given to experts, practitioners and academics as validators. The validation results can be seen in Table 4.1 below.

Table 4.1 Expert Validators, Practitioners and Academics

Na me	Valid ator	Ide al Sco re	Actual Score	Percen tage figures	Category
V1	Acade mics	120	115	95.8 %	Very worthy
V2	Acade mics	120	115	95.8 %	Very worthy
V3	Acade mics	120	114	95.0 %	Very worthy

V4	Practit ioners	120	117	97.5 %	Very worthy
V5	Practit ioners	120	115	95.8 %	Very worthy
V6	Practit ioners	120	113	93.3 %	Very worthy

Based on the data obtained from the results of validation by experts, practitioners and academics that have been processed in table 4.1, it can be seen that the maximum score of each question indicator given is 4. The percentage results obtained in the data analysis are 95.5%, so it can be concluded that the Virtual Reality-based learning media that has been developed by this researcher is declared to be very valid/feasible to use, effective, and practical, and can be used but there needs to be a small revision for the improvement of the media.

b) Qualitative data

Qualitative data on research and development is obtained from criticisms and suggestions that have been given by experts, practitioners and academics as validators. The results of this qualitative data can be used as a reference for researchers in revising products before being tested on grade XI students of the Department of Business Management which includes Office Management and Business Services, Institutional Financial Accounting and Retail Business. SMK Muhammadiyah 2 Malang.

4. Public Speaking Assessment Data for Small and Large Group Students

The data on students' learning outcomes before being tested in large groups will be tested in small groups first, where in this small group trial in each department will be sampled to further test whether there is an improvement in public speaking skills in class XI of the Department of Business Management which includes Office Management and Business Services, Institutional Financial Accounting and Retail Business at SMK Muhammadiyah 2 Malang.

a. Normality test result

This stage is carried out to find out whether the research data is normally distributed or not. The normality test uses the Kolmogorov-Smirnov test method with SPSS with the following conditions:

- If the significance value (sig) ≥ 0.05 , then the data is normally distributed..
- If the significance value (sig) ≤ 0.05 , then the data is abnormally distributed.

		Pretest_ Public_ Speaking	Posttest_ Public_ Speaking
N		44	44
Normal Parameters ^a	Mean	39.6364	71.7045
	Std. Deviation	2.83738	3.49471
Most Extreme Differences	Absolute	.134	.167
	Positive	.134	.167
	Negative	-.123	-.145
Kolmogorov-Smirnov Z		.886	1.107
Asymp. Sig. (2-tailed)		.412	.172

a. Test distribution is Normal.

Based on the table mentioned above, both pretest and posttest have a significance of 0.412 and 0.172, respectively, so that both have a value of > 0.05 and mean that the data is normally distributed

b. Paired T-test results

If in the normality test it is known that the data is normally distributed, then a paired t-test can be conducted with the aim of finding out the difference in the level of students' public speaking ability before the development of learning media and after the development of aerta to test the average difference between two paired samples. The paired t-test was carried out to test whether there was a difference in the mean by using the SPSS as follows:

Paired Samples Test								
	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Pretest_Public_Speaking - Posttest_Public_Speaking	-3.20821	5.05983	.78277	-4.68845	-1.72797	-4.042	43	.000

Based on the table mentioned above, it can be seen that the significance is 0 which means < 0.05 which means that there is a significant difference between the pretest and posttest public speaking.

IV. DISSCUSION

The results of the research and development of the Virtual Reality (VR)-based learning media to improve students' public speaking skills at SMK Muhammadiyah 2 Malang demonstrated highly positive outcomes, both in terms of media validation and student learning improvement. This section discusses the connection between the applied methods, the outcomes obtained, and their implications for improving the quality of vocational education.

1. Media Validation by Experts and Practitioners

The learning media developed was validated by six experts, consisting of three academic experts and three industry practitioners. The validation results indicated that the media was highly feasible, with an average feasibility percentage of **95.5%**. All validators classified the media as "**very feasible**" for use in the learning process.

This finding indicates that the VR-based learning media meets both pedagogical and practical standards. The strong validation results from both academics and practitioners prove that the content is not only accurate and relevant but

also practically applicable within the context of vocational education.

2. Media Trial and Effectiveness

Following validation, the media was tested on Grade XI students from the three areas of expertise within the Business Management Department: Office Management and Business Services, Institutional Financial Accounting, and Retail Business. This testing was conducted through both small-group and large-group trials.

A normality test using the **Kolmogorov-Smirnov** method confirmed that both pretest and posttest data were normally distributed (significance values > 0.05). Therefore, a **Paired Sample T-Test** was performed to analyze the difference in students' public speaking performance before and after using the VR learning media.

The results of the t-test revealed a significance value of **0.000** (< 0.05), indicating a statistically significant difference between pretest and posttest scores. This confirms that the use of the VR-based media had a **positive and significant impact** on improving students' public speaking skills.

3 Student Feedback Analysis

In addition to quantitative data, qualitative data were collected through a student response questionnaire. The results reflected a high level of interest and enthusiasm for the VR-based learning media. Students reported that the learning experience felt more realistic, engaging, and interactive. These findings strengthen the argument that the integration of immersive technology like VR enhances learning motivation and student engagement.

4 Implications for VR Use in Vocational Learning

This research contributes significantly to the development of instructional media in vocational education. The VR media not only simulates real-life scenarios, such as those experienced in SMUD'S Mart, but also supports teachers in delivering more contextual and applicable material particularly in enhancing essential soft skills like public speaking.

Furthermore, the media can serve as a solution to teachers' concerns about students' lack of readiness for workplace environments, especially regarding the Field Work Practice (PKL) program. By providing experiential and simulated learning, students become more confident and better prepared both mentally and skill-wise for real-world challenges.

V. CONCLUSION

The development of learning media based on Virtual Reality TEFA SMUDS in Improving Public Speaking Ability at SMK Muhammadiyah 2 Malang has been developed using the ADDIE (Analysis, Design, Development, Implementation, Evaluation) method. From the data that has been obtained in the field and data analysis is carried out, it is concluded that there is an improvement in public speaking skills by using the Virtual Reality-based learning media that has been developed. Accompanied by validators, practitioners and

Nurul, A.R. et al, Development of Virtual Reality-Based Learning Media Tefa SMUD'S In Improving Public Speaking Skills at SMK Muhammadiyah 2 Malang

academics, the media made has met the criteria for feasibility and can be implemented on students, especially Class XI of the Department of Business Management which includes 3 Concentrations of Expertise, namely Office Management and Business Services, Institutional Financial Accounting, and Retail Business.

The results of the implementation of the development of virtual reality-based learning media were obtained that there was a significant improvement in the ability of public speaking pretest and posttest reviewed from the average score obtained by students. Suggestions placed after the conclusion contain recommendations about the research conducted or inputs that can be used directly.

REFERENCES

1. A I Agusty. (2020). *Millealab Media Pembelajaran Fisika Berbasis Virtual Reality untuk Mengajarkan Topik Pemanasan Global*.
2. Antoni Musril, H., & Hurrahman, M. (2020a). *Implementasi Teknologi Virtual Reality Pada Media Pembelajaran Perakitan Komputer* (Vol. 9, Issue 1).
3. Antoni Musril, H., & Hurrahman, M. (2020b). *Implementasi Teknologi Virtual Reality Pada Media Pembelajaran Perakitan Komputer* (Vol. 9, Issue 1).
4. Arsyad. (2002). *Media Pembelajaran*.
5. Artikel Abstrak, I., & Pendidikan Dasar, A. (2018). *Media Virtual Reality Tata Surya untuk Meningkatkan Kemampuan Retensi*. <http://journal.um.ac.id/index.php/jptpp/>
6. Dellia, P., & Jami'ul Amil, A. (2021a). *Pengembangan Media Virtual Reality Tentang Perkapalan Dan Strategi Peperangan Laut Dalam Cerita Rakyat Jokotole Pada Pembelajaran Bahasa Indonesia SMP Negeri 1 Pasean Pamekasan*. In *Jurnal Ilmiah Edutic* (Vol. 7, Issue 2).
7. Dellia, P., & Jami'ul Amil, A. (2021b). *Pengembangan Media Virtual Reality Tentang Perkapalan Dan Strategi Peperangan Laut Dalam Cerita Rakyat Jokotole Pada Pembelajaran Bahasa Indonesia SMP Negeri 1 Pasean Pamekasan*. In *Jurnal Ilmiah Edutic* (Vol. 7, Issue 2).
8. Elisa, E., Nyoman, I., & Nugraha, P. (2023). *Pengembangan Media Pembelajaran Virtual Reality Materi Pengujian Korosi untuk Meningkatkan Keterampilan Proses Sains Mahasiswa Development of Virtual Reality Learning Media for Corrosion Testing Materials to Improve Students' Science Process Skills*. *Journal of The Indonesian Society of Integrated Chemistry*, 15(1). <https://doi.org/10.22437/jisic.v15i1.14741>
9. Febriana, D., Asih, I. V., Subhan Pamungkas, A., Sultan Ageng Tirtayasa, U., Raya Palka No Km, J., Cipocok Jaya, K., & Serang, K. (2023). *Pengembangan Media Media Pembelajaran Virtual Reality Berbantu Millea Lab Pada Mata Pelajaran Matematika di Sekolah Dasar*. In *Jurnal Pendidikan Dasar* (Vol. 11, Issue 2).
10. Jasuli, & Fitriani, E. (2018). *Pengembangan Media Pembelajaran Public Speaking Berbasis Teknologi Virtual Reality (VR) pada Mahasiswa IKIP Budi Utomo Malang*.
11. Pendidikan, J., Biologi, P., Meningkatkan, U., Digital, L., Sumber, S., Pada, B., Pertumbuhan, K., Perkembangan, D., Mahrawi, T., Marianingsih, P., Artdhita, A., Saputro, N. P., & History, A. (2023). *Pengembangan Media Virtual Reality Berbasis Website Budidaya Hidroponik ARTICLE INFO ABSTRAK*. 86. <https://ejournal.unma.ac.id/index.php/bp/>
12. Putra, A., Simamora, P., Made, I., Pradnyana, A., Wayan, P., & Suyasa, A. (2021). *Pengembangan Media Pembelajaran Pengenalan Jenis-Jenis Pekerjaan Berbasis Virtual Reality*. *INSERT: Information System and Emerging Technology Journal*, 2(1).
13. Putri Sundoro, D., & Chendra Wibawa, S. (2019). *Pengembangan Media Pembelajaran Video Interaktif Berbasis Virtual Reality (VR) Pada Mata Pelajaran Komposisi Foto Digital di SMK Kartika 2 Surabaya*.
14. Ramdhan, O., & Ratriana, D. (2017). *Pengembangan Video Pembelajaran Berbasis Virtual Reality Di Sekolah Dasar Islam Multiplus Ar Rahiim*.
15. Setiawan Riyadi, F., & Munengsih Sari Bunga, dan. (2017). *Aplikasi 3D Virtual Reality Sebagai Media Pengenalan Kampus Politeknik Indramayu Berbasis Mobile*. In *Jurnal Informatika dan Komputer* (Vol. 2, Issue 2).
16. Sifa', B., Hasbiyati, H., Afandi, B., Biologi, P., & Islam Jember, U. (2021). *Pengembangan Media Pembelajaran Berbasis Virtual Reality (VR) Pada Materi Sistem Peredaran Darah*. <http://ejurnal.uj.ac.id/index.php/BIO/ar>
17. Supriadi, M., & Hignasari, L. V. (2019a). *Pengembangan Media Pembelajaran Berbasis Virtual Reality Untuk Meningkatkan Hasil Belajar Peserta Didik Sekolah Dasar*. *KOMIK (Konferensi Nasional Teknologi Informasi Dan Komputer)*, 3(1). <https://doi.org/10.30865/komik.v3i1.1662>
18. Supriadi, M., & Hignasari, L. V. (2019b). *Pengembangan Media Virtual Reality Pada Muatan Pelajaran IPA Kelas VI Sekolah Dasar*. *JTP - Jurnal Teknologi Pendidikan*, 21(3), 241–255. <https://doi.org/10.21009/jtp.v21i3.13025>

Nurul, A.R. et al, Development of Virtual Reality-Based Learning Media Tefa SMUD'S In Improving Public Speaking Skills at SMK Muhammadiyah 2 Malang

19. Tarmizi, A. K., Hasbiyati, H., & Hakim, M. (2020). *Pengembangan Media Pembelajaran Berbasis Virtual Reality Pada Mata Kuliah Anatomi dan Fisiologi Manusia Pada Mahasiswa Semester VI Pendidikan Biologi*.
20. Wijatmiko, A., & Prihadi Mahardhika, G. (2022). Rancang Bangun Media Pembelajaran Berbasis Virtual Reality Dengan Pendekatan Metode Scrum. *Jurnal Komtika (Komputasi Dan Informatika)*, 6(2), 91–101. <https://doi.org/10.31603/komtika.v6i2.7927>
21. Wina Sanjaya. (2008). *SMK*.
22. Zaini, T. M., & Wulandari, A. (2020). Media Pembelajaran Pengenalan Fauna Berbasis Virtual Reality. *IJCCS*, x, No.x, 35142.