

DEVELOPMENT OF INSTRUCTIONAL MEDIA USING 'CANVA' BASED ON ANIMATED VIDEOS FOR THE SUBJECT OF BIOLOGY

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Abstract

Instructional media are essential for effectively conveying teaching materials to students. However, if the media used remain traditional and uninteresting, the teacher's delivery of the material may not reach students optimally. At SMAN N 1 Harau, the use of media in biology subjects only involves slides containing explanatory text narratives, leading to students encountering difficulties in comprehending the material quickly. This paper aims to create a valid, practical, and effective design for animated video-based media for biology subjects using Canva at SMA Negeri 1 Harau. The method employed is Research and Development (R&D) in the 4D version, which encompasses defining, designing, developing, and disseminating. The findings of this research were derived from product testing, including a validity test stage conducted by 3 experts, yielding a score of 0.79 in the valid category. Additionally, a practicality test was administered by 6 practitioners, resulting in a score of 0.88 in the very high category. Furthermore, an effectiveness test was conducted with 15 assessors, achieving a score of 0.65 in the effective category. In conclusion, instructional media designed based on animated videos proves to be practical and effective.

Keywords: Instructional Media, Animation Videos, Canva.

Abstrak

Media pembelajaran sangatlah diperlukan untuk menyampaikan materi ajar pada peserta didik. Namun jika media yang digunakan masih tradisional dan tidak menarik mengakibatkan materi ajar yang disampaikan guru tidak sampai kepada siswa dengan maksimal. Penggunaan media pada mata pelajaran biologi di SMAN N 1 Harau hanya menggunakan slide yang berisikan narasi penjelasan berupa teks, sehingga siswa mengalami kendala dalam memahami materi dengan cepat. Tujuan dari tulisan ini untuk menghasilkan sebuah rancangan media berbasis video animasi pada mata pelajaran biologi menggunakan Canva di SMA Negeri 1 Harau yang valid, praktis dan efektif. Metode yang digunakan adalah Research and Development (R&D) versi 4D yaitu define, design, develop dan disseminate. Temuan dari artikel ini didapatkan dari uji produk dengan tahapan uji validitas dari 3 orang ahli dengan nilai 0,79 kategori valid, uji praktikalitas dari 6 orang praktikalator dengan nilai 0,88 kategori sangat tinggi, dan uji efektivitas dari 15 orang penilai dengan nilai 0,65 kategori efektif. Dapat disimpulkan bahwa media pembelajaran yang dirancang berbasis video animasi dapat digunakan dengan valid praktis dan efektif.

Kata Kunci: Media Pembelajaran, Video Animasi, Canva

Introduction

The continuous growth and innovation in human life serve as evidence that technology is also rapidly advancing. Within society, the role of

technology is crucial, especially in developing countries. Hardware and software in the field of communication now influence every aspect of human life, including education. Education plays

an exceedingly important role in realizing knowledgeable, cultured, devout individuals capable of facing the challenges of the globalization era.

According to Law No. 20 of 2003, education is a deliberate and conscious effort to create a learning atmosphere and learning processes in which learners actively develop their potential to achieve their fullest capabilities, strong spiritual values, self-mastery, personality, intelligence, noble character, and necessary skills for oneself, society, nation, and state. Certainly, such planned educational processes can create a conducive learning environment and learning processes. This means that education should not neglect the learning process.¹ Through education, competent individuals with skills that can be developed within society are cultivated. In efforts to enlighten the next generation of the nation, education plays a vital role in preparing them to face the changes of the times.²

Learning is a multifaceted process influenced by several factors, including the teacher, students, infrastructure, and environmental factors.³ In the learning process, the teacher's role is not the only source and center of learning.⁴ To determine learning resources, education today revolves around the student, allowing them the freedom to discover. Unlike previous methods such as lecturing or rote memorization, contemporary learning is packaged innovatively and is not monotonous.⁵ Students can gain experiences

through direct participation in learning, for example, in group discussion activities. One of the current trending learning strategies is for teachers to leverage technological advancements using various media and application platforms.

The utilization of technology in the form of digital-based media and applications is highly essential to support the teaching and learning process. As part of their professional duty, teachers are required to be creative in presenting lessons aimed at fostering critical, creative, and higher-order thinking skills in students. Teachers must also be able to create an engaging conversational atmosphere in the classroom using their pedagogical skills, making learning dynamic, original, creative, effective, and entertaining.⁶ Beyond mastering knowledge and technology, teachers are required to be more creative in delivering teaching materials due to the varying levels of student comprehension. On the other hand, teachers need to employ engaging instructional media so that the material presented in each session can be easily understood by the students. Through instructional media, teachers are expected to be more creative and innovative in delivering the subject matter to their students.

Instructional media is used as a means of teaching and learning in schools, aiming to enhance the quality of the learning process.⁷ To achieve educational goals, media is an important component in the teaching and learning process.⁸

¹ R Giawa, A R Harefa, and T Waruwu, 'Pengembangan Modul Pembelajaran Berbasis Discovery Learning Pada Materi Perubahan Lingkungan', *Educativo: Jurnal ...*, 1.2 (2022), 411–22.

² Said Alwi, 'Problematika Guru Dalam Pengembangan Media Pembelajaran', *ITQAN: Jurnal Ilmu-Ilmu Kependidikan*, 8.2 (2017), 145–67.

³ Intan Nur Cahya Mukti and Heru Nurcahyo, 'Pengembangan Media Pembelajaran Biologi Berbantuan Komputer Untuk Meningkatkan Hasil Belajar Peserta Didik', *Jurnal Inovasi Pendidikan IPA*, 3.2 (2017), 137 <<https://doi.org/10.21831/jipi.v3i2.7644>>.

⁴ Umi Wuryanti and Badrun Kartowagiran, 'Pengembangan Media Video Animasi Untuk Meningkatkan Motivasi Belajar Dan Karakter Kerja Keras Siswa Sekolah Dasar', *Jurnal Pendidikan Karakter*, 7.2 (2016), 232–45 <<https://doi.org/10.21831/jpk.v6i2.12055>>.

⁵ Farida Rahmawati, Ragil Idam, and Widiyanto Atmojo, 'Analisis Media Digital Video Pembelajaran Abad 21 Menggunakan Aplikasi Canva Pada Pembelajaran IPA', 5.6 (2021), 6271–79.

⁶ Elly Anjarsari, Donny Dwi Farisdianto, and Abdul Wahid Asadullah, 'Pengembangan Media Audiovisual Powtoon Pada Pembelajaran Matematika Untuk Siswa Sekolah Dasar (Development of Audiovisual Based Powtoon Media in Mathematics Learning for Elementary School Students)', *JMPM: Jurnal Matematika Dan Pendidikan Matematika*, 5.2 (2020), 40–50.

⁷ Gita Permata Puspita Hapsari and Zulherman, 'Analisis Kebutuhan Pengembangan Media Video Animasi Berbasis Aplikasi Canva Pada Pembelajaran IPA', 6. April (2021), 22–29 <<https://doi.org/10.24905/psej.v6i1.43>>.

⁸ Putu Jerry Radita Ponza, I Nyoman Jampel, and I Komang Sudarma, 'Pengembangan Media Video Animasi

Media originates from the Latin language, being the plural form of 'medium,' and literally means an intermediary or a conduit. In general terms, media refers to anything that can transmit information from its source to the recipient of that information.⁹ Instructional media are tools that can assist students in learning both inside and outside the classroom. Educators and learners must understand instructional media to foster a creative, innovative, and collaborative learning process during teaching and learning activities. The advantages of instructional media for educators include aiding students to think creatively and actively engage with the subject matter. For students, the benefits of instructional media include the opportunity to create something from their genuine thoughts, produce creative works, become active learners, and assist both educators and students in achieving predetermined learning objectives.¹⁰

Media can be utilized as a means to enhance effectiveness and efficiency in achieving objectives. The use of media in learning provides benefits for both teachers and students. Conversely, in addressing student boredom during lessons, the utilization of media can help alleviate this issue. Essentially, the teaching-learning process is a form of communication. Instructional media serves as an intermediary in the learning process. As part of learning resources, instructional media combines software (learning materials) and hardware (learning tools).¹¹

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intermediary in the learning process. As part of learning resources, instructional media combines software (learning materials) and hardware (learning tools).

Animation-based instructional media is a tool used to convey information or messages through a series of images/animations that can be seen, heard, and moved dynamically. Videos are rich in information and comprehensive as they directly reach students. When associated with the educational aspect, there are numerous technologies in the form of applications that can be used as instructional media in schools, such as the Canva application. As one of the alternatives for instructional media, the Canva application provides space for teachers to convert the visualization process of teaching materials from text into animation-based videos. Canva application offers various design templates to be used as instructional media that will engage students' interest in learning. Additionally, the media produced through the Canva application can be downloaded in various formats such as PowerPoint for slides, PNG/JPEG for images, and MP4 format for videos.

Various elements and templates are available for free in the Canva application, which can be used as tools in the production process of instructional media. For instance, in the design of animated videos, there are features for adding animated graphics, text, audio, and other supporting materials, enabling the designed instructional media product to convey content and messages engagingly. Besides the multitude of available features, the Canva application can serve as a platform for teachers to foster creativity in designing animation-based instructional media. It can also save time in implementing instructional media and practical activities, allowing students to learn the given

Pada Pembelajaran Siswa Kelas Iv Di Sekolah Dasar?, *Jurnal EDUTECH Universitas Pendidikan Ganesha*, 6.1 (2018), 9–19.

⁹ Teni Nurrita, 'Pengembangan Media Pembelajaran Untuk Meningkatkan Hasil Belajar Siswa', 03 (2018), 171–87.

¹⁰ Gilang Alfinandika Rizanta and Meilan Arsanti, 'Pemanfaatan Aplikasi Canva Sebagai Media Pembelajaran

Masa Kini', *Prosiding Seminar Nasional Daring*, 2 (2022), 560–68.

¹¹ Delsina Faiza Rahma Elvira Tanjung, 'Canva Sebagai Media Pembelajaran Pada Mata Pelajaran Dasar Listrik Dan Elektronika', *Jurnal Vokasional Teknik Elektronika Dan Informatika*, 7.2 (2019), 79–85.

material through animated video instructional media.

The learning process in the 11th grade of SMA N 1 Harau for the subject of biology faces several challenges, both from the students and the teachers. The subject of biology demands a high level of understanding from students to achieve the learning objectives. On the student's side, they encounter difficulties in comprehending the material due to the conventional nature of the instructional media, as well as the teachers' methods of delivering the content that lack variation, resulting in a rigid atmosphere during the learning process. On the teachers' side, there exists a challenge in creativity concerning the development of teaching media. Teachers still predominantly employ text-based media, whereas the content in the biology subject requires explanations that not only rely on text but also necessitate visual-based media such as images or videos.

Previous studies that are relevant to this research and discuss animated video instructional media include, firstly, a research conducted by Indah Mafazatin Nailiah and Erwin Rahayu Saputra titled Development of TIK-based Animated Video Media for Indonesian Language Learning in Elementary Schools in 2022. The developed instructional media consisted of audio-visual-based animated videos created through Canva. In its development, teachers could input content into the audio-visual-based instructional videos through Canva, relating to song lyrics and iconography depicting vocabulary associated with body parts and the five senses. Assessing the feasibility of the animated video design created, the animated video media was tested on first-grade elementary school students. The evaluation results showed that the average student score was 89.98%, categorized as 'Good'. These results indicate that

TIK instructional media can be utilized as a variation in learning resources in the classroom, especially for Indonesian language learning in elementary schools.¹²

Secondly, a research conducted by Gita Permata Puspita Hapsari titled Development of Canva-Based Animated Video Media to Enhance Student Motivation and Achievement in 2021. In this research, the development of Canva-based animated video media aimed to determine the feasibility and effectiveness of the developed media. The results obtained indicated a feasibility level of 65.45%, categorized as valid or suitable for use. Meanwhile, the effectiveness result reached 0.56%, categorized as moderate. This implies that the developed media was effective in enhancing student motivation and learning outcomes.¹³

Thirdly, a research conducted by Yusnidah in 2022 titled Development of Animation Media in Electronics Learning for Vocational High School Students. This developmental research involved animation-based instructional media utilizing the Canva program. The feasibility of the animation instructional media was determined through assessments by material validators and media validators regarding the development of Canva-based animation instructional media. The criteria obtained were deemed highly satisfactory, with an overall average feasibility score for the material at 77.69% and an overall average feasibility score for the media at 94.18%. Overall, all four validators affirmed that the developed media was valid and thus suitable for use in the electronics learning process.¹⁴

The fourth research was conducted by Cici Farida, Destiniar, and Nyiyayu Fahriza Fuadiah in 2022 titled Development of Animation-Based Instructional media on Data Presentation Material. The result of this research is an animation-based

¹² Indah Mafazatin Nailiah and Erwin Rahayu Saputra, 'Pengembangan Media Ict Berbasis Video Animasi Pada Pembelajaran Bahasa Indonesia Di Sd', *JIPD (Jurnal Inovasi Pendidikan Dasar)*, 6.1 (2022), 8–15 <<https://doi.org/10.36928/jipd.v6i1.976>>.

¹³ Gita Permata Puspita Hapsari and Zulherman Zulherman, 'Pengembangan Media Video Animasi Berbasis

Aplikasi Canva Untuk Meningkatkan Motivasi Dan Prestasi Belajar Siswa', *Jurnal Basicedu*, 5.4 (2021), 2384–94.

¹⁴ Yusnidah Yusnidah, 'Pengembangan Media Animasi Pada Pembelajaran Elektronika Siswa SMK', *JKTP: Jurnal Kajian Teknologi Pendidikan*, 05.03 (2022), 315–25 <<https://doi.org/10.17977/um038v5i32022p315>>.

instructional media that has advantages such as presenting material using animated media, making it not only easy to read but also more engaging to aid both online and face-to-face learning processes. Based on the analysis of animation-based instructional media regarding data presentation for seventh-grade students, the results were obtained for aspects of validity, practicality, and effectiveness. a) The validity aspect obtained highly valid criteria based on validator assessments with an average total score of 93%; b) The practicality aspect met practical standards based on student response questionnaires with an average score of 86%; c) The effectiveness aspect on student learning outcomes achieved a good rating based on learning outcome tests with an attainment percentage of 81.8%.¹⁵

The first similarity among the relevant studies is that they all generated animated video instructional media using Canva. The second relevant research similarly tested the feasibility and effectiveness of the developed media. The third pertinent research involved creating animated media using Canva. Lastly, the fourth relevant research also involved creating animated video instructional media.

The difference between the first research and this research is the discussed subject matter and the location of the research, where the author conducted the research at SMA Negeri 1 Harau. The second difference is in the covered topic; the author addressed the human respiratory system in biology education and the employed methods. The third distinction is in both the subject matter and the utilized methods. Finally, the fourth disparity is observed in the software used, the covered material, and the methodologies employed.

The biology instructional media is intended to enhance students' enthusiasm for researching

biology, improve students' understanding of biology learning materials, and stimulate students' interest in the subject of biology.

Research Method

This research was conducted from September 2022 to February 2023 at SMA Negeri 1 Harau. The research method employed was Research and Development (R&D), a methodology used to develop a new product or enhance existing ones. The utilization of the Research and Development (R&D) method aims to generate a product and assess the effectiveness of that product.¹⁶

This research utilizes the Research and Development (R&D) method employing the 4D development model. The model comprises four stages outlined by Thiagarajan: Define (Definition), Design (Designing), Development, and Disseminate (Dissemination)¹⁷.

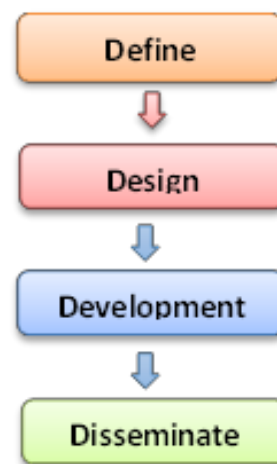


Figure 1. Stages of 4D Model Development

¹⁵ Cici Farida, Destiniar Destiniar, and Nyaiyu Fahriza Fuadiah, 'Pengembangan Media Pembelajaran Berbasis Video Animasi Pada Materi Penyajian Data', *Plusminus: Jurnal Pendidikan Matematika*, 2.1 (2022), 53–66 <<https://doi.org/10.31980/plusminus.v2i1.1521>>.

¹⁶ Firdaus Annas, 'Perancangan Sistem Informasi Bank Soal Online Di SMP Negeri 3 Matur', *Jurnal Educative: Journal of Educational Studies*, 4.2 (2020), 150–62.

¹⁷ Riri Okra and Yulia Novera, 'Pengembangan Media Pembelajaran Digital IPA Di SMP N 3 Kecamatan Pangkalan', *Journal Educative : Journal of Educational Studies*, 4.2 (2019), 121 <<https://doi.org/10.30983/educative.v4i2.2340>>.

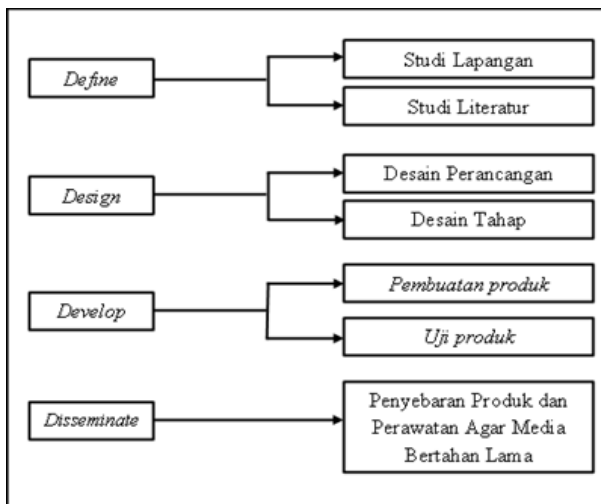


Figure 2. Scheme of Research Stages

The scheme of research stages can be explained as follows:

1. Define

In the Define stage, the researcher undertakes field studies by directly observing and conducting interviews with teachers and students. Additionally, the researcher conducts literature reviews aiming to gather information. Field studies aim to obtain information regarding the media used by teachers and to analyze the issues present at the research site. Meanwhile, literature reviews are conducted to source information from journals, books, and internet browsing).

a) Field Research

In the field research phase, the researcher conducted direct observations at the school with the aim of obtaining information regarding the types of instructional media that can be developed and utilized in the school's learning process. Data collection was carried out through observation techniques and interviews.

b) Literature Research

In this phase, the researcher seeks data sources and information as references for designing instructional media using Canva, encompassing relevant books, journals, theses, and dissertations, as well as other sources or information obtained from internet browsing. The analyzed theories are

related to instructional media, storyboarding, and other aspects associated with the development of animation-based video instructional media in the biology subject using Canva.

2. Design

In this design phase, the researcher begins by designing the instructional media that will be developed in a general form, based on the user needs analysis. To design the general form of the instructional media, the researcher refers to the primary data obtained in the Define stage. The initial step involves designing the learning activities and instructional phases, and the sketched instructional media created will be utilized in the teaching and learning process.

3. Development

This stage involves the process of product development, design, and testing. The trial of the product design is carried out to obtain direct feedback in the form of responses, reactions, and comments from participants, observers, and learners regarding the designed instructional media.

4. Disseminate

This stage involves the dissemination of the product that has been validated for its validity, practicality, and effectiveness by providing the video link to the biology teachers and 11th-grade students at SMA Negeri 1 Harau.

Product Trial

1. Validity Test

The validity test is an indicator that demonstrates whether a measuring instrument truly measures what it intends to measure. Validity refers to the degree of alignment between the data and the research objectives and effects reported by the researcher. Validation is conducted to determine the accuracy level of the resulting product. The

formula utilized in this context is Aiken's V Statistic.¹⁸

$$V = \sum s / [n(c - 1)]$$

Information:

s : r - lo

lo : Lowest validity assessment score

c : Highest validity assessment score

r : Numbers provided by validators

After conducting calculations using Aiken's V formula, the categorization of media feasibility criteria is then presented in Table 1 for reference and assessment.:

Table 1. Aiken's V Validity Criteria

Percentage	Criteria
0,6 <	Invalid
>=0,6	Valid

2. Practicality Test

After validating the product and confirming its validity, the next step is to conduct a practicality test of the product. Practicality testing involves assessment through questionnaires. Practicality refers to the extent to which users (or other experts) find the intervention useful and preferable in normal conditions. The developed model in this research can be considered practical if theoretically, experts and practitioners state that the model can be used in the field, and the implementation level of the model falls into the good category. From the practicality test results analyzed using kappa statistics, the following outcomes are obtained.¹⁹

$$K = \frac{p - pe}{1 - pe}$$

Information :

K : Product practicality level

P : The proportion realized is calculated by dividing the total score given by the examiner by the maximum number

Pe : The proportion that is not realized is calculated by means of the maximum score minus the total number given by the examiner divided by the maximum score.

The results of practical analysis by teachers and students are grouped into categories presented in Table 2:

Table 2. Criteria for Determining the Practicality of Kappa Moment

Interval	Category
0,81 - 1,00	Very high
0,61 - 0,80	High
0,41 - 0,60	Medium
0,21 - 0,40	Low
0,01 - 0,20	Very low
≤ 0,00	Not practical

3. Test Effectiveness

Next is the effectiveness testing phase, which involves testing the product to determine the quality and level of effectiveness by users regarding the designed instructional media product. The effectiveness test is analyzed using Richard R. Hake's statistical formula (G-Score), as follows:

$$\langle g \rangle = \frac{(\% \langle Sf \rangle - \% \langle Si \rangle)}{(100 - \% \langle Si \rangle)}$$

Information:

<g>: G Score Value

<Sf>: Final Score

<Si>: Initial Score

Indicator criteria from the effectiveness test sheet:

High-g has high effectiveness if it has (<g>)>0,7;

¹⁸ Riri Okra Oktaviana, Shania, 'Perancangan Media Pembelajaran Biologi Berbasis Android Di Sma Negeri 1 Kapur IX', 3.1 (2022), 403–14.

¹⁹ Oktaviana, Shania.

Medium-g medium effectiveness if it has $0,7 < g > > 0,3$

Low-g Low effectiveness if it has $< g > > 0,3$.

Finding and Discussion

Finding

The objective of this research is to develop instructional media in the form of animated videos for the subject of biology. The researcher utilized the 4D version of the Research and Development (R&D) method. The description of the stages in developing the media is as follows:

1. Define

a. Research of literature

In formulating this research, the sources or references utilized include journals related to the research topic and theories associated with the development of biology instructional media.

b. Field Studies and Interviews

To acquire primary data, the author conducted field observations in the 11th-grade biology classes at SMA Negeri 1 Harau. Through multiple observation sessions, it was noted that the teacher frequently employed lecture-style teaching methods, using slide presentations primarily consisting of textual content. Additionally, it was observed that students were not attentive during the teacher's explanations and tended to become disinterested. Assessments revealed that during daily assessments, more than 40% of students scored below the Minimum Competency Criteria (KKM).

The direct interviews conducted with teachers and several students involved in the biology learning process at the 11th grade of SMA Negeri 1 Harau aimed to explore information and facts regarding the use of instructional media thus far. From the interview with the biology teacher, Mrs. Zakiyatul Salma, it was revealed that she encountered challenges in determining

suitable and engaging media for the biology subject.

The author also interviewed several students researching biology in the 11th grade, and it can be concluded that understanding biology is challenging due to the abundance of scientific terminology, and the material primarily focuses on rote memorization. The discussion method tends to make students bored and unfocused, with some engaging in distractions and preoccupations during the lessons.

Based on the data and information obtained, it can be concluded that there are several issues and challenges faced by both teachers and students in the learning process. These issues include the underutilization of instructional media, especially animated videos, with current reliance on slide presentations and chalkboards. Another challenge is the difficulty for teachers to determine suitable teaching media due to differing student comprehension levels; not all students can readily grasp the explained lesson materials. Additionally, teachers frequently resort to lecture-based teaching methods, resulting in a teacher-centered learning process.

2. Design

In this stage, the author prepares a conceptual framework for the biology instructional media model and the learning tools, including basic competencies and learning material indicators that will be incorporated into the designed instructional media.

Storyboard

Media Dashboard Display

Media : Biology Animation Video
Modul : Initial Media Display
Screen : 1 from 2
Date : January 27, 2023



Screen Description:

This is the initial interface of the media featuring the research title, subject, school where the research took place, and the Semester 2 material menu.

Color code : #33A5A1, #FFF02D, #58CD96

Color : Java, Pico Sun, Vegetation

Base Screen : by Linktree

Link media : <https://bit.ly/3xniEYB>

Opening

Media : Biology Animation Video

Designed by: Ainil Fitri

Modul : Opening

Screen : 2 from 2

Screen Size: 1920 x 1080 pixels

Date : January 2, 2023



Screen Description:

This is the opening display of the video which shows the learning materials, the front of the class (teacher's desk) and the teacher's character

Color code : #F7CA67, #009663, #FFFFFF, #7D7C82, #E67447

Color : Grandis, green, white, grey, red-orange

Base Screen : Background by Canva, character by Zepeto

Text : SISTEM PERNAPASAN

Text attribute

Font style : Lilita One

Size : 89,4 pt

Type : Reguler

Animation : Company, Bounce

Transition : -

Backsound : Cooking Time by Capcup

Narrator : Ainil Fitri

Narration : Hello, Assalamualaikum wr.wb, How are you everyone? Hopefully you are in good health and keep up the enthusiasm to follow.

Opening Material Display

Media : Biology Animation Video

Designed by : Ainil Fitri

Modul : Opening Material

Screen : 1 from 4

Screen size : 1920 x 1080 pixels

Date : January 2, 2023



Screen Description:

This is the introductory material interface, featuring prompting questions related to the learning material and life illustrations.

Color code : #F7CA67, #009663, #FFFFFF, #E67447, #4D4D4D

Color : Grandis, green, white, red-orange, matterhorn

Base screen : by Canva

Text : How the Human Respiratory System Works?

Text attribute

Font style : Oregano

Size : 52,9 pt and 89,9 pt

Type : Reguler

Animation : Stopmotion, scrapbook

Transition : -

Backsound : Cooking Time by Capcup

Narrator : Ainil Fitri
 Narration : Talking about living organisms, breathing is one of their characteristics. How does the respiratory system work, especially in humans?

Nose Organs

Media : Biology Animation Video
 Designed by : Ainil Fitri
 Modul : Nose organs
 Screen : 1 from 1
 Screen size : 1920 x 1080 pixels
 Date : January 2, 2023



Screen Description :

This is a display of material that contains the appearance of the human respiratory organ, namely the nose

Color code : #D36D46, #E6E6E6, #F2A691, #FFF4ED

Color : saddle brown, whisper, rose bud, seashell

Base screen: by Canva

Text : Nose

Text attribute

Font style : Object Sans

Size : 53 pt

Type : Bold

Animation : Stopmotion, pudar

Transition : -

Backsound : Cooking Time by Capcup

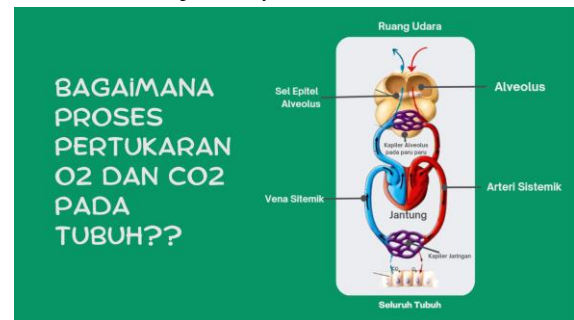
Narrator : Ainil Fitri

Narration : The air from the outside will enter through the cavity. The air that enters the nasal cavity will be purified by the air's hairs (cilia). Inside the nasal cavity, there is a mucous membrane (mucus). The mucous membrane functions to capture foreign objects that enter through the

respiratory tract. Inside the nasal cavity, there are also olfactory receptors and turbinates that have numerous blood capillaries, which serve to maintain humidity and warm the incoming air.

Illustration of O2 and Co2 Exchange

Media : Biology Animation Video
 Designed by : Ainil Fitri
 Modul : Illustration of O2 and Co2 Exchange
 Screen : 1 from 3
 Screen size : 1920 x 1080 pixels
 Date : January 5, 2023



Screen description :

This is a display of material that contains an illustration of the O2 and CO2 exchange process

Color code : #079565, #E0F9F3

Color : Shamrock green, clear day

Base screen : by Canva

Text : How is the O2 and CO2 Exchange Process in the Body ?

Text attribute

Font style : Comica

Size : 64

Type : Reguler

Animation : Typewriter, embossed

Transition : -

Backsound : Cooking Time by Capcup

Narrator : Ainil Fitri

Narration : What do you think the process is like? Let's learn together.

3. *Develop*

The instructional media was designed specifically for biology learning purposes, and intended to serve as a supplementary tool for teaching activities. Additionally, this media is also made available for self-research by students of SMA Negeri 1 Harau. The objective behind

developing this instructional media is to facilitate and enhance students' learning outcomes in the field of biology, fostering increased interest and engagement among students to actively participate in the learning process. The outcome of this instructional media design is a URL/link accessible directly via smartphones. The presentation of this instructional media incorporates animated images, audio, text, and a combination of several colors, aiming to captivate students' attention.

The creation of this biology instructional media was designed using the web-based Canva Team application, aided by supporting applications such as Zepeto, CapCut, as well as the built-in branding application on the Oppo A5 2020 smartphone.

a. Teacher Character Design

The teacher's design in this video was created using the Zepeto application, which is a 3D character creation app or game. Within this application, users have the freedom to design their own characters.

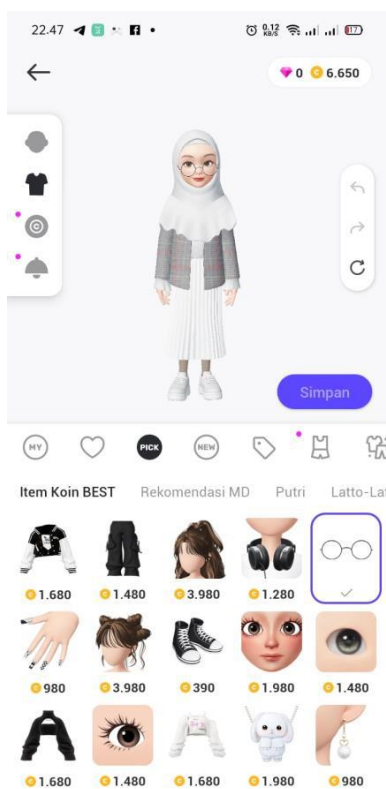


Figure 3. Teacher Character Display

The figure above is a display of the teacher character created using the Zepeto application.

b. Audio Recording (Narration)

The application utilized for recording the audio is the default recording application on the Oppo A5 2020 smartphone. This narration entails explanations for each topic within the biology curriculum for Grade XI throughout one semester.

c. Merging Video - Audio

The application used for merging video and audio is CapCut. CapCut is a video editing application developed by Bytedance Pte. Ltd.

d. Instructional media design.



Figure 4. Initial Media Display

The figure above depicts the initial interface of the educational animated video media created using Linktree. Within the initial interface of the media, there are elements such as the creator's identity, research title, a menu featuring video titles,

quizzes, Canva version videos, and a section for contacting the author.



Figure 5. Showing the Opening Video

In figure 5, there is a display of the learning material to be discussed, with the teacher's design positioned at the front of the class, replicating a real classroom setting.

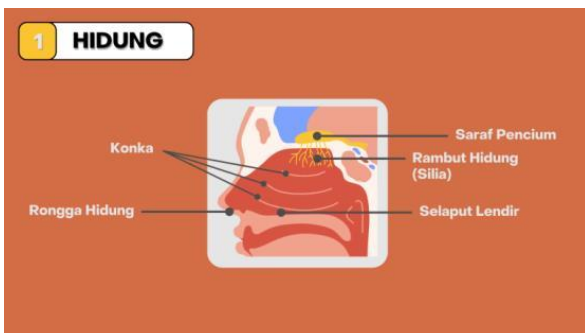


Figure 6. Display of Contents of Display Material

The content material in figure 6 showcases an explanation of the structure of the nasal organs, including the nasal cavity, nasal hair (cilia), mucous membrane, olfactory nerves, and conchae.



Figure 7. Display of Sub-Material Titles

In Figure 7 there is a display of the title of the learning sub-material that will be discussed, in front of the class (teacher's desk) and the character of the teacher.

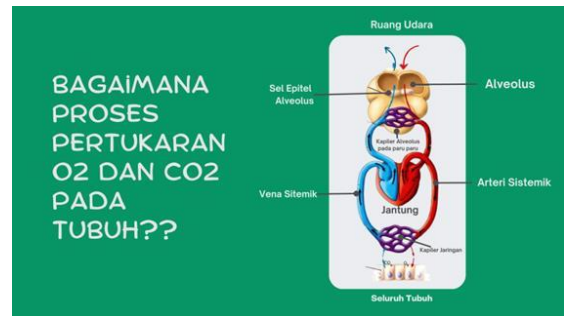


Figure 8. Display of Igniter Questions

In Figure 8 there is a display of light questions related to the material discussed, namely the exchange of O₂ and CO₂.

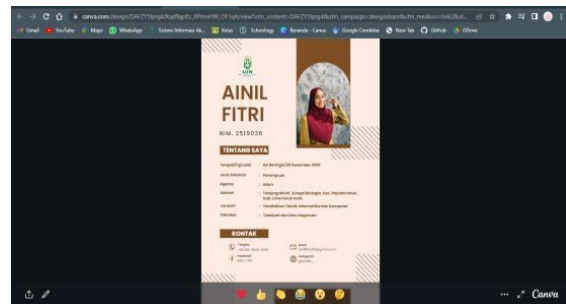


Figure 9. Display of About the Author page

In the contact section there is a button about the author which, if clicked, will lead to the Canva display as shown in figure 9.

4. Disseminate

For this initial phase, the distribution of the biology instructional media will be limited to biology subject teachers and Grade XI students at SMA Negeri 1 Harau. This approach is intended because throughout its development, the biology instructional media will undergo numerous improvements based on feedback and suggestions from relevant stakeholders. These inputs will be gathered from professors, Grade XI biology teachers at SMA Negeri 1 Harau, as well as experts who have tested the validity, practicality, and effectiveness of this biology instructional media.

Product Trial

1. Validity test

The validation of this biology instructional media was conducted by three experts. The validity test results, as assessed by Mrs. Gusnita Darmawati, S.Pd., M.Kom, indicate a construct validity score of 0.95 for the product;

Tabel 3. Hasil Uji Validitas Konstruk

NO	Validity		
	Skor/r	S	V
Item 1	5	4	1
Item 2	5	4	1
Item 3	5	4	1
Item 4	4	3	0,75
Item 5	5	4	1
Item 6	5	4	1
Item 7	5	4	1
Item 8	5	4	1
Item 9	5	4	1
Item 10	4	3	0,75
Item 11	5	4	1
Item 12	5	4	1
Sum			11,5
Average			0,95
Criteria			Valid

Subsequently, language validation by Mrs. Diyan Permata Yanda, M.Pd, resulting in a language validity score of 0.70. The following table illustrates the language validity test results;

Table 4. Language Validity Test Results

No	Validity		
	Score/r	S	V
Item 1	4	3	0,75
Item 2	4	3	0,75
Item 3	4	3	0,75
Item 4	3	2	0,50
Item 5	4	3	0,75
Item 6	3	2	0,50
Item 7	4	3	0,75
Item 8	3	2	0,50
Item 9	5	4	1
Sum			6,25
Average			0,70
Criteria			Valid

And finally, content validation was conducted by Mrs. Ernazen, S.Pd, yielding a content validity score of 0.72. The results can be observed in the table below;

Table 5. Content Validity Test Results

No	Validity		
	Score/r	S	V
Item 1	4	3	0,75
Item 2	4	3	0,75
Item 3	4	3	0,75
Item 4	4	3	0,75
Item 5	4	3	0,75
Item 6	4	3	0,75
Item 7	4	3	0,75
Item 8	4	3	0,75
Item 9	4	3	0,75
Item 10	3	2	0,50
Item 11	4	3	0,75
Item 12	4	3	0,75
Sum			8,75
Average			0,72
Criteria			Valid

The validation results were calculated using the Aiken's V statistical formula. The average value obtained for this biology learning media was 0.79.

Based on the validity test results obtained, it can be concluded that the development of animation-based video learning media using Canva for the biology subject created by the author is deemed valid.

2. Practicality test

The practicality test results of the research product were aimed at one mathematics teacher and five students. After the calculation process, practicality sheets were assessed by one biology subject teacher, Mrs. Zakiyatul Salma, S.Pd, with a score of 0.91. Additionally, the practicality scores obtained from the five students were as follows: Nadira Faruzana with a score of 0.90, M. Al Azan with a score of 0.86, Hesti Putri Ibrahim with a score of 0.91, Zahwa Azzahra with a score of 0.90, and Kanesya Latifa Azari with a score of 0.86. Based on the practicality test results, the obtained outcomes are presented in the table;

Table 6. Practicality Test Results

Rated Aspect	Practicums					
	1	2	3	4	5	6
Item 1	5	4	4	4	4	4
Item 2	5	5	4	5	5	4
Item 3	4	5	5	5	5	4
Item 4	4	4	4	4	4	5
Item 5	5	5	5	5	4	5
Item 6	5	5	4	5	5	5
Item 7	5	4	5	5	5	5
Sum	33	32	31	32	32	31
Average	0,91	0,90	0,86	0,90	0,90	0,86
Practical Results	0,88					
Information	Very High					

From six practical sessions, a score of 0.88 was obtained. Thus, upon application and utilizing the Kappa moment, the practicality value of the animation-based video learning media for the biology subject using Canva, created by the author, falls within the range of 0.81 to 1.00, categorizing it as highly effective.

3. Effectiveness Test

To test the effectiveness of the product, it was directed towards 15 students. Upon completion of the effectiveness calculation process, an average score of 0.65 was obtained, categorized as moderate effectiveness. Below is the table depicting the results of the product's effectiveness testing conducted among the students.

Table 7. Effectiveness Test Results

No	Respondents	(Si)	(Sf)	Gain Score (G)
1	Lexi Argus Saputra	70	83	0,43
2	Arindy Hanum Diceon	63	87	0,65
3	Fadila Apriyani	73	83	0,37
4	Nailah N	70	83	0,43
5	Gendis Suri Fathimatuz Zahra	73	100	1
6	Yola Yolanda	67	90	0,70
7	Fidya Rahayu	50	90	0,80
8	Muhammad Al-Kayyis	50	93	0,86
9	Nada Oliffia	73	83	0,37
10	Siti Aisyah	67	90	0,70
11	M. Al Adzam	57	90	0,76

No	Respondents	(Si)	(Sf)	Gain Score (G)
12	Nadira Faruzana	73	87	0,51
13	Gita Lestari	73	87	0,51
14	Virdani	67	90	0,70
15	Gusniati Azizah	77	90	0,56
Sum		1003	1326	9,35
Average		66,67	88,40	0,65

The outcome of this research is a biology instructional media product for Grade XI Semester 2 at SMA Negeri 1 Harau, created using the Canva program. This biology instructional media is designed to assist students in their biology studies at SMA Negeri 1 Harau. It encompasses various forms of animated displays or animated videos.

Discussion

This research has resulted in a product consisting of animation-based biology instructional media for Grade XI Semester 2 at SMA Negeri 1 Harau in the Lima Puluh Kota District, utilizing the Canva application. This biology instructional media was created to support the biology learning process at SMA Negeri 1 Harau in the Lima Puluh Kota District. The advantage of this media lies in its ability to present research materials in the form of animated images and video animations. Addressing the concerns felt by students, the presence of this instructional media brings a different pattern and atmosphere to the classroom. Consequently, students become more active in the learning process, making the classroom environment more vibrant.

Furthermore, this biology instructional media can also assist students in cultivating enthusiasm and eagerness towards learning biology. Its aim is to enhance students' comprehension of biology topics, fostering a deeper understanding of the subject matter. Additionally, it aims to spark students' interest in biology subjects, which typically require profound comprehension.

The research findings are supported by a questionnaire that has been tested and distributed to measure the maturity of a media to ensure it produces valid content and material, practicality in

its use, and effectiveness concerning biology instructional media. This maturity of the media can serve as a guide for educators teaching biology subjects to Grade XI students at the high school level.

Conclusion

From this research, it can be concluded that the developed biology instructional media has been successfully designed using the Canva application, resulting in animated video outputs. By utilizing this biology learning resource, it is hoped that educators can better explain biological concepts to students, particularly those in Grade XI at SMAN 1 Harau, thus motivating them to learn biology and exhibit interest in the subject. The instructional media underwent testing, resulting in a validity level from three experts with a score of 0.79, categorized as valid. Furthermore, the practicality test involved six assessors yielding a score of 0.88, deemed highly practical. Additionally, the effectiveness test involving 15 evaluators resulted in a score of 0.65, categorized as effective. Hence, this media is deemed suitable for enhancing the learning process in biology at SMAN 1 Harau.

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