BioEdu
Berkala Ilmiah Pendidikan Biologi
Vol. 7 No.2
Mei 2018
ISSN: 2302-9528 http://ejournal.unesa.ac.id/index.php/bioedu

# THE VALIDITY AND PRACTICALITY OF E-BOOK FLIPBOOK-BASED ON TISSUES STRUCTURE AND ORGAN FUNCTION OF PLANT IN 11TH GRADES HIGH SCHOOL MATERIAL

**Bella Septiana**
Biology Education, Faculty of Mathematics and Sciences, Universitas Negeri Surabaya
Jalan Ketintang, C3 Lt.2, Surabaya 60231
Email: bellaseptiana@mhs.unesa.ac.id

**Sifak Indana[1], Ahmad Bashri[2]**
Biology Education, Faculty of Mathematics and Sciences, Universitas Negeri Surabaya
Jalan Ketintang, C3 Lt.2, Surabaya 60231

**Abstract**

Flipbook is one of media-based e-Book designed with a software application-shaped book that containing the intended content, such as pages and can be well-thumbed. Media development e-Book with flipbook-based is one of supporting learning in the curriculum of 2013 on Biology material Base Competence of 3.3. Analyzing the relationship between the structure of the cells in tissue of the organ functions in plants and 4.3. Presenting data on observations of the structure of tissues and organs in plants. The purpose of this study was to develop electronic textbook (e-Book) flipbook-based of the material tissue structure and function of plant organs as well as to describe the validity and practicality. The stages of the development e-Book reference to development model ADDIE (Analysis, Design, Development, Implementation or Delivery, and Evaluations). The validity obtained based on the validation expert lecturer material and expert lecturer media. The practicality obtained from readability of e-Book flipbook-based and students' response. The results of the validation media showed the average value based on component of content, component of the presentation, and linguistic component was 4 with the valid criteria. The practicality of e-Book flipbook-based on readability showed that e-Book fit for student in 11th grades and students' response showed the average value was 98.33%. The overall results of the study concluded that e-Book flipbook-based suitable for use as a learning medium in supporting learning tissue structure and function of plant organs material for eleventh high school students.

**Keywords:** E-Book flipbook-based, development, tissue structure and organs function of plant

## INTRODUCTION

The current 2013 curriculum emphasizes that the center in learning is the learner. Learners are active agents in learning by building their knowledge with new knowledge based on their experience (Kay and Kibble, 2016). Learners' experiences can be built with the media in supporting learning such as the current learning media that presents interactive media and based on Science and Technology (Science and Technology) (Jones and Brown, 2011). This is in line with the current 21st century learning, in which learners are striving to have innovation skills in learning, as well as skills in the use of technology and information media so that will be useful in life skills (Wijaya, et al., 2016).

Media as supporting learning can be used in Curriculum 2013 on Biology basic competency of 3.3.Analyzing the relationship between cell structure in plant tissue and organ function in plants and 4.3.Presenting data on observation of tissue and organ structure in plants. Previous study conducted by Kusumawati (2016) revealed the learning difficulties of learners in the material structure and function of plant tissue. This may happen because the learners get less experience directly. The biological material is one of the abstract and elusive material, so it takes observation or real learning to learners (Kusumawati, 2016).

As an effort to overcome the limitations of real learning, it is necessary media that can support in learning. The development of instructional media is one of the efforts for the basic competency demands and learning objectives to be achieved as expected. In line with this, it is necessary to improve the book that can support learning and grow curiosity with the crawl of the website, the latest information, and help learners in understanding the concept of tissue structure and function of plant organs (Febrianti, et al., 2013).

Learning Characteristics in Curriculum 2013, the study of biological material of tissue structure and function of the plant organ, as well as study of related

research results become the reason for the development of flipbook e-Book media in this developmental study. Electronic Book or often known as e-Book is a book with interactive digital form more effectively and efficiently in terms of how to access it. In addition, the use of e-Book is reinforced by Tosun (2014) which stated that e-Book can made learning more optimal and fun with the visualization presented. Therefore, the development of media should pay attention to several things, including cost, efficiency, effectiveness and accessibility (Mahnun, 2012).

Attempts to develop e-Books into flipbook-based are done as e-Book improvements become more interactive especially on the material of tissue structure and function of plant organs. Flipbook developed aims to improve the existing e-Book, so that it is expected to accommodate interactive learning activities both in terms of appearance and content in it such as hyperlinks, roaming websites, audio, animation, and video.

Study development of media e-Book flipbook-based composed of learning that supports the content in it. The content in the meaning of such features as well as the achievement of business objectives with the analysis of the problem of competence and purpose in learning, especially the tissue structure and function of plant organs. The learning process can occur in all aspects, whether formal or informal (Aldoobie, 2015). Therefore the existence of learning theory can explain how learner get information, compile information obtained as well as save it into memory (Aldoobie, 2015). Development of e-Book flipbook-based have features in it that integrate with material problems in the environment as well as presenting problems which is an analysis. The characteristics of any content on the e-Book flipbook-based is generally supported by constructivist learning theory, cognitive and connectives.

Each of the features presented strives to bring content that is integrated between the material and the case in the neighborhood. Integrated features and content between the material and the case in the environment allows learners to perform analysis and construct knowledge based on the activities undertaken. The development is expected to support 21st century demands, consisting of (1) life and career skills, (2) learning and innovation skills, and (3) Information media and technology skills (Wijaya, et al 2016).

## METHOD

This was developmental study, which developing an e-Book flipbook-based as learning media of the material tissue structure and function of plant organ for students 11th high school. The development model used by ADDIE includes Analysis, Design, Development, Implementation or Delivery, and Evaluations.

The assessment of validity in this study conducted by lecturers of material experts and lecturers of media experts. Media validation results were used to determine the feasibility of media using score interpretation according to Likert Scale (Table 1).

**Table 1.** Score Interpretation Criteria's of Likert Scale

| The Score Interval | Criteria |
|---|---|
| 3,25 <P ≤ 4,00 | **Highly valid** |
| 2,50 <P ≤ 3,25 | **Valid** |
| 1,75 <P ≤ 2,50 | **Less valid** |
| 1,00 <P ≤ 1,75 | **Invalid** |

The media that has been made feasible to be used in the learning process if obtaining the average score of assessment P> 2.50 or valid criteria (Riduwan, 2012). The practicality judgment is based on the learners' responses and the results of legibility by using Fry Graph interpretation.

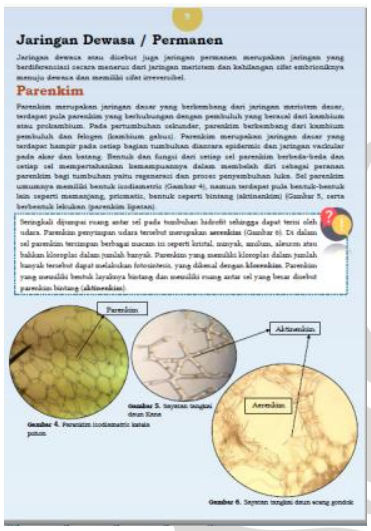
## DISCUSSION AND RESULT

E-Book flipbook-based developed serves the material tissue structure and function of plant organs (Figure 1a) in accordance with the concept that will be achieved at basic competence 3.3 and 4.3. The material includes meristem tissues (primary meristem and secondary meristem), parenchyma, collenchymas, sclerenchyma, the epidermis as well as a tissue of vessels. Further material presents organs in plants starting from the root, stem, and leaves as well as a tissue of constituents in each organ.

In addition, this study is needed for the basic competence 4.3, e-Book flipbook-based presents features that invite learners do observations. E-Book flipbook-based presents attractive colors and images that are the author's documentation as supporting material presented. It can be seen from the cover of the e-Book flipbook-based that displays plant tissue which is a writer's documentation (Figure 1b).

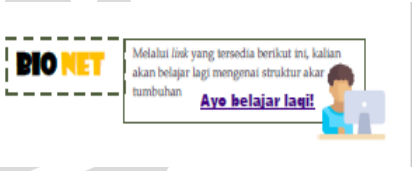
E-Book flipbook-based presenting interactive features as the supporting structure learning in anatomy and function of the organs of the plants. Feature '*Bio Net*', which is feature with a hyperlink linked the internet as additional information for learners (Figure 1c). Any other ways, problems presented in the '*Evaluasi*' feature (Figure 1d), '*Fakta Bio'*, and '*Ayo Selidiki*' (Figure 1e). Problems were presented in the form of analysis that associate with the enclosing environment. '*Fakta Bio'* and '*Ayo Selidiki*' feature taxing learners to understand the concept of the tissue structure and function of plant organs, applied materials on the issue, analyzing the material with the problem presented to present results of data problems.

One example on '*Fakta* Bio' the serving facts related to the difference in the structure of stomata due to different environmental conditions (Figure 1f).The next feature that became characteristic of the e-Book flipbook-based namely *'Aktivitas Bio'* and *'Bio Integrasi'*. *'Bio Integrasi'* is a feature that presents additional information relating to the material (Figure 1g). Whereas the *'Aktivitas Bio'* is a feature that invites learners to do observations to present the results of the observation data (Figure 1h). E-Book flipbook-based can be accessed both online and offline. Online access can allow users to access video in e-Book, and the features with the hyperlink can run well. While access to offline can be done by downloading the e-Book flipbook-based in advance. E-Book flipbook-based downloaded will be shown in PDF form. It has deficiencies which features videos and hyperlinks are not accessible.



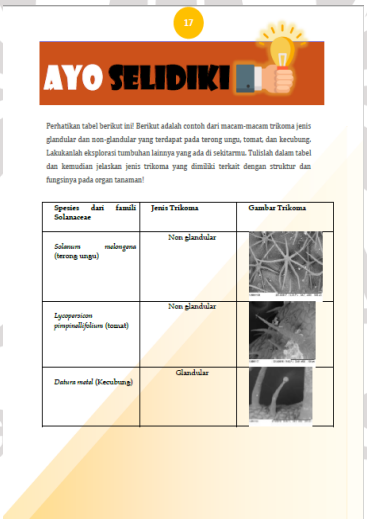

a


b

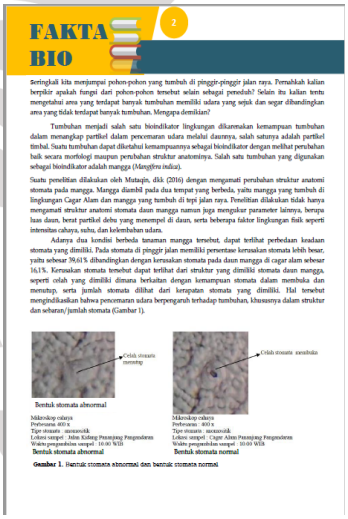



c


d




e




f


**g** **h**

**Figure 1. Profile of e-Book flipbook-based:** a) display of e-Book material, b) cover of e-Book, c) 'BIo Net' feature in e-Book, d) 'Evaluasi' feature in e-Book, e) 'Ayo Selidiki' feature in e-Book, f) 'Fakta Bio' feature in e-Book. g) 'Bio Integrasi' feature in e-Book, h) 'Aktivitas Bio' feature in e-Book

After the improvement on Draft 2 was validated by the lecturers of the material experts and lecturers of the media experts, the developed e-Book flipbook-based of tissue structure and the function of plant organs developed obtained an overall mean score of 4 with highly valid criteria. The following recapitulation data validation results presented in Table 2.

**Table 2.** Validations' results of E-Book Flipbook-Based in Tissues Structure and Organ Function of Plant in 11th Grades High School Material

| Number | Validation Criteria | Score of Validation | | Mean | Criteria |
|---|---|---|---|---|---|
| | | V1 | V2 | | |
| **A. The eligibility of the contents** | | | | | |
| 1. | The scope of material and accuration | 4 | 4 | 4,00 | Excellent |
| 2. | Current information | 4 | 4 | 4,00 | Excellent |
| 3. | Develop skills and stimulate curiosity | 4 | 4 | 4,00 | Excellent |
| 4. | Contains contextual insight | 4 | 4 | 4,00 | Excellent |
| **Mean** | | | | **4,00** | **Highly valid** |
| **C. Linguistic Components** | | | | | |
| 1. | Presentation techniques e-Book flipbook-based | 4 | 4 | 4,00 | Excellent |
| 2. | Presentation materials support | 4 | 4 | 4,00 | Excellent |
| **Mean** | | | | **4,00** | **Highly valid** |
| **B. Feasibility of Presentation** | | | | | |
| 1. | Presentation techniques e-Book flipbook-based | 4 | 4 | 4,00 | Excellent |
| 2. | Material presentation support in e-Book flipbook-based | 4 | 4 | 4,00 | Excellent |
| 3. | The choice of letters | 4 | 4 | 4,00 | Excellent |
| 4. | Contains contextual insight | 4 | 4 | 4,00 | Excellent |
| **Mean** | | | | **4,00** | **Highly valid** |

Descriptions:
V1 (Validator 1) : Material expert
V2 (Validator 2) : Educatiom expert

In addition to using the graph of Fry, practicality regarding e-Book flipbook-based obtained through learners' response. The response of learners can answer "Yes" or "no" question form based on learners' responses. The practicallity criteria response is obtained when the score ≥75%.

The results of the students' response presented in table 3 as follows.

**Table 3.** Recapitulation of Student Response to E-Book Flipbook-Based in Tissues Structure and Organ Function of Plant in 11th Grades High School Material

| Number | Statements | The number of agreement | Average per number of agreement (%) |
|---|---|---|---|
| **1.** | The overall display of e-Book flipbook-based attractive. | 20 | 100% |
| **2.** | Size and type of the selected letters are readable. | 20 | 100% |
| **3.** | There is content that describe the characteristics and features of the e-Book. | 20 | 100% |
| **4.** | Images presented of the material are clear | 19 | 95% |
| **5.** | Layout of the pictures, features and component materials arranged well | 20 | 100% |
| **6.** | The language used is informative and easy to understand | 19 | 95% |
| **7.** | Information is closely related with environment | 20 | 100% |
| **8.** | Problem analysis is closely related to the environment | 19 | 95% |
| **9.** | A hyperlink linked the internet works well (while online) | 19 | 95% |
| **10.** | E-Book flipbook-based easy in access both online and offline | 20 | 100% |
| **11.** | E-Book flipbook-based is an interactive medium | 20 | 100% |
| **12.** | E-Book flipbook-based facilitate users in particular study the anatomical tissue structure of plant organ | 20 | 100% |
| **Mean** | | 19,67 | 98,33% |

The results of this developmental study, produce e-Book on the material tissue structure and function of plant organs with flipbook display. The flipbook display can distinguish the e-Book developed with other e-Book, especially on plant tissue material. The developed E-Book can be accessed both online and offline (PDF).

Based on the results of the analysis obtained, e-Book flipbook-based developed is stated highly valid in terms of the validity of the reviewers. Aspects of the e-Book flipbook-based feasibility evaluated include the content/material feasibility, feasibility of presentation, and the vocabulary, in which each aspect got an average score of 4 with highly valid criteria.

The first criteria on the content feasibility aspect with score 4 is the scope and accuracy of the contents/material. From the validation resulted that the developed e-Book flipbook-based has the scope and accuracy of the content in accordance with the purpose of learning, easy to understand and in accordance with the truth of the concept and theory. The statement is in line with the response of learners on the 12 point (Table 3) which stated that e-Book flipbook-based simplify in learning, especially on the material of tissue structure and function of plant organs. This is because the presentation of content in the e-Book flipbook-based is written consistently, covering aspects of the structure of tissue and the function of plant organs in accordance with the needed of learners and based on reliable sources, in addition the relevant material in accordance with the objectives in learning of basic competence 3.3 and 4.3. Then e-Book flipbook-based can be used as a reference user in supporting learning. The statement is reinforced by Mursini (2012) stating that there are principles in the selection of material for the media (the book) for learners which includes the relevance, consistency, and sufficient of the material presented.

The second aspect of current information with score 4 is highly valid criteria, indicated that the developed e-Book flipbook-based has features that support learning, materials appropriate to the development of science, had updated content that reflects current conditions, and presented with hyperlink linked internet as additional information. One of the criteria that stated a feature with linked internet hyperlinks as additional information is supported by the learner's response on point 9 state that internet linked hyperlinks work well (while online).

The hyperlinks presented in the 'Bio Net' feature which invited learners directly to roam the internet pages provided. 'Bio Net' feature supported the concept of connectivist learning theory because learners learn / gain knowledge and perform activities based on internet access (Ally, 2008). In addition 'Bio Net' feature provided

internet pages in the form of information related materials and questions. So learners can accessed these features to build knowledge. This is related to learning cognitiv, where each individual has a different initial knowledge and motivation.

The 'Bio Net' feature can stimulated the curiosity of learners by studying the material itself so that it extends its knowledge compared with the students who are silent and wait for the explanation from the teacher (Salirawati, 2012). The online accessed of each individual is different according to the strength of internet access signal owned.

The fulfillment of the next criteria was e-Book flipbook-based had features that support learning, materials in accordance with the development of science, had the updated content that reflects current conditions, evidenced by the existence of features as a support in learning that links between the latest material with review the environmental conditions packaged in the 'Fakta Bio' feature, 'Ayo Selidiki' and 'Bio Integrasi'. These features aim to invited students to explore further on the problems presented. This is in accordance with Mardhiyana's (2017) statement that learning is not just about knew the material but also did further exploration that what has been learned in the learning process is more meaningful. Learning by linked the environment can improve learners' outcomes (Sugianto, 2012).

Activities undertaken by learners was the acquisition of information independently in line with the theory of learning constructivism. The theory of constructivism described how learners obtain information independently, building knowledge based on observation and interaction with the environment. Constructivism emphasized learners to be active learners in learning with student centered instructions (Slavin, 2006). In addition, the problems presented can be done in groups as in the features of 'Aktivitas Bio'. Through experience of doing activity that is cutting the root part and leaf of dicotyles and monocotyles plants in group, that was possible for the learners to got rules out information that vary through studying at peers. This feature also supports the concept of a proximal development zone where learners got gradual guidance from media and teachers regarding experimental steps undertaken.

The third aspect of content feasibility was developing skills and stimulating curiosity with the validity of 4. The fulfillment of these criteria was in line with the students' response which stated that the e-Book flipbook-based was an interactive medium (point 11). Decent learning media have criteria one of which is to develop skills and stimulated curiosity, namely by developing skills knowledge with benefits in life and cultivated the curiosity of learners and encourage to seek further information related to the material (BSNP, 2014 ). This is proved by features in the e-Book that includes "Fakta Bio', "Ayo Selidiki' and 'Aktivitas Bio' that were interactive.

Interactive intended for e-Book flipbook-based developed in addition in terms of appearance is a feature which invited learners to perform analysis and make further observations / exploration. One of the studies presented on the 'Fakta Bio' feature, which presented information about difference stomata with normal and abnormal conditions. This feature was relevant to the concept of constructivist learning theory, this theory indicated that learning was a dynamic process whereby learners build on their new thoughts related to previous knowledge (Alshalabi, et al., 2013). In this feature, the learning experienced by learners was constructed from fact-based phenomena presented in the e-Book flipbook-based so learners were directed to explore further on the basis of previously knowledge. In learning, curiosity was very important for learners to connect the learned and learned concepts (Mardhiyana, 2017).

The next feature is "Ayo Selidiki', this feature invited learners to do further exploration related to the data that provided. The data provided in the e-Book flipbook-based was one of the types of stomata owned by the Solanaceae plant species. This feature is relevant to the concept of a proximal development zone because this feature emphasized a slightly higher contextual problem than the cognitive level of the learner. The data had been provide helps learners to obtain information. According to Vygotsky text, audio, and video can support the learning process of learners as access "more knew" in learning (Kay and Kibble, 2016).

The fourth aspect is the content feasibility that includes a contextual insight got validation of 4 with highly valid criteria. This is because in the developed e-Book flipbook-based had information presented related to the environment from material to content of features, such as 'Fakta Bio' feature, 'Bio Integrasi' and 'Ayo Selidiki'. The 'Bio Integrasi' feature was a feature that contains integration between the material and its utilization in the environment. For example, this feature presented data of several types of wood that integrated with the structure of the tissue owned by utilization in accordance with market needed.

In addition, the presentation of the problems closely related to the analysis of problems in the surrounding environment presented in the evaluation feature. For example in the evaluation feature, learners presented images of roots of soil and aerial roots, it aims to encourage learners to analyze further whether the two

roots have the same function. Based on these statements presented it can be said that evaluation features are relevant to the metacognitive learners. Metacognitive was person's way of thinking based on awareness of what is known and done (Christianity, 2015). This feature requires reflection on every individual learners, so it is possible to learners are *self regulated learner*, because learning is managed based on learner independence.

The features of e-Book flipbook-based required learners to engage in material-related activities so that learners can not only gain knowledge, but also skill. According to Regulation of Education Minister (Permendikbud) Number. 22 Year. 2016, stated that knowledge is gained through the activities of "remembering, understanding, applying, analyzing, evaluating, creating". Skills are acquired through "observing, asking, trying, reasoning, tasting and creating" activities.

The next aspect was the feasibility of presentation consisting of three criteria. The first criteria was a e-Book flipbook-based presentation technique that got a score of 4 from both validators with highly valid criteria. This criteria indicated that developed e-Book flipbook-based meets the criteria in which corresponding presentation conforms to the concept, the features presented in accordance with the basic competence/objectives to be achieved, as well as the images and layouts was not interfered with the presentation of the material. The criteria are supported by the statement of the learner in the questionnaire which stated that in the presentation of the location of the image, the features and components of the material are well constructed, and there was content in the e-Book flipbook-based that supported the explanation of characteristics of e-Book flipbook-based and features owned so users can know the purpose of any existing features. The features of the developed e-Book flipbook-based are listed based on the components to be considered in the e-Book (Wang, 2015). Components include design, use of size and type of letters to watch out for, availability of hyperlinks, procedural steps/introduction of e-Books, availability of dictionaries in e-Books, and suitability of e-Book flipbook-based in the learning process.

The next criteria in the feasibility of presentation that was supporting the presentation of e-Book flipbook-based got highly valid criteria with a score of 4 both validators. That because the e-Book flipbook-based had a cover suit that illustrated the topic inside. The cover on e-Book flipbook-based had simple design used the capture of Vernonia sp. stems' tissue which aims to reflect the material in e-Book flipbook-based. E-Book flipbook-based is an interesting and enjoyable medium because of colored appearance, adopting various fonts and there are some e-Books that can insert audio and videos (Tosun, 2014).

In addition e-Book flipbook-based had a simple and clear layout in terms of supporting images, colors and selected text. Supporting images are presented based on the results of the author's documentation with the aim of overcoming the limitations of real learning that students may not be able to do. Clear and interested layout is in line with the questionnaire response of learners who stated e-Book flipbook-based has clarity of supported images and the overall appearance of e-Book flipbook-based interesting. Flipbook is a media that focuses on the visual aspect to make learning more effective in assisted the visualization of learners and facilitated the delivery of information from teachers (Sugianto, 2013).

The image on the e-Book flipbook-based was largely the author's document with the purpose of the presented image being real as a supported explanation on the material. This is in accordance with the statement of Sardiman (1990) that the media used in the learning process aims to clarify the material presented in order not to be too verbalistic. The last criteria in the aspect of feasibility of presentation is the selection of letter size which also get a score of 4.00 from each validator. In this criteria indicated that the e-Book flipbook-based meets the criteria of selected letters that include the font, the size of the letter and the color of the letters can be read clearly. This corresponds to a student's response questionnaire stated that the size and type of letters selected in the e-Book flipbook-based are clear. Arsyad (2011) stated that in the selection of letters used normal fonts, not decorated, not using capital letters as a whole, using capital letters and lowercase letters.

The third aspect was the linguistic component had two criteria that all got a value of 4. From both criteria it is known that the developed e-Book flipbook-based had valid criteria based on presentation techniques which include the material demands presented, the used of biologically understandable terms, writing in accordance with the correct rules, such as scientific names or foreign terms using italics, as well as the language used in accordance with the level of thinking of learners based on validation results. Linguistics in the book are: communicative, interactive, in accordance with the level of thinking learners, the flow of thought, in accordance with the correct rules, and the use of the correct term (BSNP, 2014). The statement is supported by the response of learners that the choice of language in the e-Book was an informative and easy to understand language.

Based on the overall score of the validation results, e-Book flipbook-based had a highly valid criteria seen from the validity result and supported by the learner's

statement on the response questionnaire. In addition to the response of learners, the results of validity was supported by the results of legibility of three samples in accordance with the level of thinking learners at the 11th level or 11th grade students. The differences in legibility of each learners are vary, which can be affected by eye movements, letters , line spacing, column and line length (Terasov, 2014). Therefore, by using Fry Graphs, it was expected that the level obtained in accordance with the grade level and the ability of learners in understanding the reading.

Most learners respond positively to e-Books developed, but there are also learners who respond negatively to writing in a e-Book flipbook-based with a response to a difficult term. This is because in biology there are foreign terms (Shabania, 2015). Therefore in the e-Book flipbook-based is equipped with a bio dictionary feature to facilitate learners in understanding the foreign terms contained in the e-Book flipbook-based. The overall interpretation of the score on the e-Book flipbook-based of tissue structure material and the function of plant organs developed produces a positive response with a very practical category which meets the components in the assessment adapted from BSNP (2014) which includes the understandable language, and arranged in accordance with the applicable curriculum.

The overall result of the e-Book flipbook-based development showed that the development of Information and Communication Technology (ICT) has had an impact on the education world especially in the learning process resulting in a shift from training to appearance, from classroom to where and at any time, from paper to online, from physical facility to network facility and from time to time cycle (Rosenberg, 2001). In addition to considering effectiveness and efficiency, e-Book flipbook-based seeks to brought easy learning media in accessing it. This is in line with the opinion Mahnun (2012) where other considerations that need to be considered in addition to the effectiveness and efficiency is the accessibility factor which concerns the ease of media access in various occasions.

## CONCLUSION

The developmental study that had been done resulted e-Book flipbook-based of tissue structure material and function of plant organ with highly valid category based on validation result of lecturers media and biology expert of UNESA and practical based on test of readability and response of 20 students.

**Suggestion**

Based on the study that had been done, the suggestions can be given as follows: (1) Need for further implementation so that the media can be applied in the learning of learners not just as supporting material. (2) Study with other materials is necessary considering the response of learners is very positive. (3) There needs to be further development of e-Book flipbook-based that is more interactive both in terms of appearance and content presented.

## ACKNOWLEDGEMENT

The researcher would like to thank to Dra. Rinie Pratiwi Puspitawati, M.Si. and Ulfi Faizah, S.Pd., M.Si. as reviewers and validators of e-Book flipbook-based, and all those who support the completion of this study.

## REFERENCES

Aldoobie, N. 2015. Technology Integration and Learning Theory. *American International Journal of Contemporary Research* , 5(6), Hal.114-118.

Ally, M. -. Foundation of Educational Theory for Online Learning. In M. Ally, *Theory and Practice of Online Learning*. hal. 15-44. -: Athabasca University.

Alshalabi, I. A.,s Hamada, S., & Elleithy, K. 2013. Research Learning Theories that Entail M-Learning Education Related to Computer Science and Engineering Courses. *International Journal of Engineering Sciences*, 2(3), hal. 88-95.

Arsyad, A. 2011. *Media Pembelajaran*. Jakarta: PT. Rajagrafindo Persada.

BSNP. 2014. *Naskah Akademik Instrumen Penilaian Buku Teks Pelajaran Pendidikan Dasar dan Menengah*. Jakarta: Badan Standar Nasional Pendidikan.

Febrianti, F. N., Budiono, J. D., & Isnawati. 2013. Pengembangan Buku Ajar Elektronik pada Materi Struktur dan Fungsi Jaringan Tumbuhan. *BioEdu*, 2(2), hal. 140-144.

Jones, T., & Brown, C. 2014. Reading engagement: A Comparison Between E-Books and Traditional Print Books in an Elementary Classroom. *International Journal of Instruction*, *4*(2).

Kay, D., & Kibble, J. 2016. Learning Theories 101: Application to Everyday Teaching and Scholarship. *Adv Physiol Educ*, 40, hal. 17-25.

Kristiani, N. 2015. Hubungan Keterampilan Metakognitif dan Hasil Belajar Kognitif Siswa pada Pembelajaran Saintifik dalam Mata Pelajaran Biologi SMA Kurikulum 2013. *Seminar Nasional XII Pendidikan Biologi FKIP UNS* (hal. 513-518). Surakarta: Universitas Negeri Surakarta.

Kusumawati, M. 2016. Identifikasi Kesulitan Belajar Materi Struktur-Fungsi Jaringan Tumbuhan pada Siswa SMA Negeri 3 Klaten Kelas XI Tahun Ajaran 2015/2016. *Jurnal Pendidikan Biologi*, hal. 19-26.

Mahnun, N. 2012. Media Pembelajaran (Kajian Terhadap Langkah-Langkah Pemilihan Media dan Imlementasinya dalam Pembelajaran). *Jurnal Pemikiran Islam*, 37(1), hal. 27-33.

Mardhiyana, D. 2017. Upaya Meningkatkan Rasa Ingin Tahu Mahasiswa Melalui Penerapan Pembelajaran Berbasis Proyek pada Mata Kuliah Evaluasi Proses dan Hasil Pembelajaran Matematika. *Jurnal Ilmiah Pendidikan Matematika*, 5(1), hal. 1-8

Mursini. 2012. *Pengembangan Bahan Ajar Bahasa dan Sastra Indonesia*. Medan: Unimed Press, (*Online*). Mei 23, 2018.

Riduwan. 2012. *Skala Pengukuran Variabel-varibel Penelitian*. Bandung: Alfabeta.

Salirawati, D.2012. Percaya diri, keingintahuan, dan berjiwa wirausaha: tiga karakter penting bagi peserta didik. *Jurnal karakter, tahun II, nomor 2, Juni 2012*. Diakses tanggal 23 Mei 2018 dari jurnal uny.ac.id.

Sardiman. 2007. *Interaksi dan Motivasi Belajar Mengajar*. Jakarta: Raja Grafindo Persada.

Shabania, Nuri, Yuke M, Ahmad S. 2015. Pengaruh Pembelajaran Model Advance Organizer terhadap Hasil Belajar Biologi Siswa pada Konsep Protista. *Edusains*. Tersedia: http://journal.uinjkt.ac.id/index.php/edusains. Diakses pada: 15 Maret 2018.

Slavin, R.E., 2006. *Educational Psychology: Theory and Practice 8th Ed*. USA: Johns Hopkins University.

Sugianto. 2012. *Upaya Peningkatan Hasil Belajar Siswa Pada Materi Ekosistem dengan Lingkungan sebagai Sumber Belajar melalui Model Pembelajaran Kooperatif Tipe Student Team Achievement Division (STAD) di SMP Negeri 7 Tanjung Selor Kab.Bulungan Kalimantan Timur*. e-Jurnal Pendidikan Universitas Negeri Surabaya. (Online), 1 (01), hal. 101-114

Sugianto, D., Abdullah, A., Elvyanti, S., & Muladi, Y. 2013. Modul Virtual: Multimedia Flipbook Dasar Teknik Digital. *INVOTEC, 9(2)*, hal. 101-116.

Tarasov, D.A. dkk. 2015. Legibility of Textbooks: a literature review. *Science Direct*.

Tosun, N. 2014. A Study on Reading Printed Books or E-Books: Reasons for Student Teacher Preferences. *The Turkish Online Journal of Educational Technology*, *13(1)*, hal. 21-28.

Wang, C.-M. &.-H. 2015. A Study of Usability Principles and Interface Design for Mobile E-books. *Ergonomics*, 58 (8), hal. 1253-1265.

Wijaya, E. Y., Sudjimat, D. A., & Nyoto, A. 2016. Transformasi Pendidikan Abad 21 sebagai Tuntutan Pengembangan Manusia di Era Global. *Prosiding Seminar Nasional Pendidikan Matematika 2016* (hal. 263-278). Malang: Universitas Kanjuruhan Malang.