Pedagonal : Jurnal Ilmiah Pendidikan
Vol. 08, No. 01, April 2024, pp. 1~9
ISSN: 2550-0406, DOI: 10.55215/pedagonal.v8i1.9664

Development of Electronic Student Work-Sheets (E-LKPD) by Digital Drawing Mode at Private Vocational Schools

Meilisa[a]*, Nining Tristantie[a], Dita Dwi Nitami[a]
[a] Faculty of Engineering, Universitas Negeri Medan, Medan, Indonesia
meilisa97ss@gmail.com*; niningtristantie@gmail.com; ditadwi@gmail.com
*Corresponding author

Article Info

Article history:

Received Mar 19, 2024
Revised Apr 18, 2024
Accepted Apr 25, 2024

Keywords:

E-LKPD
Ibis Paint
Digital Design

ABSTRACT

This research emerged from several obstacles in the field, namely students' difficulties in understanding digital technical design material with Ibis Paint The aims of this research are 1) to develop an E-LKPD for digital fashion drawing at Private Vocational School, 2) to determine the feasibility of a digital fashion drawing E-LKPD at Private Vocational School. This research uses the R&D method with a 4-D development model (define, design, development, and disseminate). The validation and trial stages were carried out to assess the feasibility of E-LKPD. Material experts and media experts play a role in validation to obtain input regarding the appropriateness in terms of material and media. The feasibility test was carried out through a questionnaire to eleven grade students at Private Vocational School, second semester. Data analysis uses a five-scale score (Likert scale) for the predetermined assessment categories. The results of this research are 1) validation of E-LKPD drawing mode according to material experts "Very Good" with an average percentage score of 94% and according to media experts "Very Good" with an average percentage score of 87.4%. 2) The feasibility of E-LKPD drawing mode is included in the "Very Good" category. The average score percentage results in the small group trial were 80% with "Good" criteria, the medium group was 87.5% with "Very Good" criteria, and the large group was 92.8% with "Very Good" criteria.

Introduction

The education process is needed as a step to increase the knowledge and intelligence of a nation, with the aim of improving the quality of its human resources (Hermanto, 2020). Education is a need that supports the national development process (Yamin & Syahrir, 2020). Educational institutions play a crucial role as workforce preparation institutions, expected to provide knowledge that is in line with the skills needed in the 21st century era, especially in the fields of digital technology and the internet. Vocational education aims to equip students with scientific and technological knowledge, as well as vocational skills that suit the needs of society, preparing them for various professions (Perpres, 2022).

Presidential Instruction number 9 of 2016 concerning the revitalization of vocational education emphasizes the importance of improving the quality and competitiveness of

Indonesia's human resources. By applying 21st century digital skills to fashion design vocational education graduates, it is hoped that they will be ready for work, demonstrate a professional attitude, and compete effectively in the world of work (Rahmawati, 2022). The largest human resource in the fashion creative industry comes from fashion design students because the use of digital design has become an integral part of the entire fashion design process, providing significant efficiency and flexibility in creating, editing and realizing creative ideas in the world of fashion (Wiana, 2019).

Setia Budi Binjai Private Vocational High School is a formal educational institution that develops knowledge and skills. The Fashion Design skills program is available at the Setia Budi Binjai Private Vocational School. Setia Budi Binjai Private Vocational School aims to create quality vocational education, which produces graduates who are faithful and devout and have competent entrepreneurial character who are nationally and internationally certified. The curriculum implemented is an independent curriculum, which gives educators the freedom to develop quality learning according to students' learning needs and context.

Setia Budi Binjai Private Vocational School in the field of fashion expertise in class X has elements of Fashion Drawing (MM). Based on the Learning Flow and Objectives (ATP) according to the independent curriculum issued by the Ministry of Education, Culture, Research and Technology in 2022, the scope of learning includes: knowledge, skills and work attitudes with learning outcomes namely: students are able to make drawings of the body and basic anatomy illustration, mixing colors, to be applied in creative and independent implementation of designs and details to body anatomy as well as creating technical designs digitally.

One of the competencies in the Fashion Drawing (MM) element at Setia Budi Binjai Private Vocational School is creating technical designs digitally. Making digital technical designs, students learn about making fashion designs and coloring designs using applications that can be used to create designs using Android and computers. Applications for creating designs via Android are the Sketchbook application, MediBang Paint, Ibis Paint X, and so on. Applications for creating designs via computer are CorelDraw, Adobe Photoshop, Macromedia Flash, and so on. (Wulandari, 2022).

Based on the results of observations and interviews with teachers and students at Setia Budi Binjai Private Vocational School, it is known that students study digital technical design on fashion drawing elements using the Android application, namely Ibis Paint using the Ibis Paint This happens because the fashion drawing element does not yet have teaching materials such as student handbooks or worksheets that focus more on material for making fashion designs using Ibis Paint The teacher delivers the material using the lecture method and explains the material steps directly to the students. This causes the learning process; students do not understand and the teacher has to repeat the material which causes class conditions to be less conducive.

Based on the discussion above, it can be concluded that students' skills in creating digital fashion designs are very important and need to be possessed by students in the current era. Rational steps that can be taken to make this happen include developing the learning process to achieve optimal results. In the context of technological advances and rapid information growth, greater flexibility is needed in the knowledge transformation system in the learning process. This can be achieved by building two key elements, namely creativity and innovation, to support independent learning. Schools need teaching materials that can facilitate students so that they can actively participate in developing knowledge. This aims

to enable them to better understand the material or concepts, as well as master the skills taught in a lesson (Wiana, 2019).

The 21st century learning should focus on students (student centered). However, in reality, the learning process still tends to be teacher centered, which can cause most students to become passive (Suryaningsih & Nurlita, 2021). Students show a tendency to be less enthusiastic about learning, feel bored during learning, and experience difficulty in understanding the concepts of material presented by the teacher (Asrori & Suparman, 2019). Electronic Student Worksheets (E-LKPD) are one of the learning materials that can meet the needs of students in the 21st century era.

E-LKPD is a student worksheet format which consists of a series of instructions for activities or tasks that must be completed by students during the learning process. This format is prepared based on basic competencies and delivered via digital electronic platforms or the internet (Prastika, 2021). E-LKPD is expected to be able to increase students' knowledge and skills, especially in the context of making digital technical designs. The advantages of E-LKPD include its ability to present information in the form of text, images, audio and video (Kosasih, 2021). Apart from that, its use is practical, interesting and interactive. E-LKPD can also be accessed via various devices such as smartphones, computers and laptops.

Student worksheets are a teaching material option that can help teachers facilitate the learning process. This aims to facilitate effective interaction between teachers and students (Indriani, et al, 2022). Not only that, the use of E-LKPD can also increase students' understanding of learning material, both theoretically and practically, involving increasing cognitive knowledge and psychomotor skills (Octaviana, et al, 2022). This is in line with research conducted by Andriyani et al (2018) regarding the development of electronic LKPD with the result that this electronic LKPD can overcome limited study time at school because students can design themselves and improve students' creative thinking abilities, namely by designing projects. Alone. Based on research conducted by Zahroh & Yuliani (2021) regarding E-LKPD, the results showed that the E-LKPD developed was stated to be able to train students' critical thinking skills on learning material. E-LKPD is not only practical but also effective in its implementation in learning.

Based on the conditions and potential at Setia Budi Binjai Private Vocational School where students generally have smartphones so they can support ICT (Information and Communication Technology) based learning. The application of E-LKPD has the potential to overcome obstacles in learning, providing convenience to teachers and students during the teaching and learning process. The impact can be seen in making it easier to understand the material, increasing interactivity, and making learning activities more enjoyable (Puspita & Dewi, 2021). E-LKPD has the advantage because it can be accessed anytime and anywhere without being bound by time and space. Currently, the development of teaching materials such as student worksheets is a very urgent need. Changes to the independent curriculum at the Setia Budi Binjai Private Vocational School mean that the need for teaching materials that are in accordance with the competencies to be achieved is still not met.

Fashion drawing lessons involve a deep understanding that can not only be gained through understanding theory, but also through the application of practical skills (Wahyuni et al., 2021). Therefore, teachers need to provide teaching materials that suit these needs. Students need to understand concepts through providing materials, assignments and activities that are arranged systematically in the learning process. E-LKPD is a very important tool because it can help students understand the material and master digital fashion

design skills. Based on the problems that have been described, researchers are interested in carrying out research with the title "Development of an Electronic Student Worksheet (E-LKPD) for Drawing Fashion Digitally at Setia Budi Binjai Private Vocational School".

Method

This research uses research and development (R&D) research. According to Sugiyono (2020), a development (R&D) model defines the phases that researchers go through in creating a product design, assessing the product's effectiveness, and making it available to a large number of users. The product that will be developed in this research is the Electronic Student Worksheet (E-LKPD). The research design used in this research is the 4-D (Four D) development model (Sivasailam et al., 1974). According to Sugiyono (2020), the 4-D development model consists of 4 stages, namely Define, Design, Develop, and Disseminate.

This research was conducted at the Setia Budi Binjai Private Vocational School which is located on Jalan Perintis Independen No 111A, Pahlawan, North Binjai District, Binjai City, North Sumatra. The implementation of this research took place in September, in the odd semester of the 2023/2024 academic year.

The product resulting from this research is an Electronic Student Worksheet (E-LKPD) which is prepared based on digital technical design material on fashion drawing elements with an attractive display design and can be accessed online from various devices. The subjects of this research are students who have passed digital technical design lessons. So, this research involved class XI Fashion Design students at the Setia Budi Binjai Private Vocational School.

The instrument used in this research is in the form of a questionnaire that can be filled out by respondents. Respondents are asked to choose responses according to the characteristics given. The survey instrument chosen was a closed questionnaire, where respondents were asked to select the answers provided using a check mark (√). The Likert Scale method is used in this questionnaire instrument to assess participants' attitudes, opinions and perceptions of social phenomena (Sugiyono, 2020). In analyzing the data, this research uses quantitative descriptive analysis techniques. Quantitative data obtained from the questionnaire was analyzed by looking for the average assessment results. In accordance with the method described by Sugiyono (2020), the calculation formula used is as follows:

$$X = \frac{Total\ Score\ Obtained}{The\ Sum\ Score\ for\ all\ item}\ x\ 100\%$$

Table 1. Percentage Scale

Intervals	Criteria	Score
81% - 100%	Very Good	5
61% - 80%	Good	4
41% - 60%	Enough	3
21% - 40%	Not Good	2
0% – 20%	Very Not Good	1

Source: Riduwan (2010)

Results and Discussion

Product Development Result

The product that has been developed is E-LKPD with the aim of increasing students' understanding of digital technical design material, namely the use of the Ibis Paint and

Melvyn I. Semmer. This development model consists of 4 main stages, namely: Define, Design, Development and Disseminate.

Researchers used a teacher needs questionnaire and obtained an average percentage of 94% and evaluating the student needs questionnaire, it was found that the average percentage reached 91.2%. which indicates that teachers need development in the learning process, especially through the use of E-LKPD which is in accordance with the independent curriculum material.

Based on the results of the analysis of student needs questionnaires that have been carried out, it can be seen that as many as 95.8% of students stated that the facilities and infrastructure at school were sufficient. Then as many as 81.3% of students stated that the learning methods used at school were still not optimal. As many as 100% of students stated that they really needed teaching materials that were able to support the learning process in digital technical design creation competencies. As many as 77.3% of students face difficulties in understanding digital technical design material.

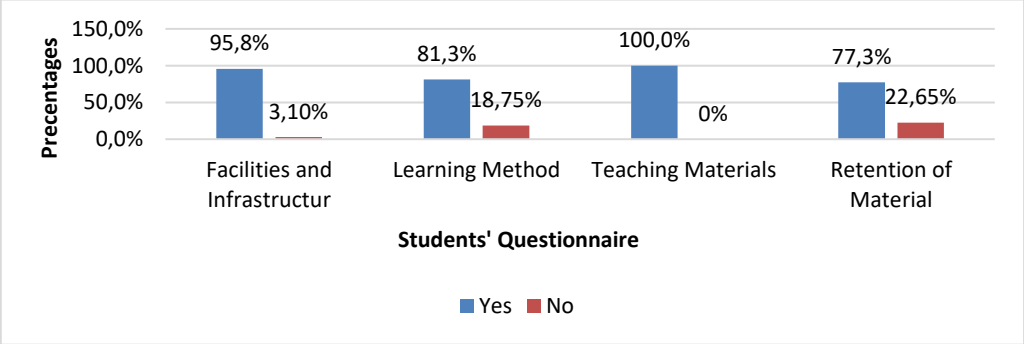

Figure 1. Percentage of Student Needs

Researchers designed special LKPD to suit students' needs where the material was technically designed digitally (Wahyuningsih, 2022). This LKPD is equipped with video tutorials to support students' understanding, and can be accessed with flexibility at various times and places. The hope is that this development can improve the quality of learning and student involvement. In the final analysis phase, content is identified that will be included in the E-LKPD that will be developed. This process refers to the flow and learning objectives of digital technical design creation material.

Product Eligibility

Validation of material experts was carried out by 3 experts consisting of lecturers in fashion education at state university, fashion teacher at private vocational school, and teacher in the field of fashion drawing. Validation results from three material experts, which include three aspects of assessment: suitability of content, presentation of material, and grammar. The total number of questions assessed was 20 items. Total score of 93 from validator I, equivalent to a percentage of 93%, validator II gave a total score of 95 with a percentage of 95%, and validator III gave a total score of 94 with a percentage of 94%. With an average percentage score of 94% for all aspects assessed by the three material experts, E-LKPD is considered valid and can be recognized as a product suitable for use in the learning process.

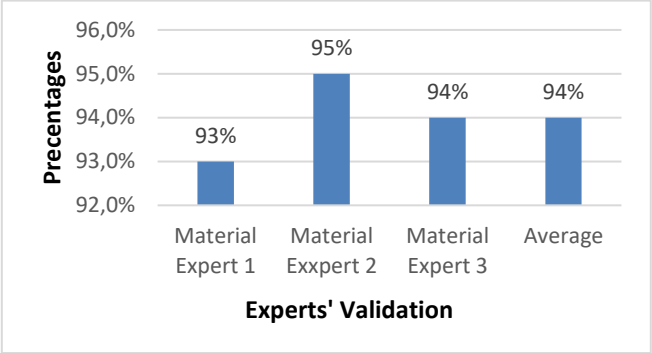

Figure 2. Validation Results by Material Expert

The two media experts involved in this validation process are the lecturers at the Faculty of Engineering, State University. Validation results from two media experts covering 27 questions. The total score from validator I was 117 with a percentage of 86.7% and the total score from validator II was 119 with a percentage of 88.1%. So, based on the average percentage score from media validation results by the two material experts, it can be concluded that E-LKPD received an average score of 87.4%, in the "good" category. Therefore, the product is considered valid and suitable for use in the learning process.

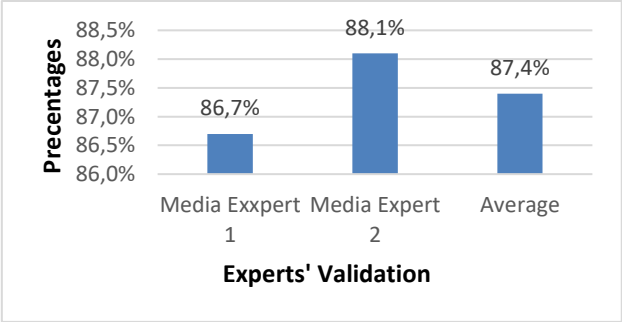

Figure 3. Validation Results by Media Expert

Feasibility testing involving student responses is an important step to measure the effectiveness and acceptance of E-LKPD among end users. By involving 32 Class XI Fashion Design students at Setia Budi Binjai Private Vocational School, the data obtained from the questionnaire instrument can provide a broader view of the extent to which E-LKPD can meet the needs and expectations of students. These responses include aspects such as ease of use, clarity of material, and interactive engagement. The results of this feasibility test can serve as a guide for improving and perfecting E-LKPD so that it is more responsive to student needs.

In this trial stage, researchers implemented three steps, namely small group, medium group and group trials. Small group trials were carried out on subjects of 1 – 3 people, medium groups consisted of 6 – 8 people, and large groups consisted of 15 – 30 people (Risal, et al, 2022).

The results of the feasibility test can be a valuable basis for improving E-LKPD before widespread use. Seeing weaknesses or obstacles identified by students can help researchers to optimize the features and presentation of material to better suit students' needs and expectations. The following is a table of feasibility tests carried out by students:

Table 1. Percentage Scale

Trials	Persentage	Criteria
Small Group	80 %	Good
Medium Group	87,5 %	Very Good
Big Group	92,8 %	Very Good

Based on the results of the feasibility test, there was a significant increase in value. The percentage of small group to medium group trials increased by 7.5%. Meanwhile, the percentage of medium to large group trials increased by 5.3%. The final results of the E-LKPD development research for digital technical design creation show that the product is in the "very feasible" category. Therefore, it can be concluded that this E-LKPD can be used well by teachers and students in class X of Setia Budi Binjai Private Vocational School.

The final stage in product development is distribution, which is carried out on a limited basis. This e-LKPD for digital technical design creation can be accessed online via a link shared via the teacher's WhatsApp, then given to students to access via the Canva website. Access to this product can be done via smartphone, laptop or PC.

The results of the validation of E-LKPD by validators through several aspects showed that the average validation score by experts on material aspects was 94%; while the average expert validation score for media aspects was 87.4%. This means that the E-LKPD being developed is very worthy of further development. Testing using these two aspects is supported by explanations from previous studies which state that there are several components that need to be considered in making E-LKPD to determine multimedia quality such as material and media aspects, curriculum analysis, design aspects, learning aspects, and content aspects. contained as material (Prastowo, 2016).

The results of the E-LKPD feasibility test through several aspects showed an average small group trial score of 80%; medium group 87.5%; and the largest group 92.8%. Based on this assessment, E-LKPD is included in the "very good" category. These results indicate that the E-LKPD drawing mode is feasible to use. As explained, E-LKPD presents a variety of media including text, images, animation, video, connections and other multimedia elements. There is also learning material content in terms of concepts, principles, procedures, application theory whose aim is as a tool to help understand the material (Kosasih, 2021).

The use of E-LKPD can increase students' understanding of learning material, both theoretically and practically, involving increasing cognitive knowledge and psychomotor skills. This is proven by the results of the feasibility test which was carried out with a large group trial percentage of 92.8% in the "very good" criteria. In line with previous research on the development of electronic LKPD by Andriyani, et al (2018), the feasibility test results obtained were 81.76% in the "very good" category. The results of research conducted by Fitriasari and Yuliani (2021) obtained a percentage of 80.3% with "good" category. Based on research conducted by Zahroh & Yuliani (2021), the percentage result was 94% in the "very good" category.

Conclusion

The digitally produced E-LKPD drawing mode is in the "very good" category and is suitable for use in the learning process. The results of the E-LKPD development on the digital technical design creation competency show several positive aspects in the context of materials and media. This can be seen from the validation results obtained from material experts with an average score percentage of 94% and an average score percentage from media experts of 87.4%. The feasibility of E-LKPD drawing fashion digitally is included in the "very good" category. This can be seen from the results of small group, medium group

and large group trials conducted on class XI students at the Setia Budi Binjai Private Vocational School. The average score percentage for the small group is 80% with "good" criteria, the average score percentage for the medium group is 87.5% with "very good" criteria, and the average score percentage for the large group is 92.8 % with "very good" criteria. Through this feasibility test, the E-LKPD digital drawing mode was declared suitable for use in the learning process.

References

Andriyani, E. Y., Ernawati, M. D. W., & Malik, A. (2018). Development of Electronic Student Worksheets on Thermochemical Subject Matter at11thGrade High School. *Journal of The Indonesian Society of Integrated Chemistry*. Vol. *10*(1): 6-11.

Asrori, A., & Suparman. (2019). Analisis Kebutuhan E-LKPD Sesuai Model Problem Based Learning untuk Meningkatkan Kemampuan Berpikir Kreatif. *Prosiding Sendika*. Vol. 5(1).

Fitriasari, D. N. M., & Yuliani, Y. (2021). Pengembangan Lembar Kegiatan Peserta Didik-Elektronik (E-LKPD) Berbasis Guided Discovery untuk Melatihkan Keterampilan Proses Sains Terintegrasi pada Materi Fotosintesis Kelas XII SMA. *Berkala Ilmiah Pendidikan Biologi (BioEdu)*. Vol. *10*(3): 510-522.

Hermanto, B. (2020). Perekayasaan Sistem Pendidikan Nasional untuk Mencerdaskan Kehidupan Bangsa. *Foundasia*. Vol. 11(2): 52-59.

Indriani, S., Nuryadi, N., Marhaeni, N. H., & Kurniati, R. (2022). Efektivitas Penggunaan E-LKPD Untuk Meningkatkan Kemampuan Pemahaman Konsep Segiempat dan Segitiga. Jurnal Pendidikan Tambusai, 6 (1), 3959-3966.

Kosasih, E. (2021). *Pengembangan bahan ajar*. Yogyakarta: Bumi Aksara.

Octaviana, F., Wahyuni, D., & Supeno, S. (2022). Pengembangan E-LKPD untuk meningkatkan keterampilan kolaborasi siswa SMP pada pembelajaran IPA. Edikatif: Jurnal Ilmu Pendidikan. Vol. 4(2): 2345 – 2353.

Prastika, Y. (2021). Pengembangan Lembar Kerja Peserta Didik (LKPD) Interaktif Segi Banyak Beraturan dan Tidak Beraturan Berbasis Liveworksheets terhadap hasil belajar peserta didik Kelas IV Sekolah Dasar. *Journal of Basic Education Studies*. Vol. 4 (1): 2601-2612.

Perpres. (2022). *Peraturan Presiden (Perpres) Nomor 68 Tahun 2022 tentang Revitalisasi Pendidikan Vokasi dan Pelatihan Vokasi*. Jakarta: Kemendikbudristek

Prastowo, A. (2016). *Panduan Kreatif Membuat Bahan Ajar Inovatif Menciptakan Metode Pembelajaran yang Menarik dan Menyenangkan*. Yogyakarta: Diva Press

Puspita, V., & Dewi, I. P. (2021). Efektifitas E-LKPD berbasis Pendekatan Investigasi terhadap Kemampuan Berfikir Kritis Siswa Sekolah Dasar. *Jurnal Cendekia: Jurnal Pendidikan Matematika*. Vol. *5*(1): 86-96.

Rahmawati, D. (2022). *Gambar Mode (Desain dan Produksi Busana)*. Jawa Tengah: Lini Suara Nusantara

Riduwan. (2010). *Skala Pengukuran Variabel-Variabel Penelitian*. Bandung: Alfabeta.

Risal, Z., dkk (2022). *Metode Penelitian dan Pengembangan Research and Development (R&D).(Konsep, Teori-Teori, dan Desain Penelitian)*. Malang: CV. Literasi Nusantara Abadi.

Sivasailam, T., Semmel, D. S., & Semmel, M. I. (1974). *Instructional Development for Training Teachers of Exceptional Children*. Bloomington: Indiana University.

Sugiyono. (2020). *Metode Penelitian dan Pengembangan Research and Development*. Bandung: Alfabeta.

Suryaningsih, S., & Nurlita, R. (2021). Pentingnya Lembar Kerja Peserta Didik Elektronik (E-LKPD) Inovatif dalam Proses Pembelajaran Abad 21. *Jurnal Pendidikan Indonesia (Japendi)*. Vol. 2(7): 1256-1268.

Wahyuni, S., Hapsari, F., & Herawati, M. (2021). Pengaruh praktik kerja industri dan minat kerja terhadap kesiapan kerja pada dunia usaha dan dunia industri siswa smk. *Jurnal Educatio FKIP UNMA*, 7(4), 1766-1772.

Wahyuningsih, S. (2022). *Dasar-Dasar Busana kelas X*. Jawa Tengah: PT Lini Suara Nusantara

Wiana, W. (2019). Pengembangan Multimedia Interaktif Berbasis Motion Graphics untuk Meningkatkan Penguasaan Konsep Dan Keterampilan Mendesain Busana Berformat Digital: *Studi Penelitian pada Prodi Pendidikan Tata Busana Universitas Pendidikan Indonesia* (Doctoral dissertation, Universitas Pendidikan Indonesia).

Wulandari, E., T. (2022). *Dasar-Dasar Busana (Fesyen) SMK/MAK Kelas X Semester 1*. Yogyakarta: ANDI

Yamin, M., & Syahrir, S. (2020). Pembangunan Pendidikan Merdeka Balajar. *Jurnal Illmiah Mandala Education*. Vol. 6(1): 126-136.

Zahroh, D. A., & Yuliani, Y. (2021). Pengembangan e-LKPD Berbasis literasi sains untuk melatihkan keterampilan berpikir kritis peserta didik pada materi pertumbuhan dan perkembangan. *Berkala Ilmiah Pendidikan Biologi (BioEdu)*. Vol. *10*(3): 605-616.