



**DEVELOPMENT OF SELF-LEARNING MEDIA BASED ON ISPRING SUITE  
10 ON RESPIRATORY SYSTEM MATERIALS IN CLASS XI-MIA IN  
METHODIST 8 MEDAN PRIVATE HIGH SCHOOL MEDAN**

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Accepted: November 27<sup>th</sup>, 2023. Published: December 31<sup>th</sup>, 2023

**Abstract**

This study aims to determine the feasibility level of the Learning Multimedia that was developed based on the ispring suite 10 as a source of independent learning on the respiratory system material for class XI SMA. Learning Media developed based on expert validation, namely material experts, media experts and based on field tests to obtain responses and assessments by subject teachers, and students. This study uses a 4-D model of instructional development design by Thiagarajan which includes 4 stages, namely; define, design, develop, and disseminate which are limited to limited field tests and limited distribution to see the results of students' classical learning mastery. Research preparation begins in August 2021 and will be carried out in October 2021 – July 2022. The product trial was conducted at the Methodist 8 Medan Private High School. The results of the study indicate that the Learning Multimedia that has been developed is feasible to be used as a source of student self-study because it meets the eligibility criteria. Based on expert validation, the mean score was 4.40 or 88% (very feasible) from material experts. Meanwhile, media experts obtained a mean score of 4.62 or 92.4% (very feasible). Based on the results of field tests on teacher and student responses, it was obtained a mean score of 87.05 (very feasible) from the results of the teacher's assessment of the field of study and a mean score of 90.62 (very decent) from the results of student assessments. Students' classical learning completeness in limited distribution gets a percentage of 86.15% (very decent).

**Keywords:** Development, Learning Multimedia, Respiratory System

## Introduction

Science and Technology (IPTEK) is always evolving and evolving to give birth to innovations and changes that cannot be avoided. The world is currently in the era of the 5.0 industrial revolution. The era of the industrial revolution 5.0, where the world is fully in touch with the Internet (Internet of Things (IoT)). The development of this industrial revolution has affected all areas of life, including the world of education. Improving the quality of education in the face of industrial revolution 5.0, can be done by optimizing technology as an educational tool such as learning communication media and learning resource media for students. In the learning process, learning is not only done at school with the guidance of the teacher, but the learning process at home independently is very important to improve the quality of student learning outcomes.

The results of preliminary observations through interviews with 25 students and 1 teacher in the field of biology at the Methodist 8 Medan Private High School explained that face-to-face learning in schools uses student handbooks and student worksheets as learning media. While independent learning at home, using the communication media Whatsapp and google classroom to share learning media in the form of PowerPoint and Youtube video links. In this process, there are several obstacles faced by students, including time constraints where the implementation of face-to-face learning is limited in schools, making student learning time very short. So we need a solution in the form of additional learning media to help students understand, deepen and repeat the subject matter at home. Meanwhile, the online learning process is constrained by the internet which has an impact on the low attendance and participation of students.

Students are less responsive to chat in class groups as seen from the minimal chat response and low student scores in independent task work. Students admitted that they were bored when studying independently at home because the learning process was monotonous where students were only directed to summarize the subject

matter in notes and then collect it. While the obstacles faced by teachers are teachers need learning media that can be used by students independently so that students can learn directed. Furthermore, network constraints and learning from home and independent learning constraints that cannot be fully supervised by the teacher directly result in students being less motivated and unsatisfactory student learning outcomes seen from the low classical mastery scores of students when holding midterm exams. Currently, students are bored with conventional learning and are more interested in practical and economical things, so there is an innovation to develop learning multimedia that allows students to study conducive, easy to use and inexpensive in cost.

The learning multimedia can be created using the iSpring Suite 10 software which is software that can produce learning multimedia with digital technology that can be accessed online or offline, has various features such as being easy to distribute on both laptops and on various platforms in flash format so that can be used anywhere and anytime, can make quizzes with various types of questions / questions. In the development of this interactive multimedia, the focal point of the learning material is the respiratory system because based on interviews with Biology subject teachers, in general the respiratory system material is material that is quite difficult for students to understand because some of the processes in it are abstract and complex so that media or media is needed. visualization aids for respiratory organs and the mechanism of human breathing so that students can more easily understand the material.

The respiratory system material is one of the biology learning materials that is considered difficult for students, because students cannot see directly the organs that make up the respiratory system in the body cavity and the processes that occur in the respiratory system so that auxiliary media are needed to help students understand. Based on the description above, it is necessary to do research on " development of self-learning media based on ispring suite 10 on respiratory system materials in class

XI-MIA in methodist 8 medan private high school medan”.

### Research Method

This development research was carried out with a design adapted from a 4D (four-D) model consisting of 4 main stages, namely: (1) define, (2) design, (3) develop, (4) disseminate (spread), (Thiagarajan, 1974). This development research was only carried out until the deployment stage in the field was limited, namely using only 1 class XI MIA namely XI MIA-Uggulan to determine student responses to the developed multimedia and to determine students' classical mastery after using the developed multimedia. The instrument used in this study to determine the feasibility value of the multimedia learning product produced is a questionnaire and a test in the form of multiple-choice questions arranged based on learning indicators.

Analysis of the data used in this development research is descriptive data based on assessment data in the form of a check list which is summarized in the form of a Likert scale table that has been given a certain score, namely a scale of 1 to 5 which can be seen in table 3.6. The Likert scale is used to measure the value of attitudes, opinions, and perceptions of a person or group of people regarding a phenomenon (Amanda, 2019).

**Table 1.** Assessment criteria

| Category | score     |
|----------|-----------|
| 5        | Very good |
| 4        | Oke       |
| 3        | Enough    |
| 2        | Less      |
| 1        | Very less |

In calculating the average score of answers on each aspect of the questions in the questionnaire, the following formula is used:

$$xt = \frac{\sum Xi}{N}$$

Information:

Xt: Mean score of answers for each aspect of the question as a whole.

Xi: The total score of answers from different respondents.

N: The total number of items in points (Sriadhi, 2018).

The data obtained from the questionnaire was quantified using the Likert scale and analyzed by calculating the percentage of item scores on each answer to each question in the questionnaire using the following formula:

$$p = \frac{X}{\sum Xi} \times 100$$

Information:

P: Searched score

X: The total number of respondents' answers in all points

Xi: Overall ideal score in points

100: Constant Number (Alfia, 2021).

Furthermore, to convert quantitative data into qualitative data compiled and developed based on the assessment criteria developed by (Sriadhi, 2018), the interpretation of the feasibility of learning multimedia through descriptive statistics is divided into four groups with the ideal mean (2.50) as the limit of the feasibility score.

**Table 2.** Eligibility Assessment Criteria

| No | Persentase (%) | Interval Mean Skor | Interpretasi |
|----|----------------|--------------------|--------------|
| 1. | <50            | 1,00 - 2,49        | Not feasible |
| 2. | 50-66          | 2,50 - 3,32        | less worthy  |
| 3. | 66-83          | 3,33 - 4,16        | Worthy       |
| 4. | 83-100         | 4,17 - 5,00        | Very Worthy  |

Furthermore, data analysis of student learning classical test results was obtained through the distribution of multimedia to a limited field to see the completeness of classical student learning outcomes. The class can be said to have completed learning if it meets the indicators of the success of the quality of the learning process if the success of classical learning outcomes is at least 85% of the number of students who reach

the KKM. According to Zainal (in Simbolon, 2018) the percentage of classical completeness (PKK) can be calculated using the formula:

$$PKK = \frac{T}{N} \times 100\%$$

Information:

P: The percentage of classical completeness (PKK)

Q: the number of students with the KKM complete category

N: the total number of students as research objects (Simbolon, 2018).

### Result and Discussion

The initial product or learning multimedia product design was produced with the iSpring Suite 10 software in the form of draft 1. The initial draft 1 which has been integrated with the iSpring Suite 10 software can be seen in the following figure:



Figure 1. Media Preview

The first draft of learning multimedia that has been produced in the early stages is then reviewed by the supervisor and then an Expert Appraisal is carried out. This assessment is carried out by material experts and media experts. Based on the results of material expert validation, it is known from the aspects of guidance and information that the mean score = 4.00; From the aspect of multimedia content/materials, the mean score = 4.27 and from the evaluation aspect, the mean score is 4.00. When converted to qualitative data, the mean score interval for all aspects is already in the mean  $X > 3.33$  interval which is included in the "adequate"

category. However, there are several categories that get a poor rating, so they still need some revisions. After revision, it is known from the aspect of guidance and information that the mean score = 4.75; From the aspect of multimedia content/materials, the mean score = 4.36 and from the evaluation aspect, the mean score is 4.2. When converted from quantitative data to qualitative data, the mean score interval for all aspects of guidance and information, multimedia content/materials and evaluation is already in the mean interval  $X > 3.33$  which is included in the appropriate category to use with the mean score of all aspects 4.4 with the category "very decent". The following can be observed the assessment of the material expert after the revision.

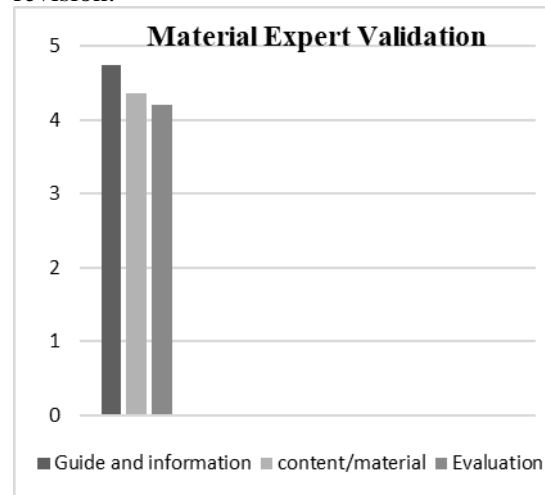
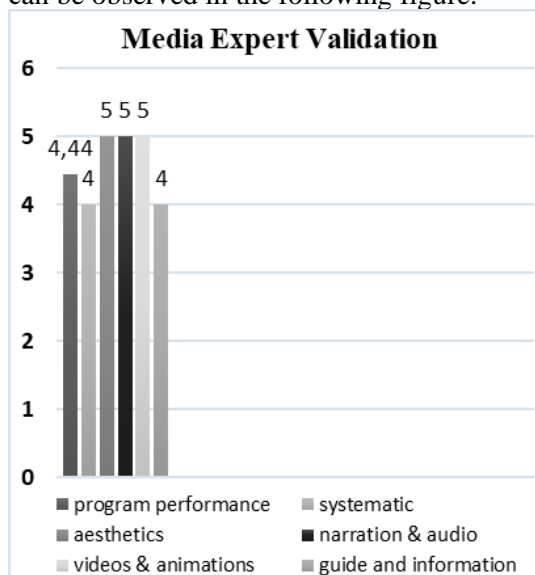


Figure 2. Material Expert Validation Diagram

Furthermore, based on the results of media expert validation, iSpring Suite 10-based learning media obtained an assessment of program performance aspects with a value of  $X_t = 3.88$ , in the systematic, aesthetic and design principle aspects, it was known that in the systematic category,  $X_t = 3.33$ ; aesthetic category obtained the value of  $X_t = 5.00$ ; narration and audio quality categories with a value of  $X_t = 4.66$ ; and the category of video and or animation quality with a value of  $X_t = 5.00$ . In accordance with the provisions for converting quantitative to qualitative values, the ideal mean value (2.50) is the value as the limit of the feasibility score and the feasibility of

using media is at the mean score of  $X > 3.33$ , therefore, the guidance and information aspects that get the value  $X_t = 3.00$  is interpreted in the "less feasible" category so that it still requires a process of improvement to make it more feasible and there are several points that still need improvement in order to produce a product learning media that are more appropriate and better to use.

Based on the results of media expert validation after revision, the iSpring Suite 10-based learning media obtained an assessment with the aspects of Guidance and Information with a value of  $X_t = 4.00$ , program performance aspects with a value of  $X_t = 4.44$ , on the aspects of systematics, aesthetics and design principles it is known that in the systematic category, the value of  $X_t = 4.00$ ; aesthetic category obtained the value of  $X_t = 5.00$ ; narration and audio quality category with a value of  $X_t = 5.00$ ; and the category of video and or animation quality with a value of  $X_t = 5.00$ . When converted from the quantitative data above to qualitative data, the mean score interval for all aspects of guidance and information, multimedia content/materials and evaluation is already in the mean interval  $X > 3.33$  which is included in the appropriate category to use with the overall mean score. aspect 4.62 with the category "very feasible". For differences in the assessment of media validation experts after revision, it can be observed in the following figure:



**Figure 3.** Media Expert Validation Diagram

After the product was improved and produced draft 2, then multimedia testing was carried out in a limited field to test the feasibility of the learning multimedia developed for users (students and teachers) class XI MIA-U to see the level of feasibility in Methodist 8 Medan Private High School. Based on the teacher's response questionnaire, which was filled out and carried out by 1 teacher in charge of Biology in class XI at the Methodist 8 Medan Private High School, the iSpring Suite 10-based learning media was feasible to use referring to the aspect of content quality and objectives, the mean score = = 86.66; In the aspect of instructional quality, the mean score = 81.25 and on the technical quality aspect, the mean score = 87.5. When converted from the quantitative data above to qualitative data, the mean score interval as a whole is included in the decent category where the score obtained is 87.05 in the interval 4.17-5.00 with the "very feasible" category.

Furthermore, based on a direct test of students of class XI-MIA Excellence at SMA Swasta Methodist 8 Medan, responses were obtained where the quality aspect of the content obtained the mean score = 91.53; In the aspect of media display, the mean score = 89.03 and in the technical quality aspect, the mean score = 95.12. When converted from the quantitative data above into qualitative data, the mean score interval as a whole is included in the decent category where the score obtained is 90.62 in the interval 4.17-5.00 with the "very feasible" category.

Based on the teacher's response questionnaire, which was filled out and carried out by 1 teacher in charge of Biology in class XI at the Methodist 8 Medan Private High School, the iSpring Suite 10-based learning media was feasible to use referring to the aspect of content quality and objectives, the mean score = = 86.66 ; In the aspect of instructional quality, the mean score = 81.25 and on the technical quality aspect, the mean score = 87.5. When converted from the quantitative data above into qualitative data, the mean score interval as a whole is included in the decent category where the score obtained is 87.05 in the

interval 4.17-5.00 with the "very feasible" category.

Based on the questionnaire responses of class XI-MIA Featured students at Methodist 8 Medan Private High School, learning media based on iSpring Suite 10 is feasible to use referring to the aspect of content quality, the mean score = 91.53; In the aspect of media display, the mean score = 89.03 and in the technical quality aspect, the mean score = 95.12. When converted from the quantitative data above into qualitative data, the mean score interval as a whole is included in the decent category where the score obtained is 90.62 in the interval 4.17-5.00 with the "very feasible" category.

To see the level of product success in the learning process, especially student learning outcomes, students are directed to answer competency test questions contained in the developed learning media. the percentage of classical completeness success (PKK) is obtained 92,30% "very feasible" category.

The final product after being revised gets a validation value with the mean score of the guidance and information aspects with a value of  $X_t = 4.75$ ; multimedia content/material with the acquisition value of  $X_t = 4.36$ ; and evaluation with a value of  $X_t = 4.20$ . if the mean score of all aspects of the assessment is taken, the result is  $X_t = 4.40$  so that the total score of all aspects of the media gets the "very feasible" category, which reaches a percentage of 88% in accordance with the criteria for evaluating the feasibility of multimedia products explaining that the media developed is suitable for use by teachers and students in terms of material. This is in accordance with previous development research using the same software, namely the iSpring suite by Qomariyah and Mistianah (2021) who obtained the results of material expert validation with a percentage of 88% which were in the "Valid" or "decent" category seen from the similarity of indicators of ease of use of media. and the suitability of the content of the material with the demands of the curriculum and learning objectives. Likewise, research conducted by Ariyanti et al. (2020) that learning media developed

with validity values by content/material experts at a percentage of 80% and above are said to be valid where in this study a validity value of 94% was obtained as seen from the similarity of indicators of conformity of the material with theories and concepts and the level of depth of learning material.

The final product after the revision of the media obtained an assessment with guidance and information aspects with a value of  $X_t = 4.00$ , program performance aspects with a value of  $X_t = 4.44$ , in the systematic aspect, aesthetics and design principles it is known that in the systematic category, the value  $X_t = 4.00$ ; aesthetic category obtained the value of  $X_t = 5.00$ ; narration and audio quality category with a value of  $X_t = 5.00$ ; and the category of video and or animation quality with a value of  $X_t = 5.00$ . When converted from the quantitative data above to qualitative data, the mean score interval for all aspects of guidance and information, multimedia content/materials and evaluation is already in the mean interval  $X > 3.33$  which is included in the appropriate category to use with the overall mean score. aspect of 4.62 with a percentage of 92.4% in accordance with the criteria for evaluating the feasibility of multimedia products explaining that it is included in the "very feasible" category to be used in terms of media.

This research is in accordance with previous development research using the same software, namely the iSpring suite of media development iSpring Suite 8 with a think model in the genetics course by Qomariyah and Mistianah (2021) seen from the similarity of indicators of media display and grammar that get the results of media expert validation with the percentage of 89% who are in the "Valid" or "decent" category where the media expert assessment category which is in the 76% interval and above indicates that the media is very good and does not need to be revised so that it is feasible to use. Likewise, research conducted by Ariyanti et al. (2020) on the development of interactive multimedia material on the role of economic actors in economic activities for class X students with the similarity of indicators of ease of use,

media display, use of background colors, images, sounds and letters which in this study obtained a validity value by learning media experts of 82% which is included in the very feasible category and does not need to be revised and is feasible to use. This is also supported by research on the development of Android-based iSpring Suite 9 learning media in basic electricity and electronics subjects conducted by Dita et al. (2022) seen from the similarity of indicators of accessibility, language, images or animation and time which explains that the results of media validity above 80% are feasible, where in their research, a validation percentage of 82.29% is obtained, which means it is valid or good to use.

Based on the teacher's response questionnaire, the learning media developed based on iSpring Suite 10 is feasible to use. The results of the overall mean score interval are included in the decent category where the score obtained is 87.05 according to the criteria for evaluating the feasibility of multimedia products in the interval 4.17-5.00 with the "very feasible" category. These results are in accordance with research conducted by Julianti & Arwin (2021) in terms of the ease of use of learning media in the development of android-based learning media using Powerpoint iSpring Suite 9 in integrated thematic learning for class IV which explains that the teacher's response obtains a 100% practicality percentage of the media used. developed. If the value obtained is in the 86%-100% interval, including meeting the practicality indicators, it means that it is easy to use.

Furthermore, the media test in the field was limited to 26 students on learning media developed based on iSpring Suite 10 which was feasible to use referring to the overall mean score included in the decent category where the score obtained was 90.62 in the interval 4.17-5.00 with "very decent" category. The data from this study are in accordance with previous research conducted by Ariyanti et al. (2020) from the similarity of indicators of ease of use of media, attractiveness of media, and ease of understanding the material which explains that the student response obtained after using media developed using the iSpring

suite software is 83.4% in the study which is in the effective category where in the use of the media helps students in understanding the material independently.

The feasibility of learning multimedia developed using iSpring Suite 10 software on the respiratory system material in humans to see the classical mastery of student learning in class XI SMA Swasta Methodist 8 Medan obtained data showing that there were 24 students who achieved scores above the minimum completeness criteria value with a mean class score. is 86.15 with the achievement of the percentage of classical completeness success (PKK) of 92.30%. In accordance with the opinion expressed by Hasibuan et al. (2019) which states that "Classical learning completeness criteria are met if in the class there are 85% of students have completed learning" which explains that the learning resources developed are effective for the learning process because they meet the criteria for the success indicators of the quality of the learning process with successful outcomes. learning classically by 92.30%.

This multimedia is designed with an emphasis on students (self-instruction) in the learning process independently, in other words this media is indeed designed as an independent learning medium for students and its use does not depend on the teacher as an independent instruction instructor because in its use the students themselves guide themselves. in learning by following the guidelines of the learning media (Miftah, 2013). However, it does not mean that the teacher does not have a role in the independent learning process in this media, the teacher plays a very important role in the test process provided in the media, namely practice questions and competency tests because every answer to a question that has been done by students will be automatically sent to the teacher's email. In other words, the teacher will still be irreplaceable and will continue to play a role in the learning process independently using this media.

In this study, the developed independent learning media obtained good scores, especially in the aspect of media use by users which can be seen in the aspects of guidance and information with the

acquisition of  $X_t = 4.75$  by material experts and  $X_t = 4.00$  by media experts. which is in the category of very feasible to use. In this study, it was previously explained that teachers and students received assessments and responses that this media could be used in terms of technical, content and instructional assessments by teachers and students. Based on field trials on teachers, the value of the instructional quality aspect was obtained with a mean score = 81.25 and on the technical quality aspect with a mean score = 87.5. And based on direct testing of students, the technical quality score was obtained with a mean score of = 95.12 which indicates the category is very feasible to use. In accordance with the score obtained by the assessment of experts and direct field trials, the feasibility value explains that this learning media is easy to use independently from a technical and instructional point of view which gets an assessment that is very feasible to use. As stated by Andrizal & Ahmad A., (2017) that learning media which can be said to be independent learning media are media whose effectiveness cannot stand alone in achieving learning goals if users cannot use and use media in the learning process.

### Conclusion

Based on the results of field tests on teacher and student responses, it was obtained a mean score of 87.05 (very feasible) from the results of the teacher's assessment of the field of study and a mean score of 90.62 (very decent) from the results of student assessments. Students' classical learning completeness in limited distribution gets a percentage of 86.15% (very decent).

### Reference

- Alfia, N. (2021). Pengembangan Media Pembelajaran Berbasis Ispring Suite 8 Pada Tema Peduli Terhadap Makhluk Hidup Kelas IV Madrasah Ibtidaiyah Nurul Iman Pematang Gajah. Skripsi. Fakultas Tarbiyah Dan Keguruan Universitas Islam Negeri Sulthan Thaha Saifuddin. [Versi elektronik]
- Amanda, N. P. (2019). Pengembangan Media Pembelajaran Interaktif Dalam Pengenalan Komunikasi Dasar Bahasa Inggris Berbasis Macromedia Flash Kelas V SD/MI. Skripsi. Lampung: Universitas Islam Negeri Raden Intan.
- Andrizal & Ahmad A., (2017). Pengembangan Media Pembelajaran Interaktif Pada Sistem E-Learning Universitas Negeri Padang. Padang: Universitas Negeri Padang [Versi elektronik]
- Anwar, R. (2014). Hal-Hal yang Mendasari Penerapan Kurikulum 2013. [Versi elektronik]. Humaniora. Jakarta: BINUS University. vol.5(1), 97.
- Ariyanti et al. (2020). Multimedia Interaktif Berbasis Ispring Suite 8. Surabaya: Universitas PGRI Adi Buana Surabaya. Vol.8 No.2 Edisi Mei 2020.
- Dita et al. (2022). Pengembangan Media Pembelajaran Ispring Suite 9 Berbasis Android Pada Mata Pelajaran Dasar Listrik Dan Elektronika Di SMK Negeri 3 Surabaya. [Versi elektronik]. Jurnal Pendidikan Teknik Elektro. Volume 11 Nomor 01 Tahun 2022, 79-85.
- Hasibuan, A.M., Saragih, S. & Zul, A. (2019). Development of learning materials based on realistic mathematics education to improve problem solving ability and student learning independence. International Electronic Journal of Mathematics Education, 14(1): 243-252.
- Herman, D.S. (2017). Multimedia Pembelajaran Interaktif: Konsep dan Pengembangan. Yogyakarta: UNY Press.
- Hernawati, K. (2010). Modul Pelatihan Ispring Presenter. [Versi elektronik]. Teknologi Pendidikan, vol.05(01), 18.
- Himmah, F. (2017). Pengembangan Multimedia Interaktif Menggunakan Ispring Suite 8 Pada Sub Materi Zat Aditif Untuk Meningkatkan Hasil Belajar Siswa SMP Kelas VIII. [Versi elektronik]. Jurnal Pendidikan Sains. Yogyakarta: UNY. vol. 5(02), 73-82.



- Ilham, E.P. (2013). Teknologi Media Pembelajaran Sejarah Melalui Pemanfaatan Multimedia Animasi Interaktif. [Versi elektronik]. *Jurnal TEKNOIF*, 1(2), 20–25.
- Julianti, M. & Arwin (2021). Pengembangan Media Pembelajaran Berbasis Android Menggunakan Powerpoint Ispring Suite 9 Pada Pembelajaran Tematik Terpadu Kelas IV Sekolah Dasar. [Versi elektronik]. *Journal of Basic Education Studies / Vol 4 No 1*
- Miftah, M. (2013). Fungsi dan Peran Media Pembelajaran Sebagai Upaya Peningkatan Kemampuan Belajar Siswa. *Kwangsan: Jurnal Teknologi Pendidikan*, 1(2), 95. <https://doi.org/10.31800/jtp.kw.v1n2.p95--105>
- Munir. (2012). Multimedia Konsep & Aplikasi Dalam Pendidikan. *Antimicrobial agents and chemotherapy*. Bandung: Alfabeta (Vol. 58(12)).
- Musdalifah, R. (2019). Pemrosesan dan Penyimpanan Informasi pada Otak Anak dalam Belajar: Short Term and Long Term Memory: *Jurnal Pendidikan Islam* (Vol. 17. No.2.Hal.218-235)
- Partono, J., Wulandari, Y., & Indyastuti, P. (2020). Multimedia Interaktif Dalam Pembelajaran Daring Sebagai Upaya Meningkatkan Hasil Belajar Peserta Didik. *Prosiding Pendidikan Profesi Guru*. Universitas Ahmad Dahlan.
- Patwa, A., & Amit. S. (2015). Anatomy And Physiology Of Respiratory System Relevant To Anaesthesia. *Indian Journal of Anaesthesia*, 59(9), 533–541.
- Prawirohartono, S. (2020). Konsep Dan Penerapan Biologi SMA/MA Kelas XI Jakarta: PT. Bumi Aksara.
- Qomariyah, I. N. & Mistianah. (2021). Pengembangan Media Ispring Suite 8 Dengan Model Think Pada Mata Kuliah Genetika. *Jurnal Pendidikan Biologi*. 12, 108–113. doi <http://dx.doi.org/10.17977/um052v12i2p108-113>
- Ramli, M. (2012). Media Teknologi Pembelajaran. Banjarmasin: IAIN Antasari Press. [Versi elektronik].
- Samsinar. (2019). Urgensi Learning Resources (Sumber Belajar) dalam Meningkatkan Pembelajaran. [Versi elektronik]. *Jurnal Kependidikan*, 13(02), 194–205.
- Sari, M. P., & Ridwan. (2020). Interactive Multimedia Development using Ispring Suite 9 Application in Natural Sciences Learning of IX Grade in Junior High School. [Versi elektronik]. *International Journal of Sciences and High Technologies*, 21(2), 251–258.
- Sriadhi (2018). Instrumen Penilaian multimedia pembelajaran. [Versi elektronik]. Diakses dari: <https://www.researchgate.net/publication/334586889>
- Sugiyono, (2015). Metode penelitian pendidikan: Pendekatan kuantitatif, kualitatif, dan R&D. Bandung: Alfabeta. [Versi elektronik].
- Sumiharsono, R. & Hisbiyatul. H. (2017). Media Pembelajaran: Buku. Bacaan Wajib Dosen, Guru dan Calon Pendidik. CV.Pustaka Abadi. [Versi elektronik].
- Thiagarajan, Sivasailam et al. (1974). Instructional development for training teachers of exceptional children: A sourcebook. [Versi elektronik]. *Journal Psychology*.