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THE DEVELOPMENT OF FLIPBOOK BASED ON DIGITAL LITERACY ON ANIMALIA-VERTEBRATES OF HIGH SCHOOL STUDENT GRADE 10th

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Abstract

Developments of technology in the 21st century require students to have digital literacy skills. This skill must be possessed as a guide for obtaining relevant and accurate material information from various sources. Thus, the purpose of this research is to produce a flipbook in which developed for Animalia-Vertebrates materials on X grade of high school, based on digital literacy that meets the criteria of validity and practicality. This study applied 4D model, without the disseminate stage. Flipbook validity was measured by the validity of subject material experts and education experts. Whereas practicality of the flipbook was measured by the readability test, practicality test, Biology teachers' response, and the students' responses. The limited trial of this study involved five Biology teachers and 20 students. Data was analyzed descriptive-quantitatively. The results showed that digital literacy-based flipbooks were declared valid in a scale of 3.8 and an overall average percentage score of 96.5%. The practicality of flipbooks was seen from the results of the readability test on level of 10 that shows flipbooks are suitable for X grade of high school students; the implementation test with 100% percentage score; the positive response of practicality by Biology teachers obtained percentage of 90.2%; and the student response obtained percentage of 97,8%. Based on those parameters, it concluded that the digital literacy-based flipbook in which developed for Animalia-Vertebrates materials on X grade of high school is valid and practical.

Keywords: e-book, internet searching, hypertextual navigation, content evaluation, knowledge assembly, online learning.

INTRODUCTION

The education system in the 21st century had been utilized technology in learning activities. This development is a new challenge for the world of education through digital technology. Rapid development of technology had been resulting in the abundance of digital information that can be limitlessly accessed (Shiyamsyah and Yuliani, 2022). According to Nurjanah et al (2017) the conveniences of accessing digital information through internet, resulting the amount of information that can't be accounted through digital publication media such as blogs or WordPress that doesn't include clarity of sources of information. The abundant information spread, makes it difficult for people to distinguish between false and true information. A person should not only obtain information, but also has to analyze information and integrate it to become digitally literate (Sujana and Rachmatin, 2019). Therefore, it is important for people to have an effective level of digital literacy.

Digital literacy is part of computer literacy and information literacy. Digital literacy not only regarding to computers and technology, but also to several skills and abilities (Ambarwati et al., 2019). Those abilities and skills include the utilizing of digital technology to search, manage, and evaluate information, thus it can develop new accurate knowledge (Setyaningsih et al., 2019). Therefore, Gilster (1997) formulated four competencies' students whose digital literacy trainned in this study, those are internet searching, hypertextual navigation, content evaluation, and knowledge assembly.

Twenty first century education requires students capable to use technology-based learning media. The selection of this media in accordance with the learning purpose, capable in increase the enthusiasm and motivation of students. Learning media aims to make what the teacher pass on can effectively and efficiently accepted by students (Mahnun, 2012). One of learning media that frequently used is e-book. E-book helps in distance learning method, overcome subjects' problems those are difficult for education experts to understand,

and create new learning methods. E-book can be accessed by students through the internet and run both online and offline.

E-book developed on the topic of high school Biology subject. One of the Basic Competencies (KD) in the 2013 curriculum for Biology subjects in X grade of high school are KD 3.9 and KD 4.9 about grouping animals into phyla based on body layers, body cavities, body symmetry, and reproduction. This topic has a broad scope of study, so there are many concepts' students must learn and understand properly. Students have capable to get information and material concepts from many references in order to understand the concept correctly. Using the developed e-book, students can explore various sources to obtain information related to Animalia-Vertebrates materials.

The developed e-book is a flipbook that has more interactive display, such as to flip, inserted photos and videos, as well as hyperlinks to facilitate a wider access in discover information. Flipbook increases students' learning motivation along with students' understanding (Mulyadi et al., 2016). This is in line with Putri and Ambarwati's research (2019) which has developed an electronic book based on digital literacy that successfully trains students' digital literacy through information and digital technology. Another study developed by Muhlas and Kuntjoro (2019) concluded the use of flipbook in learning can foster students' interest in reading and help them understand Ecology materials by using videos and animations.

Based on those descriptions, this study aims to produce a flipbook based on digital literacy for X grade of high school on Animalia-Vertebrates materials which meets the criteria of validity and practicality.

METHODS

This research was about the development of a flipbook based on digital literacy on Animalia-Vertebrates materials which was composed by 4D development model (define, design, develop, disseminate), without disseminate stage. The development stage was carried out at the Biology Department, Universitas Negeri Surabaya in February-August 2022. Whereas the limited trial was carried out in August 2022 at Trimurti High School Surabaya as many as 20 students of X IPA participated. The data analysis include validity tests, readability tests, implementation tests, Biology teachers' responses, and students' responses. The obtained data were descriptive-quantitatively analyzed.

Those data based on the results of validity and practicality. The validity of the flipbook is obtained from the results of the validity test. The validation results were analyzed using Likert scale criteria 1-4. The validation score percentage is calculated using the following formula:

$$P\ validation\ score\ (\%) = \frac{\Sigma\ \text{obtained score}}{\Sigma\ \text{maximum score}} x100\%$$

The results based on percentage of those validations, and then interpreted by validity criteria. A flipbook categorized as invalid if it gets percentage of 25%-40%, less valid 41%-55%, quite valid 56%-70%, valid 71%-85%, and very valid 86%-100%.

The practicality of flipbook which including readability tests, implementation test, Biology teachers' responses, and students' responses. Meanwhile the practicality was evaluated based on the readability test results. The flipbook readability test was carried out using the Fry graph formulation. Readability score was obtained from 100 words written in the flipbook. Therefore, Fry's legibility test results were obtained from the intersection between the number of sentences and the number of syllables multiplied by 0.6 at the point between 9-12 in Fry's graph. Based on this readability, can be seen the compatibility of flipbook with the student's level.

The results of the flipbook implementation are based on the observers' evaluation who asked to fill "Yes" or "No" column for each activity that has been classified into the Guttman score criteria.

$$Implementation\ score\ (\%) = \frac{\Sigma\ \text{Total score obtained}}{\Sigma\ \text{Maximum score}} x100\%$$

Percentage of observation results then interpreted by practicality criteria. Flipbook is classified as not good implemented if the percentage of implementation in the amount of 0%-25%, pretty good 26%-50%, good enough 51%-70%, good 71%-85%, and very good 86%-100%.

Responses both Biology teachers and students were obtained from a questionnaire given by answering "Yes" or "No" to each question guided by the Guttman scale. The percentage of questionnaire responses can be calculated using the following formula:

$$P\ response\ (\%) = \frac{\Sigma\ \text{"Yes" Answer}}{\Sigma\ \text{questionnaire subject (teacher or student)}} x100\%$$

The percentage of those results then interpreted using practicality criteria. Flipbook classified as not practical if it gets percentage of 0%-25%, less practical 26%-50%, quiet practical 51%-70%, practical 71%-85%, and very practical 86%-100%.

RESULT AND DISCUSSION

The result of this research is a flipbook, which is the type of e-book, as a learning media based on multimedia technology. Flipbook is characterized and specified as electronic media that can be accessed both

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online or offline on gadgets like computers or smartphones. There are hyperlinks and videos inside, lead directly to the intended page. Flipbook is designed using Microsoft PowerPoint then converted to Flip PDF Professional software so it can be flipped, more interactive, and can be inserted photos, videos, as well as hyperlinks inside to make it easier to access wider information. Flip PDF Professional software usage is effective in learning and potentially developed into a good learning media (Watin and Kustijono, 2017).

A digital literacy-based flipbook about Animalia-Vertebrates materials for X grade of high school consists of 3 chapters i.e. the characteristics, classification, and role of each class of Vertebrates in daily life. The digital literacy-based flipbook section composed of front cover, introduction, body, and closing. Front cover of the flipbook contains identity of the flipbook, title of the materials, level of education unit, and author's name. It includes sample image of some Vertebrates too. Whereas the introductory section consists of an inner page, preface, table of contents, concept map, and book instructions; content section consists of aim of study, chapter descriptions, main materials, activities, and assignments. Last, the closing section consists of bibliography, glossary, about the author, and back cover. The following is a flipbook display that had been developed.

Figure 1. Digital literacy-based Animalia-Vertebrates flipbook display (A) Front cover; (B) Inner page; (C) Preface; (D) Table of contents; (E) Concept map; (F) Book instruction; (G) Cover on each chapter; (H) Chapter description; (I) References; (J) Glossary; (K) About the author; (L) Back cover.

E-books completed with images, videos, animations, and texts, make it easier for students to visualize abstract concepts (Pradina and Suyatna, 2018). This flipbook type e-book is supported by five digital literacy-based features i.e. Bio Concept, Bio Information, Bio Lab, Bio Doing, and Bio Think (**Table 1**).

Table 1. Features in flipbook

Features	Description
Bio Concept	This feature directs students to watch videos in order to practice their ability to access digital tools and facilities (internet searching).
Bio Information	This feature directs students to practice internet search skills and identify hypertext directions (hypertextual navigation).
Bio Lab	This feature directs students to carry out practical activities in accordance with the instructions provided.
Bio Doing	This feature directs students to practice the ability to evaluate the validity of information (content evaluation) and process the information into an opinion (knowledge assembly).
Bio Think	This feature directs students to take quizzes in order to improve their comprehension of concepts (knowledge assembly).

Validity of the developed flipbook was reviewed based on 5 aspects, i.e. the feasibility of content, presentation, language, the feasibility of the flipbook, and the feasibility of digital literacy. Each aspect was assessed by two validators consisting of education expert lecturers and material expert lecturers as shown in **Table 2**.

Table 2. Validation results of Animalia-Vertebrates flipbook

No.	Component	Average	Percentage (%)	Validity Category
A. Feasibility of Content				
1.	The suitability of the materials in the flipbook with the Core Competencies (KI) and Basic Competencies (KD)	4	100	Very valid
2.	Materials coverage and accuracy	4	100	Very valid
3.	Actuality	4	100	Very valid
Component Average		**4**	**100**	**Very valid**
B. Feasibility of Presentation				

4.	Presentation technique	4	100	Very valid
5.	Material presentation support	4	100	Very valid
6.	Presentation equipment	3.5	87.5	Very valid
7.	Text quality	3.5	87.5	Very valid
8.	Image quality	4	100	Very valid
9.	Layout quality	4	100	Very valid
10.	Quality of use instructions	4	100	Very valid
11.	Language usage	3.5	87.5	Very valid
Component Average		**3.8**	**95.3**	**Very valid**
B. Feasibility of Language				
12.	Language structure	3.5	87.5	Very valid
13.	Use of symbols, terms, and words	3.5	87.5	Very valid
Component Average		**3.5**	**87.5**	**Very valid**
D. Feasibility of Flipbook				
14.	Feasibility of the flipbook aspect	4	100	Very valid
Component Average		**4**	**100**	**Very valid**
E. Feasibility of Digital Literacy				
15.	Internet searching	4	100	Very valid
16.	Hypertext navigation	4	100	Very valid
17.	Content evaluation	4	100	Very valid
18.	Knowledge assembly	4	100	Very valid
Component Average		**4**	**100**	**Very valid**
Overall Component Average		**3.8**	**96.5**	**Very valid**

The practicality of digital literacy-based flipbook is reviewed through the readability test, the implementation test, the teachers' responses, and the students' responses. The readability test that is utilized to determine the difficulty level of reading and comprehension by a user based on readability level is presented as follows.

Table 3. Readability Levels Recapitulation of Digital Literacy-Based Flipbook on Animalia-Vertebrates Materials

Cover Page	∑ Sentences	∑ Syllable	Level
9	4.7	250 x 0.6 = 150	9
31	5	256 x 0.6 = 153.6	10
57	6	263 x 0.6 = 157.8	10
Average	**5.2**	**153.8**	**10**

The results of the calculation of the number of sentences and syllables are then converted to the Fry graph presented in (**Figure 2**).

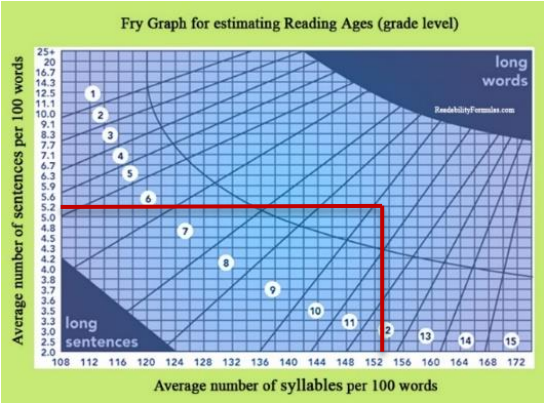

Figure 2. Fry graph readability test formulation.

The flipbook readability results from the three samples got an average number of sentences 5.2 and the number of syllables 153.8, so it was at level of 10 that shows flipbooks are suitable for X grade of high school students. This is along with Susetyadi et al (2020) research, which mentioned readability in a paragraph can affect motivation, interests, reading skills, and knowledge possessed by previous students.

The practicality of digital literacy-based flipbook then determined through the test data for implementation. The implementation data were obtained based on observations by two observers using the implementation sheet. Implementation analysis is used to determine the activities carried out by students during the learning process utilizing digital literacy-based flipbook media. The results of this observation can be seen in **Table 4.**

Table 4. Implementation of learning using digital literacy-based flipbooks

No.	Aspect	Percentage (%)	Category
1.	Students open the manual on the flipbook	100	Very good
2.	Students capable to operate the table of contents	100	Very good
3.	Students read the concept map of Animalia-Vertebrates materials	100	Very good
4.	Students read the objectives and chapter descriptions on the flipbook Animalia-Vertebrates materials	100	Very good
5.	Students read the materials that has been presented in the flipbook	100	Very good
6.	Students observe the pictures and videos contained in the flipbook	100	Very good
7.	Students follow the	100	Very good

	hypertext and hyperlink directions		
8.	Students browse the website available in flipbooks	100	Very good
9.	Students read and answer the questions provided in the flipbook	100	Very good
10.	Students read the glossary contained in the flipbook	100	Very good

Based on observation results of learning by flipbooks based on digital literacy, the percentage of learning implementation is 100%, this indicates that learning activities using flipbooks are very well implemented. Student activities are declared good when they meet a percentage of ≥71%. The high activity of students shows that they are motivated to try and do activities on the media. In line with Satyapraksha and Sudhanshu (2014), multimedia usage in Biology learning can provide new and good experiences for students and motivate them to concentrate on learning points.

Biology teacher and student responses are included in the practicality of a digital literacy-based flipbook. Five high school Biology teachers as users responded to digital literacy-based flipbooks and resulting 90.2% score in the very practical category (**Table 5**). This shows that digital literacy-based flipbooks developed by researchers can be utilized as learning resources for students. Teacher response questionnaires are needed since teachers hold an important role in determining and selecting appropriate learning resources to assist students in achieving basic competencies (Kantun and Budiawati, 2015).

Table 5. Biology teacher response questionnaire results (n=5)

No.	Questions	Practicality Percentage (%)	Practicality Category
A. Content Criteria			
1.	The Animalia-Vertebrates materials on the flipbook is related to daily life	100	Very practical
2.	The material presented in the flipbook is easy to understand	60	Quiet practical
3.	Flipbooks attract students to keep learning	100	Very practical
4.	The questions given are consistent with the materials being studied	100	Very practical
5.	The concept map presented helps students to find out the material to be studied	100	Very practical
6.	Flipbooks assist students understand the concept of the materials being taught	100	Very practical
7.	Animalia-Vertebrates digital literacy-based flipbook facilitates students to learn independently outside of school hours	100	Very practical
8.	Flipbook based on digital literacy of Animalia-Vertebrates materials easy to accessed wherever and whenever you want	100	Very practical
Percentage of Content Criteria		**92.5**	**Very practical**
B. Presentation Criteria			
9.	Attractive flipbook appearance	100	Very practical
10.	The presentation of the flipbook attracts interest and attention to read	100	Very practical
11.	Interesting flipbook features	100	Very practical
12.	The illustrations in the flipbook supported the understanding of Animalia-Vertebrates materials	80	Very practical
13.	The letters in the flipbook are clearly legible so it is comfortable to read	80	Very practical
Percentage of Presentation Criteria		**92**	**Very practical**
C. Language Criteria			
14.	The language is easy to understand	100	Very practical
15.	The sentences is easy to understand	60	Quiet practical
16.	The term used are easy to understand	100	Very practical
Percentage of Language Criteria		**86.6**	**Very practical**
D. Criteria for Digital Literacy-based Flipbook			
17.	Students can observe the steps of information search using a search engine through the bio concept menu and bio information	100	Very practical
18.	Students can identify directions for a hypertext in a web browser through the bio information and bio doing	80	Very practical
19.	Students able to evaluate the validity of information content related to Animalia-Vertebrates through the bio doing	80	Very practical
20.	Students capable to manage information related to Animalia-Vertebrates materials into facts and opinions that have just been found	100	Very practical

	online through the bio doing		
Percentage of Digital Literacy-based Flipbook Criteria		**90**	**Very practical**
Percentage of Positive Responses		**90.2**	**Very practical**

The results of the student response questionnaire gave a very good response to the digital literacy-based flipbook developed by researchers based on 4 aspects, i.e. content, presentation, language, and digital literacy competence with a percentage of 97.8% in the very practical category (**Table 6**). This shows that digital literacy-based flipbooks can be utilized for practical student learning.

Table 6. Student Response Questionnaire Results (n=20)

No.	Questions	Practicality Percentage (%)	Practicality Category
A. Content Criteria			
1.	The Animalia-Vertebrates materials on the flipbook is related to daily life	85	Very practical
2.	The materials presented in the flipbook is easy to understand	100	Very practical
3.	Flipbooks attract students to keep on learning	90	Very practical
4.	The questions given are consistent with the subject materials studied	100	Very practical
5.	The concept map presented helps students to know the material to be studied	100	Very practical
6.	Flipbook can help to understand the concept of the material being taught	100	Very practical
7.	Animalia-Vertebrates digital literacy-based flipbook facilitates students to learn independently outside school hours	100	Very practical
8.	Flipbook based on digital literacy of Animalia-Vertebrates materials easy to accessed wherever and whenever you want	100	Very practical
Percentage of Content Criteria		**96.8**	**Very practical**
B. Presentation Criteria			
9.	Attractive flipbook appearance	90	Very practical
10.	Presentation of a flipbook attracts students' interest and attention to read	90	Very practical
11.	Interesting flipbook features	100	Very practical
12.	The illustrations in the flipbook supported the understanding of Animalia-Vertebrates materials	100	Very practical
13.	The letters in the flipbook are clearly legible so it is comfortable to read	100	Very practical
Percentage of Presentation Criteria		**96**	**Very practical**
C. Language Criteria			
14.	The language is easy to understand	100	Very practical
15.	The sentences is easy to understand	100	Very practical
16.	The terms are easy to understand	100	Very practical
Percentage of Language Criteria		**100**	**Very practical**
D. Criteria for Digital Literacy-based Flipbook			
17.	Students can observe the steps of information search using a search engine through the menu bio concept and bio information	95	Very practical
18.	Students can identify directions for a hypertext in a web browser through the bio information and bio doing	100	Very practical
19.	Students able to evaluate the validity of information content related to Vertebrates through the bio doing	100	Very practical
20.	Students capable to manage information related to Animalia-Vertebrates materials into facts and opinions that have just been found online through the bio doing	100	Very practical
Percentage of Digital Literacy-based Flipbook Criteria		**98.7**	**Very practical**
Percentage of Positive Responses		**97.8**	**Very practical**

Digital literacy-based Flipbook analysis in terms of validity results based on aspects: the feasibility of content, presentation, language, flipbook, and aspects of the feasibility of digital literacy. The validity of the two validators as presented in **Table 2**, the flipbook developed by researchers shows an average content feasibility score of 4 which is very valid category; the feasibility of the presentation score of 3.8 which is very valid category; linguistic feasibility score of 3.5 which is very valid category; the feasibility of the flipbook aspect score of 4 which is very valid category; and the feasibility of the digital literacy aspect score of 4 which is very valid category, so the overall average score is 3.8

with percentage 96.5% which is included in the very valid category. According to BSNP (2014) the development of a good textbook is related to three components of feasibility, i.e. the feasibility of presentation, content, and language.

The first component is the feasibility content which gets an average value of 4 with a percentage of 100% so it is included in the very valid category (**Table 2**). The content feasibility component includes suitability criteria of the subject materials with KI and KD, the scope and accuracy of the materials, as well as the actuality of the materials listed in the flipbook. This is proportionate to the results of the teacher response questionnaire which obtained a percentage of 92.5% which is very practical category as presented in (**Table 5**). Despite being included as very practical category, it left one component as "The material presented is easy to understand, on a percentage of 60% from a teacher's response questionnaires (**Table 5**). This is caused there were learning resources that use English so it is feared that students will find it difficult to understand the material. As the following teacher responses.

"It would be better if the videos inserted inside the flipbook are in Indonesian, so students will be easier to figure out the subject materials."

The subject materials in the flipbook is the most important thing in the development. The Animalia-Vertebrates digital literacy-based flipbook from the 2013 Curriculum, describes the materials according to the syllabus and is presented in a coherent manner. This consistent with Istiningrum's et al research (2016) which shows that the feasibility of good flipbook content is seen by the suitability of the materials with KD and capable to support the achievement of learning indicators and objectives, the accuracy of the materials which include facts, concept accuracy, theoretical accuracy and the truth of principles, supporting learning materials and actuality. As a complementary, a video is inserted as an audio-visual medium which facilitates understanding in the study of Animalia-Vertebrates materials. The videos are mostly in English, but hyperlink has been provided for users to easily access Indonesian subtitles enabled, so users can understand the materials using Indonesian. This is supported by the percentage results of students' responses of 100% (**Table 6**) which states that the material is easy to understand by users. Video utilization as an additional medium can help clarify and understand the concept (Surasmi, 2016).

The second component is the feasibility of the presentation which gets an average value of 3.8 with percentage of 95.3% which is included in the very valid category (**Table 2**). Components of presentation feasibility include criteria for presentation techniques, supporting material presentation, completeness of presentation, quality of text, quality of images, quality of layout, quality of instructions for use, and language usage. However, the components of presentation completeness, text quality, and language usage get a scale of 3. The validator gives the following critique.

"The shape of the letters looks broken, it should be better to use another font."

The researchers made an improvement to the flipbook in accordance with the validators' suggestions by replacing the font of the writing on the developed flipbook. The presentation component is very important in learning, because interesting learning resources presentation will increase the interest of students in using them. Consistent with Rifqiawati et al (2020) that the appearance of attractive learning resources can provide visual stimulation to encourage student interest in learning and maximize the support of the learning process.

The third component, language feasibility, includes language structure and the use of symbols, terms, and words which get an average value of 3.5 with percentage of 87.5% which is included in the very valid category (**Table 4**). This is proportionate to the results of the teacher response questionnaire which obtained a percentage of 86.6% with a very practical category as presented in (**Table 8**). Although included in the very valid and very practical category, there are components that gets a low percentage. The validator also provide suggestions for improvement as follows:

"The preparation of sentences has not used PUEBI and SPOK correctly."

"The explanation of the material in the flipbook does not yet use dialogical language."

The researchers made an improvement to the flipbook in accordance with the validators' suggestions by using PUEBI and SPOK correctly as well as using dialogical language to make it easier for users to understand the material, thus in line with the categories set by the BSNP (2014) which explains that the language usage in learning resources is expected to have an educative category, in line with the level of students thought, according to the rules and the correct use of terms. However, the results of the teacher's response to the criteria of ease of understanding sentences get a fairly low percentage of 60%. The teacher's response gives the following critique

"Some sentences are not standard, so they should be fixed to make it easier for users to understand."

The criticism is not in harmony with the results of the student's response (**Table 6**) and validation results (**Table 2**) because the sentences used dialogical

language, so that learners can easily understand sentences. According to Nurlaili (2011), the use of clear sentence structures can facilitate students in understanding the concepts being taught.

The next component is the feasibility of flipbook and digital literacy which get an average value of 4 with a very valid category. The developed flipbook is presented in the form of interactive media which means there is a reciprocal relationship and a combination of media usages in it such as images, videos, animations, hyperlinks, and even exercises that can be directly evaluated by scores. This is also supported by Wahyuni and Rahayu (2021) that the flipbook type e-book has a transition effect so it can be flipped over like a printed book, operated using a computer or smartphone, accessed whether online or offline, as well as hyperlinks to access the intended website page.

Digital literacy in this flipbook is designed in the form of hyperlinks or hypertext as well as videos contained in each chapter of the material. The videos available in flipbooks was trained internet searching skills, hypertext clues in flipbooks such as the bio information feature was trained hypertext directions skills, the bio doing feature include problems in daily life was trained evaluate information content skills, and quizzes in flipbooks was trained knowledge assembly skills. According to Nasrullah et al (2017) with digital literacy, learning media users can practice their skills to interpret and using data from various sources and access information through technological devices. However, the digital literacy competence in the flipbook that has been developed already meets the category. Gilster (1997) states that the competencies that must be possessed by a person to have digital literacy skills are searching for information via the internet, hypertext directions, evaluating information content, and knowledge assembly.

The validity of the flipbook is directly proportional to the practicality of the flipbook in terms of the responses of teachers and students. Based on the results of the analysis obtained, flipbooks based on digital literacy Animalia-Vertebrates materials are considered practical in terms of content, presentation, language, and digital literacy competencies. Of all the flipbook components, teachers and students responded well to the flipbook developed. This is confirmed by student comments:

"The flipbook used has an attractive color and appearance."

"The Animalia-Vertebrates flipbook is very good, easy, can be studied at home, and clear to read."

"Flipbook presents a different look from textbooks and easy to understand."

In addition, the flipbook based on digital literacy materials for Animalia-Vertebrates received comments from the teacher:

"This flipbook is good enough."

"The flipbook can be continuously improved and developed for other Biology material."

"The flipbook is very good and interesting."

The recapitulation of positive responses shows that the developed flipbook is very practical for every aspect of the assessment. The responses of teachers and students also can be seen from the responses that have been given through the input and suggestions column on the response questionnaire sheet. The response of teachers and students is also one of the indicators in determining the practicality of the developed flipbook. Nyeneng et al (2018) suggest that teaching materials that have been developed practically will make it easier for students in the learning process and boost their interest in exploring further the material being taught.

The selected teaching materials according to the demands of the curriculum will be utilized as a guide in the learning process. Flipbook is a good technology utilization to improve students' digital literacy skills, equipped with features that support digital literacy abilities. Comply with the research of Fuad et al (2020) that adaptive learning resources are called innovative and interactive if provided some additional features such as illustrations, non-boring texts, and unique information that can help students learn the material discussed in these learning resources.

Digital literacy is centered on digital skills and started from the use of computers. Digital literacy has shifted to mobile devices since the birth of the internet and social media. Digital literacy needs to be trained by routine activities. The results showed that the intensity of students in using flipbook type e-books was able to facilitate students to practice of digital literacy.

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CONCLUSION

The development of flipbook based on digital literacy on Animalia-Vertebrates material was in valid and practical. The results showed that digital literacy-

based flipbooks were declared valid in a scale of 3.8 and an overall average percentage score of 96.5%. The practicality of flipbooks is seen from the results of the readability test on level 10 that shows flipbooks are suitable for X grade of high school students; the implementation test with 100% percentage score; the positive response of practicality by Biology teachers obtained percentage of 90.2%; and the student response obtained percentage of 97,8%.

SUGGESTION

Further research is needed in the implementation of flipbook to train student digital literacy to support 21st century learning.

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