

**PUBLIKASI ARTIKEL**  
**DEVELOPMENT OF WEB-BASED LEARNING MEDIA ON**  
**CLASS X VIRUS MATERIAL**

**Oleh:**

**Setia Ningsih**

**NPM.2101083003**



**Program Studi Tadris Biologi**  
**Fakultas Tarbiyah dan Ilmu Keguruan**

**INSTITUT AGAMA ISLAM NEGERI METRO (IAIN) METRO LAMPUNG**

**1446 H/2024 M**

**DEVELOPMENT OF WEB-BASED LEARNING MEDIA ON CLASS X  
VIRUS MATERIAL**

Diajukan untuk memenuhi tugas dan memenuhi sebagian syarat memperoleh gelar sarjana pendidikan (S. Pd)

Oleh: Setia Ningsih

NPM. 2101083003

Pembimbing: Tika Mayang Sari, M. Pd

Program Studi Tadris Biologi Fakultas Tarbiyah dan Ilmu Keguruan

**INSTITUT AGAMA ISLAM NEGERI METRO**

**(IAIN) METRO LAMPUNG**

**1446 H/2024 M**



**KEMENTERIAN AGAMA REPUBLIK INDONESIA**  
**INSTITUT AGAMA ISLAM NEGERI METRO**  
**FAKULTAS TARBİYAH DAN ILMU KEGURUAN**

Jalan Ki. Hajar Dewantara Kampus 15 A Inggimulyo Metro Timur Kota Metro Lampung 34111  
Telepon (0725) 41507; Faksimili (0725) 47296; Website: [www.tarbiyah.metrouniv.ac.id](http://www.tarbiyah.metrouniv.ac.id); e-mail: [tarbiyah.iaim@metrouniv.ac.id](mailto:tarbiyah.iaim@metrouniv.ac.id)

**NOTA DINAS**

Nomor : -  
Lampiran : 1 (Satu) Berkas  
Perihal : Pengajuan Munaqosyah

Kepada Yth.,  
Dekan Fakultas Tarbiyah dan Ilmu Keguruan  
Institut Agama Islam Negeri (IAIN) Metro  
di Metro

*Assalamu'alaikum Wr.Wb*

Setelah kami mengadakan pemeriksaan dan bimbingan seperlunya, maka proposal penelitian yang telah disusun oleh :

Nama : Setia Ningsih  
NPM : 21010813003  
Fakultas : Tarbiyah dan Ilmu Keguruan  
Program Studi : Tadris Biologi (TPB)  
Yang berjudul : DEVELOPMENT OF WEB-BASED LEARNING MEDIA  
ON CLASS X VIRUS MATERIAL

Sudah kami setuju dan dapat diajukan ke Fakultas Tarbiyah dan Ilmu Keguruan Institut Agama Islam Negeri Metro untuk diseminarkan.

Demikian harapan kami dan atas perhatiannya saya ucapkan terima kasih.

*Wassalamu'alaikum Wr. Wb*

Metro, 30 September 2024

Mengetahui,  
Ketua Program Studi Tadris Biologi

Pembimbing

**Nasrul Hakim, M.Pd**  
NIP. 19870418 201903 1 007

**Tika Mavang Sari, M.Pd**  
NIP. 199311302019032018

## PERSETUJUAN

Judul : DEVELOPMENT OF WEB-BASED LEARNING MEDIA  
ON CLASS X VIRUS MATERIAL

Nama : Setia Ningsih

NPM : 21010813003

Program Studi : Tadris Biologi

Fakultas : Tarbiyah dan Ilmu Keguruan

## DISETUJUI

Untuk diajukan dalam Sidang Munaqosyah Fakultas Tarbiyah dan Ilmu Keguruan IAIN Metro

Metro, 30 September 2024



Tika Mayang Sari, M.Pd  
NIP. 199311302019032018



KEMENTERIAN AGAMA REPUBLIK INDONESIA  
INSTITUT AGAMA ISLAM NEGERI METRO  
FAKULTAS TARBIYAH DAN ILMU KEGURUAN

Jalan Ki. Hajar Dewantara Kampus 15 A Iringmulyo Metro Timur Kota Metro Lampung 34111

Telepon (0725) 41507; Faksimili (0725) 47296; Website: www.tarbiyah.metrouniv.ac.id; e-mail: tarbiyah.iain@metrouniv.ac.id

**PENGESAHAN UJIAN ARTIKEL**

No: B-5760/In.28.1 / D/PP.00.2/12/2024

Artikel dengan judul: DEVELOPMENT OF WEB-BASED LEARNING MEDIA ON CLASS X VIRUS MATERIAL, disusun oleh: Setia Ningsih, NPM: 2101083003, Program Studi: Tadris Biologi (TBIO) telah diujikan dalam sidang munaqosyah Fakultas Tarbiyah dan Ilmu Keguruan pada hari/tanggal: Kamis, 01 November 2024.

**TIM PENGUJI**

Ketua/Moderator : Tika Mayang Sari, M.Pd

Penguji I : Dr. Yudiyanto, M.Si

Penguji II : Vifty Octanarlia Narsan, M.Pd

Sekretaris : Dwi Kurnia Hayati, M.Pd

(.....)  
(.....)  
(.....)  
(.....)

Mengetahui  
Dekan Fakultas Tarbiyah dan Ilmu Keguruan



Dr. Zuhairi, M.Pd.

NIP. 19620612 198903 1 006

## ORISINALITAS PENELITIAN

Yang bertanda tangan di bawah ini :

Nama : Setia Ningsih  
NPM : 2101083003  
Program Studi : Tadris Biologi  
Fakultas : Tarbiyah dan Ilmu Keguruan

Menyatakan bahwa publikasi artikel ini keseluruhan adalah asli hasil penelitian saya kecuali bagian-bagian yang ditujuk dari sumbernya dan disebutkan dalam daftar pustaka.

Metro, 20 Desember 2024



**Setia Ningsih**  
NPM. 2101083003

Beranda > Arsip > Vol 12, No 1 (2024)

# Jil. 12, Nomor 1 (2024)

## JURNAL BIOTIK

### Daftar isi

<b>IDENTIFIKASI MORFOLOGI JAMUR MAKAN LIAR (<i>Termitomyces striatus</i>) DI HUTAN KAMPUS IPB</b>	BAHASA INDONESIA : PDFPDF 1-11
<a href="#">doi   10.22373/biotik.v12i1.18170</a> <i>Nurhakiki Nurhakiki, Ivan Permana Putra</i>	
<b>STUDI ETNOBOTANI IDENTIFIKASI JENIS TUMBUHAN YANG DAPAT DIGUNAKAN DALAM PRODUKSI ECOPRINT</b>	BAHASA INDONESIA: 12-22
<a href="#">doi   10.22373/biotik.v12i1.19431</a> <i>Nurul Fajriana, Ulia Hanum, Nurhidayatun Rahma</i>	
<b>PENGARUH ABU SEKAM PADI TERHADAP KETERSEDIAAN DAN SERAPAN PANGAN JAGUNG (<i>Zea mays L.</i>) DI ULTISOL</b>	BAHASA INDONESIA: 23-32
<a href="#">doi   10.22373/biotik.v12i1.20091</a> <i>Wulan Maghfirah, Ilyas, Ilyas, Yusrizar Yusrizar</i>	
<b>KEMAMPUAN GURU SAINS DALAM MERANCANG INSTRUMEN SIKAP SPIRITUAL SISWA</b>	BAHASA INDONESIA: 33-43
<a href="#">doi   10.22373/biotik.v12i1.19309</a> <i>Ida Meutiawati, Fitriawany Fitriawany, Sabaruddin Sabaruddin</i>	
<b>PENGEMBANGAN MEDIA PEMBELAJARAN BERBASIS WEB PADA MATERI VIRUS KELAS X</b>	BAHASA INDONESIA: 44-52
<a href="#">doi   10.22373/biotik.v12i1.22943</a> <i>Setia Ningsih, Tika Mayang Sari</i>	

- Tim Redaksi
- Peninjau
- Fokus dan Cakupan
- Pedoman Penulis
- Etika Publikasi
- Kebijakan Akses Terbuka
- Proses Tinjauan Sejawat
- Abstraksi dan Pengindeksan
- Kontak
- Registrasi
- Biaya Penulis

Sertifikat Akreditasi  
**SINTA 3**



Template Artikel



Browser tabs: (79) Vadesta Ft. Destya Eka, (122) WhatsApp, penyerahan artikel penyetera... BIOTIK: Jurnal Ilmiah Biologi Tekn...  
URL: jurnal.ar-raniry.ac.id/index.php/biotik/index



# BIOTIK

Jurnal Ilmiah Biologi Teknologi dan Kependidikan

PROGRAM STUDI PENDIDIKAN BIOLOGI/  
FAKULTAS TARBIYAH DAN KEGURUAN  
UNIVERSITAS ISLAM NEGERI AR-RANIRY BANDA ACEH

Alamat Redaksi:  
Jl. Syekh Abdul Rauf Komplek Fakultas Tarbiyah dan Keguruan UIN Ar-Raniry  
Darusalam, Banda Aceh, 23111. Email: jurnal.biotik@ar-raniry.ac.id

P-ISSN: 2337-9812  
E-ISSN: 2549-1768

RUMAH TENTANG LOGIN DAFTAR MENCARI SAAT INI ARSIP PENGUMUMAN

Beranda > Vol 12, No 2 (2024)

## BIOTIK: Jurnal Ilmiah Biologi Teknologi dan Kependidikan

Judul Jurnal : BIOTIK: Jurnal Ilmiah Biologi Teknologi dan Kependidikan  
ISSN : P-ISSN 2337-9812 | E-ISSN 2549-1768  
Awalan DOI : Frefix 10.22373 oleh Crossref  
Pemimpin redaksi : Samsul Kamal, M.Pd  
Redaktur Pelaksana : Mulyadi, M.Pd  
Penerbit : Universitas Islam Negeri Ar-Raniry  
Frekuensi : Dua (2) edisi per tahun ( April dan September )  
Analisis Kutipan : Indeks Copernicus | Sinta | Google Scholar



BIOTIK : Jurnal Ilmiah Biologi Teknologi dan Kependidikan menerbitkan artikel ilmiah di bidang pendidikan dan teknologi biologi. Lebih jauh, jurnal ini menjembatani kesenjangan antara penelitian dan praktik, menyediakan informasi, ide, dan wawasan, selain pemeriksaan kritis terhadap penelitian dan pengajaran biologi. Melalui liputan pengembangan kebijakan dan kurikulum, hasil penelitian terbaru tentang pengajaran, pembelajaran, dan penilaian biologi dimunculkan ke permukaan. Jurnal ini diterbitkan oleh

**Tim Redaksi**

- Peningjau
- Fokus dan Cakupan
- Pedoman Penulis
- Etika Publikasi
- Kebijakan Akses Terbuka
- Proses Tinjauan Sejawat
- Abstraksi dan Pengindeksan
- Kontak
- Registrasi
- Biaya Penulis

Sertifikat Akreditasi  
**SINTA 3**

06:48  
26/12/2024



# SERTIFIKAT

Direktorat Jendral Pendidikan Tinggi, Riset dan Teknologi  
Kementerian Pendidikan, Kebudayaan, Riset dan Teknologi Republik Indonesia



Kutipan dari Keputusan Direktorat Jendral Pendidikan Tinggi, Riset, dan Teknologi  
Kementerian Pendidikan, Kebudayaan, Riset dan Teknologi Republik Indonesia

Nomor: 230/E/KPT/2022

Peringkat Akreditasi Jurnal Ilmiah Periode IV Tahun 2022

Nama Jurnal Ilmiah:

**BIOTIK: Jurnal Ilmiah Biologi Teknologi dan Kependidikan**

E-ISSN: 25491768

bersama dengan Lembaga Penelitian dan Pengabdian kepada Masyarakat (LP2M) Universitas Islam Negeri Ar-Raniry Banda Aceh

Ditetapkan Sebagai Jurnal Ilmiah:

**TERAKREDITASI PERINGKAT 3**

Akreditasi Berlaku selama 5 (lima) Tahun, yaitu:

Volume 10 Nomor 1 Tahun 2022 sampai Volume 14 Nomor 3 Tahun 2026

Jakarta, 30 December 2022

Plt. Direktur Jendral Pendidikan Tinggi, Riset, dan Teknologi



Prof. Ir. Nizam, M.Sc., DIC, Ph.D., IPU, ASEAN Eng  
NIP. 196107061987101001

**BIOTIK: JURNAL ILMIAH BIOLOGI TEKNOLOGI DAN  
KEPENDIDIKAN**

PROGRAM STUDI PENDIDIKAN BIOLOGI UNIVERSITAS ISLAM NEGERI  
AR-RANIRY BANDA ACEH

P-ISSN 2337-9812 | E-ISSN 2549-1768

**EDITOR IN CHIEF**

Samsul Kamal, M.Pd

**ASSOCIATE EDITOR**

1. Mulyadi (Universitas Islam Negeri Ar-Raniry Banda Aceh, Aceh, Indonesia)
2. Elita Agustina (Universitas Islam Negeri Ar-Raniry Banda Aceh, Aceh, Indonesia)
3. Muslich Hidayat (Universitas Islam Negeri Ar-Raniry Banda Aceh, Aceh, Indonesia)
4. Lina Rahmawati (Universitas Islam Negeri Ar-Raniry Banda Aceh, Aceh, Indonesia)
5. Misbahul Jannah (Universitas Islam Negeri Ar-Raniry Banda Aceh, Aceh, Indonesia)
6. Dian Aswita (Universitas Serambi Mekkah, Banda Aceh, Indonesia)
7. Izwar (Universitas Teuku Umar, Meulaboh, Aceh, Indonesia)
8. Syukriah (Universitas Islam Negeri Sumatera Utara, Medan, Indonesia)
9. Mimie Saputri (Universitas Syiah Kuala Banda Aceh, Aceh, Indonesia)
10. Ilham Zulfahmi (Universitas Syiah Kuala Banda Aceh, Aceh, Indonesia)
11. Ernilasari (Universitas Serambi Mekkah, Banda Aceh, Indonesia)
12. Rivan Rinaldi (Universitas dan Penelitian Wageningen, Belanda)
13. Zuraidah (Universitas Islam Negeri Ar-Raniry Banda Aceh, Aceh, Indonesia)
14. Eva Nauli Taib (Universitas Islam Negeri Ar-Raniry Banda Aceh, Aceh, Indonesia)
15. Rizky Ahadi (Universitas Islam Negeri Ar-Raniry Banda Aceh, Aceh, Indonesia)

## **ALAMAT REDAKSI**

### **BIOTIK: Jurnal Ilmiah Biologi Teknologi dan Kependidikan**

Jl. Syeikh Abdul Rauf, Komplek Fakultas Tarbiyah dan Keguruan UIN Ar-Raniry,  
Darussalam, Kec. Syiah Kuala, Banda Aceh, Aceh, Indonesia, Kode Pos: 23111.

Email: [jurnal.biotik@ar-raniry.ac.id](mailto:jurnal.biotik@ar-raniry.ac.id)

## DEVELOPMENT OF WEB-BASED LEARNING MEDIA ON CLASS X VIRUS MATERIAL

<sup>1</sup>Setia Ningsih and <sup>2</sup>Tika Mayang Sari

<sup>1,2</sup>Islamic Religion Institute of Metro, Lampung, Indonesia

Email: [ftiksetianingsih@gmail.com](mailto:ftiksetianingsih@gmail.com)

DOI: 10.22373/biotik.v12i1.22943

### ABSTRAK

Berdasarkan hasil pra-survei yang telah dilakukan di SMA Negeri 1 Kotagajah, ditemukan masalah yaitu penggunaan media pembelajaran yang kurang pada saat kegiatan pembelajaran pada materi biologi termasuk materi virus. Dalam kegiatan belajar mengajar, media pembelajaran yang digunakan hanya sebatas Lembar Kerja Peserta Didik (LKPD) dan Power Point. Hal ini mengakibatkan beberapa siswa mengalami kesulitan dalam memahami informasi dan kehilangan minat terhadap mata pelajaran biologi. Peneliti kemudian mengembangkan platform pembelajaran berdasarkan konten viral yang tersedia untuk siswa kelas X melalui internet. Lima tahapan model ADDIE adalah analisis, desain, pengembangan, implementasi, dan evaluasi. Hasil persentase sebesar 80%, 87%, 94%, dan 85% diperoleh dari validator ahli materi, ahli media, guru, dan siswa. Siswa menyatakan bahwa penggunaan materi pembelajaran berbasis web tentang virus "sangat layak".

**Kata Kunci:** Media Pembelajaran, Web, Virus.

### ABSTRACT

Based on the results of the pre-survey that has been carried out at SMA Negeri 1 Kotagajah, a problem was found, namely the use of learning media that is lacking during teaching and learning activities on biological material including virus material. In teaching and learning activities, the educational media used are limited to Student Worksheets (LKPD) and Power Point. This resulted in some students having difficulty understanding the information and losing interest in biology. Scientists then developed a learning platform based on viral content available to Class X students via the Internet. The five stages of the ADDIE model are analysis, design, development, implementation, and evaluation. Percentage results of 80%, 87%, 94% and 85% were obtained from material expert, media expert, teacher and student validators. Students indicated that the use of web-based learning materials about viruses was "very feasible".

**Keyword:** Learning Media, Web, Virus.

## **INTRODUCTION**

Learning (Education) needs to be continuously adjusted to keep up with the changing times. The changing times from era 4.0 to 5.0 have had a significant impact on the world of education. Educational institutions need to be prepared to face new challenges that arise due to this shift in time. Since 2020, there have been major changes in learning methods. From what used to be done manually in the classroom, it has now shifted to a more automated digital realm [1]. Therefore, the world of education has begun to implement a 21st century learning model that focuses on the evolution of technology [2]. The 21st century has changed many aspects of life, becoming an age where information can be easily accessed and disseminated anytime and anywhere [3]. The development of technology has an impact on the way people learn, including how it is used.

The utilization of web-based media is one of the latest developments in digital education. Web utilization as learning media is a method to present learning materials by utilizing the internet, including in the form of writing, simulations, and other

interactive content [4]. It creates a new learning experience for students, enriching the learning process in a more diverse, dynamic, and creative way, potentially improving their academic achievement [5]. It is expected that through this learning platform, students will be able to take an active role and interact, which will help improve their learning achievement.

Based on the results of preliminary research and distributing questionnaires through Google Form between classes used in pedagogy, namely using Power point, LKPD. In line with the results of questionnaires that researchers have distributed to students, namely students are less satisfied with the learning media used during teaching and learning activities, especially in biology subjects, some students reveal that in biology subjects the material is difficult to understand, one of which is on virus material and the use of media that is less interesting. According to interviews conducted with class X students, they are allowed to bring cell phones, the cell phones are used to access the internet when looking for references to the material

being studied. With cell phones students can search for material references in any form such as learning videos, the desired articles.

Because of the problems mentioned, it is necessary to create incentives to change learning methods to make them simpler, more active (interactive) and more attractive (interesting). It is also important for students to have new experiences through the use of technology [6]. Using google sites as a teaching tool can help solve problems in the classroom. Google sites is a product from Google that functions to create websites that can be used personally or for group purposes [7].

In web learning media google sites uses features including 1) home, 2) instructions for use, 3) virus material, 4) quiz, 5) biography. Therefore, it is important to use interactive and easy-to-use media when teaching biology virus material, in order to support the learning process for students. Because learning on virus material tends to be verbal and abstract. With the support of learning media, virus material should be presented in a simple and practical way, making it more accurate, easier to

understand and more practical in everyday life [8]. Google sites can make it easier for students to learn by presenting the material in an interesting way, so that they are more motivated and enthusiastic in the learning process.

## **RESEARD METHOD**

The method used in research and development is R&D. ADDIE is a model used in making web-based educational media and describes the steps of analysis, design, development, implementation, and evaluation [9].

The purpose of this study (research) is to develop a new type of online material and learn how it works. Educational media was developed that was based on the Google website and focused on class X Virus content.

The research was conducted from October to December 2023. The data collection technique used in the study was in the form of direct interviews and then distributing questionnaires. Questionnaires are used to obtain results from material expert validators, media experts and practicality data from products that have been developed in the form of teacher responses and student responses

to web-based learning media on Virus material.

Data analysis in this study involved the use of qualitative and quantitative methods for. Descriptive data analysis was conducted by surveying biology teachers of SMA N 1 Kotagajah and students of class X 6, which related to learning media problems. Not only that, researchers also obtained input or suggestions from validators Mrs. Asih Fitriana Dewi, M.Pd. and Mr. Nasrul Hakim, M.Pd. teaching as Tadris Biology at IAIN metro and both are material and media

specialists. Quantitative descriptive analysis was made from a Likert scale with five answers validated by experts, media experts, teachers and students. There was a different scale for each answer. Likert scale is used to collect data with the aim of understanding or measuring the feasibility of a learning media [10].

$$P = (\sum x) / n \times X \times 100\%$$

Description:

P = Percentage of Validity

$\sum x$  = Number of points (Score) obtained in each criterion

n = Maximum number of points (Score)

**Table 1.** Percentage Score Categories

No	Value scale	Score	Presentage	Validity Level
1.	5	84-100	84-100%	Very Feasible
2.	4	68-84	68-84%	Feasible
3.	3	52-68	52-68%	Feasible Enough
4.	2	36-52	36-52%	Less Feasible
5.	1	20-36	20-36%	Very Less Feasible

## RESULT AND DISCUSSION

The product resulting from this development research is web-based learning media on virus material. The following is a picture of the web learning media that has been developed:



**Figure 1.** Initial Display of Web Learning Media Virus Material

## Validation Results

Validation is a stage of assessing and determining the feasibility of a product carried out by experts. The research contains two contents in it, namely media and material.

### 1. Material Expert Validation Results

The results of material expert validation and can be seen in the following graphic image:

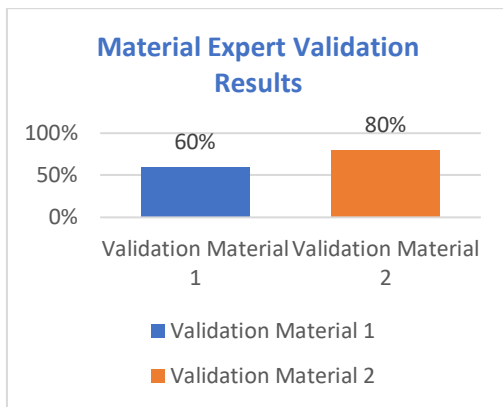


Figure 2. Graph of material validation results

### 2. Media Validation Results

The results of media expert validation can be seen in the following graphic image:

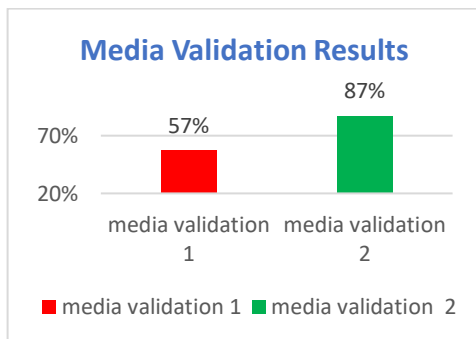


Figure 3. Graph of Media Expert Validation Results

### 3. Teacher and Student Trial Results

After completing the development of web-based learning media products, the next step involves the validation process by material experts and media products. This validation was carried out through a small group trial consisting of 11 students of class X SMA Negeri 1 Kotagajah. As shown in the following graph:

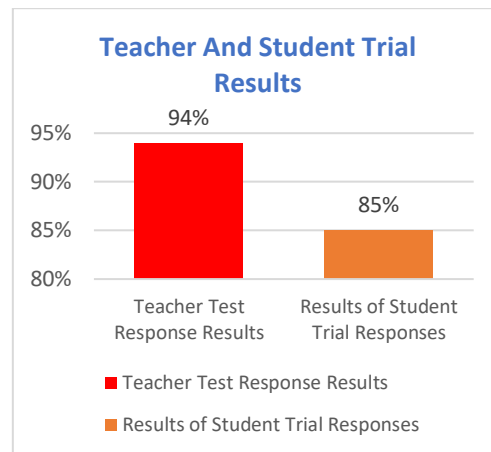


Figure 3. Graph of Teacher and Learner Trial Response Results

The purpose of this research is to create a new or superior product. The model used in making web-based learning media is ADDIE, which includes the steps of analysis, design, development, implementation, and evaluation [11]. This research produces a web-based learning media about viruses in biology lessons. ADDIE



model development research has five stages, namely:

The analysis stage is composed of three stages, namely performance analysis, needs analysis and then curriculum examination. The Needs Analysis and Performance Analysis will be distributed to teachers, while the Lecture Analysis and Performance Analysis will be distributed to students. The performance analysis looks at the educational media used by teachers. The goal of this analysis is to identify problems and find solutions by developing new media for education. The media required for student learning is identified through the application of needs analysis. The content and media used become the basis of the analysis. while curriculum analysis is used to determine the curriculum of the institution (school) that is the place of research (study). This is in accordance with Alfebriyesi's statement which states that these three aspects or steps are interrelated because they are all used to identify problems in the process related to the media used and their requirements [12]. The design stage is the process of designing the entire media. In this stage, researchers take various design steps such as designing

data, navigation, main menu, material sub menu, task menu, and evaluation menu. After that, the researcher makes a flow to facilitate the making of the website by making a programming outline (GBPM), storyboard, and flowchart [13].

The developed learning media then entered a series of assessments (validation) to assess the suitability of the developed media on the Internet. Both material experts and media experts are responsible for the validation. Mrs. Asih Fitriana Dewi, M.Pd, as the material validator and Mr. Nasrul Hakim, M.Pd, IAIN Metro Media validator.

Material expert validation was carried out twice to provide recommendations for improvements to the learning material about the material virus on the web. The results of the first validation by the expert obtained a validity percentage of 60% and were classified in the "feasible" category. However, the media in this category must be modified to adjust to improvements, which have been validated by experts and checked by various factors. The results of the second test by the material expert showed the quality of giving 80% and

was classified as "feasible". However, the material expert validator only provided a few suggestions for improvements to the developed product.

Media expert validation was conducted twice. The results of the first validation by media experts gave a confidence level of 57% and were placed in the "not feasible" category carried out in the inspection area which reflected recommendations for improvement from media experts. After the second validation, a reliability score of 87% was obtained which fell into the "very feasible" category. While in the second stage of validation, the media expert validator only gave a few suggestions for improvement.

The product design that has been made and confirmed to be suitable for the implementation stage can now be tested through the validation of material experts and media experts. At SMA N 1 Kotagajah, the product was tested with a biology teacher and a small group of 10 students who had received information on the topic of viruses. This is in accordance with Setyosari's opinion which states that small group trials only use 6 to 12 subjects [14]. Evaluation and

measurement of the suitability of web-based learning media products on virus material is carried out through revisions based on suggestions for improvement from validation by material and media experts using a validation questionnaire. Then, the evaluation is carried out based on the improvement input from the responses of teachers and students when testing the product at the implementation stage.

In web-based learning media for virus material in the form of a google site, this has several advantages, namely: Material that can be anywhere at any time, this web-based media can also be accessed via cellphone so that it does not require students to use a laptop, then in this web-based learning media on Virus material there are learning videos and interactive quizzes in the form of quizzes where the quiz is to measure the level of student understanding. This is in line with Rijjal's statement that using web-based learning media can provide a different learning atmosphere in the classroom [15].

## CONCLUSION

The model used in making web-based learning media is ADDIE. The first five phases include design analysis, development, implementation and evaluation. The results of validation and product test reactions from teachers and students of SMA Negeri 1 Kotagajah show that the use of online materials for virus learning is "very feasible". This is based on the results of teacher and small group responses consisting of eleven Class X students, as well as product validation results. From all the results of the percentage of material expert validators, media experts, teacher and student feedback which amounted to 80%, 87%, 94% and 85% respectively, it shows that the web-based learning media is "very feasible."

## REFERENCE

- [1]F. Dwiyama. 2021. Pemasaran Pendidikan Menuju Era Revolusi Industri 5.0. *Jurnal Manajemen Pendidikan Islam*, 1 (1), 24–25.
- [2]R. Pramesti Vidya Bhakti Eva, M. Syarif Sumantri, Murni Winarsih 2020. Media Pembelajaran Abad 21: Komik Digital Untuk Siswa Sekolah Dasar. *Jurnal Pendidikan Dasar*, 1–8.
- [3]K. A. Faradayanti, Endryansyah, Joko, Achmad Imam Agung. 2020. Kepraktisan Media Pembelajaran Berbasis Web Untuk Menunjang E-Learning Pada Mata Pelajaran Instalasi Motor Listrik Di Smk. *Jurnal Pendidikan Teknik Elektro*, 9 (3), 675-683.
- [4]N. Rahman, Maemunah, Haifaturrahmah, and S. Fujiaturrahmah. 2020. Pelatihan Pengembangan Media Pembelajaran Berbasis Web Bagi Guru SMP. *Jurnal of Character Education Society*, 3 (3), 621–630.
- [5]M. Fetra Bonita Sari, Risda Amini. 2022. Pengembangan Media Pembelajaran Berbasis Web Google Site pada Pembelajaran IPA Sekolah Dasar. *Jurnal basicedu*. 6 (4), 524–532.
- [6]H. Hendi, L. F. Yeni, and A. N. Mardiyyaningsih. 2023. Pengembangan Website Virus Sebagai Sumber Belajar Biologi Kelas X IPA. *Jurnal Bioeducation*, 10 (1), 1–7.
- [7]F. Hidayat and M. Nizar. 2021. Model Addie (Analysis, Design, Development, Implementation and Evaluation) Dalam Pembelajaran Pendidikan Agama Islam. *Jurnal Inovasi*

- Pendidik Agama Islam*, 1 (1), 28–38.
- [8]A. R. K. Nisa, N. S Aninditya 2021. Efektivitas Model Pembelajaran Berbasis Proyek dalam PJJ Terhadap Pemahaman Materi. *Alinea Jurnal Bahasa Sastra, dan Pengajaran*, 10 (1), 61.
- [9]M. Albert. 2019. Model-Model Penelitian Pengembangan (Research And Development. (10)
- [10]Okpatrioka. 2023. Research And Development ( R & D ) Penelitian Yang Inovatif Dalam Pendidikan. *Jurnal Pendidikan, Bhs. dan Budaya*, 1 (1), 86–100.
- [11]Nurdiyanti.2020.Pengembangan media pembelajaran berbasis weblog untuk meningkatkan sikap siswa terhadap biologi dan internet. *Kromatin Jurnal Biologi dan Pendidik. Biologi*,1 (1).
- [12]A. T. C. Yanindah and N. Ratu. 2021. Pengembangan E-Modul SUGAR Berbasis Android. *Jurnal Cendekia Jurnal Pendidik Matematika*. 5 (1), 607–622.
- [13]E. Islanda, D. Darmawan, J. Terusan, P. No, K. T. Kidul, and K. Garut. 2023. Pengembangan Google Sites Sebagai Media Pembelajaran untuk Meningkatkan Prestasi Belajar Siswa. 27, 51–62.
- [14]L. Sari, R. A. Pratama, B. I. Permatasari. 2020. Media Pembelajaran Puzzle Angka dan Corong Angka (PANCORAN) Bagi Anak Berkebutuhan Khusus (ABK). *Kreano, J.urnal Matematika dan Kreatif*, vol. 11 (1), 88–100.
- [15]Rijal. 2020. Pengembangan Media Pembelajaran Berbasis Web Untuk Meningkatkan Kreativitas Guru. *Jurnal Ideas*, 6 (1), 81-96.