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Developing Civicpedia as a Civic Education E-Learning Media To Improve Students' Information Literacy

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Abstract

The relevance of the research stems from the need to construct literacy information technology in the 21st century learning. The essential idea of this article was improving students` information literacy through "Civicpedia" as a civic education e-learning media (learning material on website, e-dictionary, video, poster, valued story, and interactive quiz). This research aims to describe: 1) the design of civicpedia as a civic education e-learning media to improve students' information literacy; 2) the intensity of the use of Civicpedia in the learning process, and 3) the responses of the civicpedia users. Qualitative and quantitative approach with research and development design was used in the study. The data were obtained through observation, documentation, interview, and questionnaire. Data collection, data reduction, and data presentation were performed to analyze qualitative data, and quantitative data analysis were shown in percentage. The participants of the research were 447 students from 11 Junior High School (SMP) and 1 Islamic Junior High School (MTs) in Bandung, West Java, Indonesia. The following was results of studied: 1) the concept of the civicpedia design consists of home page, dictionary page, media page, quiz and contact page; 2) steps in developing teaching materials were designed based on Curriculum of 2013, compiled on the basis of the formal education level, and contextually formulated on the current real-life controversial cases, collaborated with authentic assignments, which enhanced the students' critical thinking, and related to unknown terms with suitable images and videos; 3) the students' responses regarding the implementation civicpedia in the learning process were positive. The program display was considered good and the interactivity aspect was deemed very good. Most students very positively perceived the use of Civicpedia in civic education learning to improve information literacy.

Key words: *Civicpedia, E-Learning Media, Civic Education, Information Literacy*

Introduction

Since the last decade, the issue of literacy has drawn noteworthy attention in Indonesian education. The level of literacy in Indonesia is considered low and it has not been internalized in the people's daily life. Progress in International Reading LIteracy Study (PIRLS) has reported that Indonesia ranked 45 of 48 countries in the International Results in Reading with the score of 428 and the global average score was 500 (IEA, 2012). In addition, in reading literacy test of PISA

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2009 Indonesian students were 57 in rank with 396 in score (OECD average score was 493) and the ranking declined in PISA 2012 to 64 with similar score (OECD average score was 496) (OECD, 2013). The low level of literacy in discourse indicates that education has not been able to develop students' competence and interest in knowledge. Educational practice at school thus far has not demonstrated that school as learning organization created lifelong learners. The application of information technology in education was needed for rapidly and broadly acquiring information, promoting personal learning efficacy and work efficiency, enhancing cooperation and communication with others, and cultivating personal habits of active learning and lifelong learning (Xu & Chen, 2015)

In the future, internet use will continue growing higher due to the production of mobile devices which has exceeded 2 billion and is predicted to surpass 2.7 billion (Hanchman, 2011). The required skill nowadays is the skill which go along with the advancement of communication technology including computers and mobile devices, which is expected to help decision making actions. Researchers have emphasized the importance of information literacy skills in various field, including at home (Rieh, 2014) and at school (Leckie & Fullerton, 1999). The mastery of information literacy in digital era can lead to a more successful life and education. Thus, a person who retain information literacy skill will keep on learning to acquire and create new information and knowledge. Now, the society needs to nurture and construct literacy, which has shifted to an information technology and electronic devices. In short, someone is recognizing the need for, understanding, finding, evaluating and using information-activities which may be supported in part by fluency with information technology, in part by sound investigative methods, but most importantly, through critical discernment and reasoning (Saad & Zainab, 2002).

The practice of civic education in enhancing students' literacy skills, however, is merely an indoctrination. It suppresses students' cognitive state, hinders theircreativity, and reduced the students' opportunity to gain higher order thinking (Daryanto, 2010, p. 2). This also seems to occur due to the teachers' lack of innovation in using learning media. The students hopes that the teacher can design learning media which is appropriate with their characterstics and objectives of learning. If it is fulfilled, the students might be more motivated and grasp the learning material. Multimedia tools offer not only a great deal of advantages in increasing quality in the classroom, but they also provide options to overcome obstacles faced by the teacher. Furthermore, learning media is also functions to distribute, deliver, and link the learning sources, which, in the end, can lead to a better

communication in learning and changes in behaviors as the objective of learning can be achieved (Munadi, 2008, p. 36). Therefore, research and development-based study is needed to create interactive learning multiedia. Civicpedia is a civic education e-learning media which is devised with the integrated terms search, learning material on website, e-dictionary, video, poster, valued story, and interactive quiz to ease teachers in developing students' literacy skills.

In general, this research was intended to describe how Civicpedia as the civic education learning media can increase students' information literacy level and, specifically, was driven to answer the following research questions:

1. How does the design of Civicpedia as a civic education e-learning increase the junior high school students' information literacy level?
2. How is the intensity of the use of Civicpedia in the learning process?
3. How are the responses of the Civicpedia users?

Method

Research Design

The research was conducted using a research and development (R&D) design. According to Borg and Gall (1989, p. 782), research and development design is "a process used to develop and and validate educational product." This research can also be considered as "research-based development" that its occurence serve as strategy to enhance the quality and productivity of education by manufacturing educational products. It`s can be in the forms of curriculum, learning method, learning media, textbooks, learning models, evaluation systems, and many more.

Research and Development by Borg dan Gall (1989, hlm. 784) has steps that can be described as follows: *1) Research and Information colletion; 2) Planning; 3) Develop Preliminary form of Product; 4) Preliminary Field Testing; 5) Main Product Revision; 6) Main Field Testing; 7) Operational Product Revision; 8) Operational Field Testing; 9) Final Product Revision, and 10) Disemination and Implementation.*

Population and Sample/ Study Group/Participants

The population in this research included junior high school students in Bandung, West Java, Indonesia. Based on junior high school data in Bandung, total of school population as much 54 Junior High School (SMP) and 2 Islamic Junior High School (MTs). Using cluster sampling,

the participants of the research were 477 students from 11 Junior High School (SMP) and 1 Islamic Junior High School (MTs) in Bandung, West Java, Indonesia. Teachers of Civic Education as facilitator and lecturers who are experts in civic education learning. Clustering technique is a technique of selecting other samples by using the principle of probability. The students were divided into 12 schools.

Table 1.
Distribution of Samples

Cluster	School	Sampling
I	SMPN 2 Bandung	38
	SMPN 5 Bandung	40
	SMPN 12 Bandung	37
II	SMPN 9 Bandung	42
	SMPN 15 Bandung	39
	MTSN 2 Bandung	41
III	SMPN 10 Bandung	43
	SMPN 26 Bandung	42
	SMPN 40 Bandung	39
IV	SMPN 29 Bandung	39
	SMPN 38 Bandung	37
	SMPN 52 Bandung	40
	Total	477

Source: School Administration Data, 2016

Data Collection Tools

Questionnaire, interview, observation, and document analysis were used to collect the data to be analyzed qualitatively and quantitatively. The collect data of quantitative with questionnaire used for describe the implementation of civicpedia in civic education learning. The test of validity using Pearson`s Product Moment and its reliability was tested with Cronbach`alpha.

Data Analysis

To analyze qualitative data, the following steps were performed: 1) Reducing the data by summarizing field notes and highlighting important events related to the focus of the research; 2) Systematically organize certain categories and classification; 3) Creating tables and figures to display the data, so that the relations between the data can be observed comprehensively; 4)

Completing a cross-site analysis by comparing and analyzing the data meticulously; and 5) Presenting the findings and drawing conclusions from recursive trends and implications, making recommendations for further improvements (Fraenkel and Wallen, 1993, p. 399-403). Quantitative analysis was done for questionnaire data and they were converted into percentage (Creswell, 1994).

Findings

The Design of Civicpedia Learning Media in Civic Education

1. *Product Design Stage*

The design of Civicpedia is generated from the obtained learning media on concepts made in flowchart, sketch, and storyboard. The developed learning media was designed based on the following flowchart:

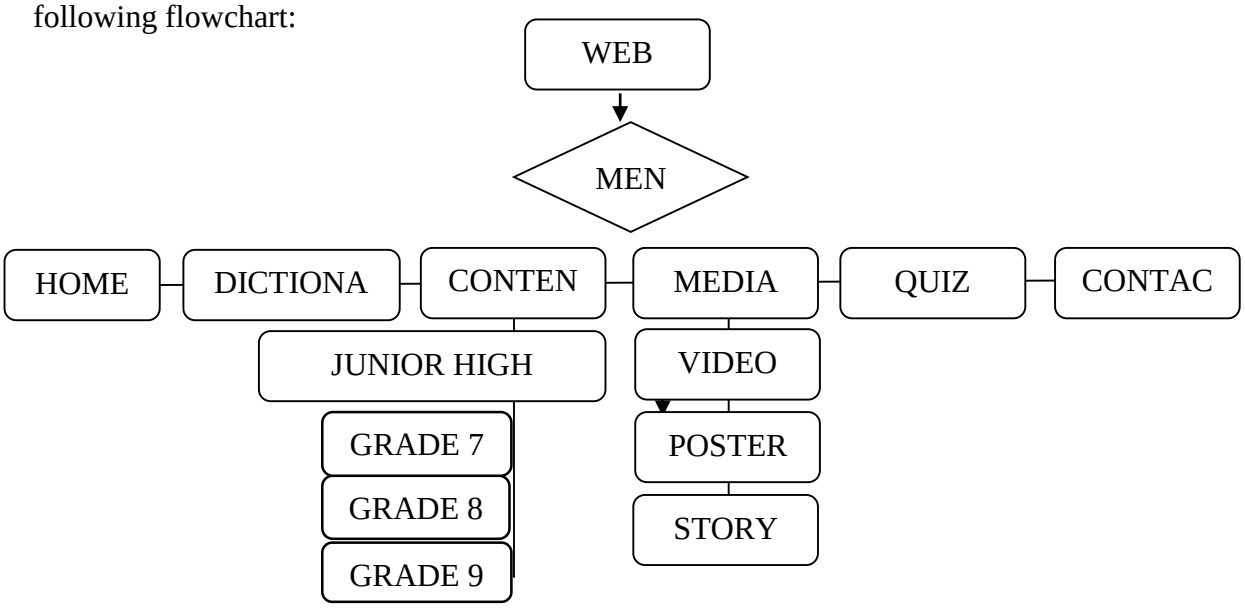

Figure 1. Flowchart of Civicpedia as Media of Civic Learning

Steps for user in using Civicpedia areas follows:

- Open the web browser in computer or laptop;
- Go to the following link: http://kamuspkn.upi.edu/
- Search terms in the search bar or in the dictionary menu. Then, the translation page will appear when users look for terms. Users can use the search alphabetically by clicking alphabetic sort button;
- Adjust the level of the education, elementary (*SD*), junior high (*SMP*), senior high (*SMA*), or tertiary education (*PT*), in the material menu;

- Find the learning media you would like to use from the media menu such as videos, posters, and stories. The videos are linked to a YouTube account to facilitate the students to find other interesting videos related to civic education learning;
- Find the assessment forms based on the previously learned materials in the quiz menu. In the interactive quiz, the users are able to answer to questions and directly get the score.

2. *Website Appearance Sketch*

After making the flowchart of the website, website interface sketch were drawn as needed. The website interface has usually similarity with the civic Education e-dictionary, which has page like news but interestingly has been equipped with the terms search menu. Similarly with the news sites, the home page has attractive slide show images to make the stories in the sites more appealing to be visited by the users.

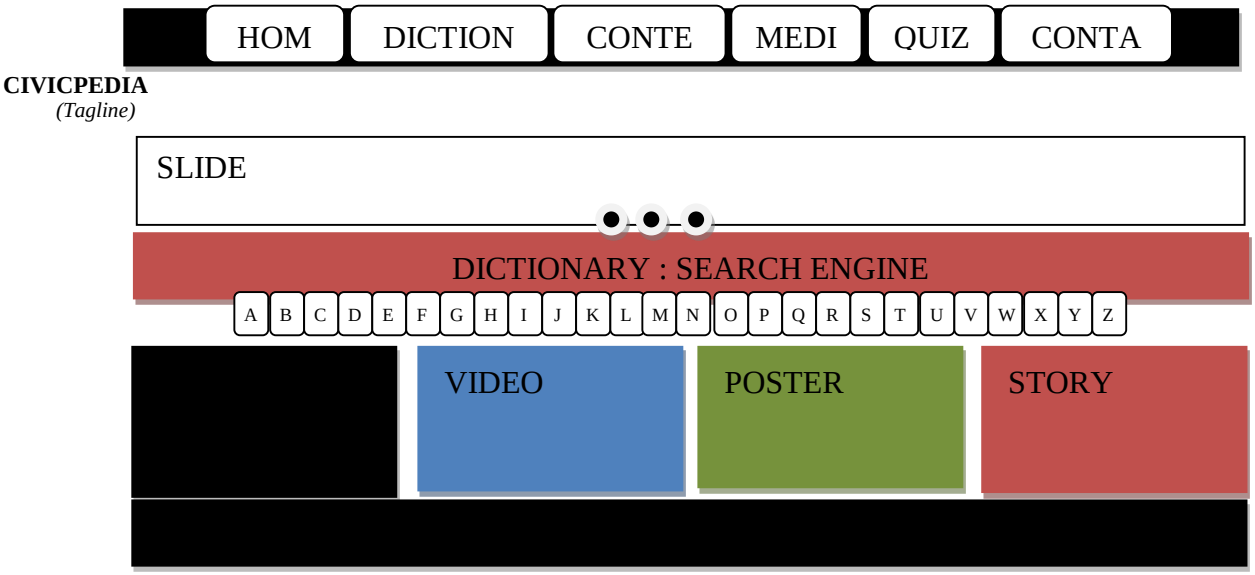

Figure 2. Civicpedia Web Sketch

The sketch made the work of designing the website more uncomplicated and focused. The sketch was not in detail but comprised elements such as layout, font type, columns, navigation bar, and sites colours. When the website was developed, a more detailed work was done. One important thing to bear in mind in developing the website is that it has to be user friendly and not too complicated in term of colours or images.

3. *Storyboard*

After the portal sketch had been completed, a graphic web design of pages were created. Storyboard is the merged the tree diagram and the appearance of the website. Storyboard was a vital process because it involved other designers in the team. It was used to visually describe the developed e-dictionary-based design of the learning media. Since the several designers were involved in this process, a strict deadline was in effect. Thus, storyboard helped significantly to explain job desk of each designer in the team. Synchronization must be maintained by one web designer to make each page of the website consistent.

4. *Material Development Stage*

The indicators of material mastery on each learning media were developed in this stage. The steps to indicate the comprehension of the users are by:

- Designing learning material based on current Curriculum of 2013;
- Compiling materials based on student's education level;
- Formulating the material contextually which involving controversial real-world cases;
- Collaborating the authentic assignments that fosters students' critical thinking; and,
- Linking the material with the predicted unknown vocabulary and suitable videos.

5. *Product Creation Stage*

This stage was executed after the planning and designing stages had been completed and was the main action of the research. To create the Civicpedia in the final stage, analysis, users' interface design, coding, testing, and implementation were performed. They are elaborated next.

a. Analysis

The early stage of making this website was to learn user's interface design using PHP, Javascript, and HTML, while MySql was used to manage the database. Not only having a complete facility to create the product, but this software also offered the ease to create the learning media.

b. Users' Interface Design

Users' interface was adjusted to the users' education level. Because of the users of the Civicpedia in the research were the junior high school students, the interface, to avoid users' boredom, were made as interesting as possible. The designed interface were:

1) Web page of the application consisted of home page, output and output web service. While the home page comprised the terms search, the out page showed the meaning of the searched terms and other related words. Besides home page, dictionary page also contained terms search system and could be ordered alphabetically. Output web service page involved XML format containing id_istilah from the input, istilah_dasar input and all function offered by the websites. Output page consisteds of users' searched terms or other information related to them such as synonyms, antonyms, word buildings, or plural forms.
2) Search page contained civic education learning material for junior high school students in XML format. The outcomes were: Learning Material Page entails navigation menu to the learning material page. Provided materials in this learning material page were lessons for grade VII, VIII, and IX, and several materials adapted from the Curriculum of 2013 students' handbook. In the page the terms were brought together with its definition.

   - First stage was to find learning material in the home page by suitable education level.
   - Then, choosing suitable material based on the students' grade, and before that, the random learning material has been shown to the users.
   - Next, there will be concept index in form of link. Concept index can be seen in the mind mapping.
   - Finally, by systematically formulized and simplified words, the real output page will come out. When there is predicted to be difficult words, a link to its definition will also occur.

   As an admin of the web sites, new terms are frequently added, so that it will enrich the registers of the terms.
3) In the media search page, there are videos, posters, and stories in XML format. Media Page contains navigation menu to the media page. The used media in this e-dictionary are videos, posters, and stories to help the students brainstorm of the main lessons, then the media are linked to related concepts of the materials.

4) Quiz search page comprised quizzes to evaluate students' learning progress data in SWF format. The navigation menu to quiz pages provided in Civicpedia wasinteractive multiple choice questions that can be answered directly by the students and links to the concepts are given in the page.

c. Coding

Coding was done to make the buttons work as the navigation in the web, Civicpedia could function in accordance with the designed necessity. Integrated Development Environment (IDE) programming language is used to make the coding to the objects in the interface operate correctly. In addition, HTML and and Java script was utilized to the learning multimedia was attached in the appendices.

d. Testing

This step was conducted to test whether the code in Civicpedia could perform as its function and to find the shortcomings to be fixed. Then, error in the web sites were corrected in this stage. the results of this step was EXE file, a file that can be run without opening the master program.

e. Implementation

By getting the EXE file in the testing stage, Civicpedia can be opened in other computers or laptops as long as using Windows operating systems, the most common found operating systems at school.

The Form of Intensity Using Civicpedia in Civic Education Learning

Learning Media

The development of Civicpedia is part of creating a learning media that can stimulate students' creativity and motivation. the teacher has provided a new learning experience to the students, regardless of he or she overlook the context of where, when, and to whom the learning media take place. Contextual materials enable the students to think critically in solving a problem. The material presentation in Civicpedia are organized in systematic way on the basis of 2013 Curriculum. E-learning in the Civicpedia is delivered through various videos, posters, and stories and this ease both the teacher and the students in the learning process.

Teaching Methods

Based on the observation data, most of the teachers has not fully understood the importance of the lesson's opening activity to bridge the students' to a new experience by asking appropriate questions or relate the lessons to their prior knowledge. In implementing Civicpedia, the students can have the opportunity to look at different media in the system. After observing the stimuli in form of video, posters, and stories, the students are expected to be able to explain or to have hints on the materials. In the main activity, the teacher can facilitate the students to reconstruct new experience in implementing Civicpedia. The teacherscan directly introduce the students to work on tasks or exercises and examine the given examples. To find the meaning of difficult words, the students can directly look up in the dictionary search menu.

Then, the teachers provided opportunity for the students to do exercises individually or in groups and were able to directly check the results and give feedbacks to the students. One important thing that had not been conducted was to guide and lead the students gradually to reach the learning objective, which was to reveal new facts, knowledge, and skills. Apparently, not all teachers delivered feedback through guided questions, so that the students were not aware of the novelty experience they had in the learning process and could not compare it with their prior knowledge and understanding. The teachers, however, compensated this drawback by providing positive compliments with different intensity to their students who had answered correctly. The frequent compliments might be considered as usual expressions by the students and might be less meaningful to boost students' motivation.

Learning process

The teachers delivered the learning materials in Civicpedia efficiently because they had accessed them before the learning process begun. The modification or materials delivery can be adjusted based on the relevancy of particular or certain topic, but because the time management was often ignored, the completion of tasks and exercises merely depended on the students' performance. It happened due to the teachers were not aware of the cognitive amount of the given exercise and how long they should have been worked on. All teachers used relevant pictures in Civicpedia as teaching aid. The teachers' initiative were regularly seen from the frequency and variety of support given to the students who needs help. However, not all teachers were able to provide stimuli to increase students' motivation in order to complete the exercises and tasks.

Learning Interaction

Based on interviews data, the students were given chance to take part in fulfilling the group works through discussion and drawing conclusion. The students acquired vast opportunity to ask questions and express their opinions. Nonetheless, most of the teachers limited the session, and they preferred to explain while the students were in attentive state. Generally, the teachers have not been able to create democratic atmosphere to advance students' questioning and expressing opinions skills. However, based on the data, after the use of Civicpedia the teachers were able to inspire the students to participate actively in every activity. The condition of the teaching and learning process were more favorable because the students did not feel anxious when they find unknown difficult words.

Learning evaluation

Civicpedia provides a user-friendly evaluation of students' attitudes, performance, and other evaluation criteria to the teachers. Previously, the teachers had not done any formative evaluation in the learning process due to insufficient allotted time, but, by using Civicpedia, they were able to do so and directly understood the students' performance after the learning process. The teachers did not need to check and calculate the students' answers because Civicpedia has done that automatically in a quick and precise fashion. The teachers did not need to make test descriptors because they had been made in Civicpedia.

Civicpedia Users' Satisfaction Level

After the students used the Civicpedia, the data related to students' assessment toward the software were collected through questionnaire. The questionnaire assessed the communication, visual design, and content of the software. The results of descriptive quantitative data analysis to Civicpedia users` satisfaction in Civic Education learning can be seen in Table 1.

Table 2.

The Responses of Civicpedia Users' Satisfaction

No	Aspects assessed of Civicpedia	Indicators	Frequency (%)				
			Very Good	Good	Fair	Poor	Very Poor
1.	Communication	Actuality of the message presented	69.7	29.4	0.9	-	-
		Two-way communication	54.5	31.3	11.0	3.2	-

		Effectiveness of media in learning	62.6	32.3	4.5	0.6	-
		Share of material between users	73.5	23.9	2.6	-	-
		Interactivity level between users	72.3	22.6	4.5	0.6	-
2.	Visual Design	Unique and innovative display	67.7	27.1	3.9	1.3	-
		Quality of display design	58.7	27.1	12.3	1.9	-
		Effectiveness of function each menu	59.7	29.3	11.0	-	-
		The effectiveness of navigation aids menu	74.2	21.3	3.9	0.6	-
		Consistency between menu views	75.5	21.9	2.6	-	-
3.	Content	Media suitability with goals	72.9	23.2	3.3	0.6	-
		Completeness of learning elements	62.3	33.2	4.5	-	-
		Material truth presented in the media	74.5	15.2	8.4	0.6	1.3
		Adequacy of material presented in the media	77.8	17.7	4.5	-	-
		The depth of material presented in the media	79.4	11.6	5.2	3.8	-
Total			1035.3	367.1	83.1	13.2	1.3
Overall Mean Score			69.02	24.48	5.54	0.88	0.08

Table 2. above shows that Civicpedia users` satisfaction after the use of learning media through Civicpedia in Civic Education learning sits at 69.02 % (very good category), 24.48 % (good category), 5.54 % (fair category), 0.88 % (poor category), and only 0.08 % (very poor category). The dominant users` satisfaction of Civicpedia in Civic Education learning is the depth of material presented in the media, adequacy of material presented in the media, and cconsistency between menu views. Which means that Civicpedia can serve as a very good learning aid.

Discussion, Conclusion and Implications

The empirical findings of the implementation of Civicpedia in civic education to increase the students' information literacy shows a positive outcome. There are five points that can be drawn as conclusions in this research.

First, the implementation of Civicpedia is one of the learning media that supports the teaching and 21st century learning process. The phenomenon of information competency in 21st century learning is indispensable. On the one hand, these are the enhancing factors of being of the information society that are envisaged from the outside; on the other hand, information

competency exists in the subject's ideas about information technologies, information resources and the information society (Natalia, et al 2018). Learning media is various component or learning source in learners' environment that can stimulate the students to learn information technologies as information society (Gagne, 1970; Briggs, 1970; Schramm, 1995). In other words, Civicpedia media was made to be integrated in learning all of its components, including materials, methods, media, resources, and assessment. Thus, media as one component of learning should be based on guidance to the students to make them realize the truth, virtues, and beauty through the process of considering the proper value and consistent actions as information society (Komalasari & Saripudin, 2017).

Second, practical notions related to the judgments on reasons using this media in learning, according to Yamashita (2011) are caused by 1) demonstration; 2) familiarity; 3) clarity; and 4) active learning. It implies that the purpose of learning media use is to help creating democratic, comfortable, and active learning. In line with Gerlach (1980: 21), "a medium, broadly conceived, is any person, material, as event that establishes condition which enable the learner to acquire knowledge, skills, and attitudes." The main principle using learning media is to make learning process more effective and efficient. There are several learning media types such as still pictures, audio recording, motion pictures, television, real things, simulation, models, programmed and computer-assisted instruction (Gerlach, 1980, p. 247-250).

Third, the result of the students' responses from the questionnaire shows that both communication between the teacher and the students aspect in using Civicpedia (93.33%) and the design and presentation of the website aspect (92.00%) are considered very good. The average score of the students' responses is 85.71%. The percentage of communication satisfactory falls to very good. The program design aspect is deemed good and its interactivity aspect is believed to be very good. Civicpedia is regarded as an appropriate learning media in civic education learning process. It is supported by the result of the questionnaire that communication aspect received the highest positive responses from the students. Communication of study drew upon consist with social learning theories that learning is co- construction of knowledge (Vygotsky, 1978). Learning brings students` experiences to share through peer interactions, and it has the potential to foster critical thinking and literacy information culture (Dewey, 1938; Gokhale, 1995; Sharp, 2018).

Fourth, based on the questionnaire related to students' assessment on the use of Civicpedia in learning process, the software was deemed as very good (90.74%). It suggests that there was decent

communication during the learning process using Civicpedia. Beneficial learning media is hoped to increase students' engagement in learning process and eventually improve students' knowledge. The reasons for this are (a) the learning process is more interesting and can boost students' motivation, (b) learning material is easily understood and it allows students to achieve the learning objectives, (c) more varied teaching methods avoid students' boredom, and (d) Students interest-driven activities can span contextual boundaries and be self-sustaining given adequate time, freedom, and resources (Sudjana, 1990, p.2; Barron, 2006, p. 199-201). Learning conditions that allow for the creation of contextual learning are among the basic principles of constructivism theory (Komalasari, et al, 2018).

Last, Civicpedia was created to assist the teachers delivering learning material and to help the students understanding technical terms in civic subject and increasing their information literacy. In general, the reason of the focus of media literacy education is the students at school is the teachers believe that students at schools still developing their point of view and are open to analysis and evaluation techniques. Potter (2008, p. 17) states that adults tends to overestimate their capability in media literacy. In fact, being an adult does not necessarily make a person becomes a media literate. To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information (Spitzer et.al, 1998, p. 32). Information literacy may contribute to democracy, participation and active citizenship in a democratic society. An information literate individual is more able to gain an informed opinion on matters of the day and to be able to express their opinion in public (Livingstone, 2008).

So, conclusion of this article that main functions of the electronic dictionary software of civic education are: a) users can easily find one definition related to civic education term; b) users can also find definition alphabetically or numerically; c) users can get feedbacks for related terms, if the searched words are not found in the database; d) users can access new included terms in the database; e) users can find and access popular search in the system; f) users can access contextual materials from the Curriculum of 2013 on various level; g) users can access learning media in form of videos, posters, and stories; h) users can send comments and or suggestions to improve the systems in contact menu. Steps in developing materials is composed based on: a) Curriculum of 2013; b) formal education level (from primary school to tertiary education); c) contextually controversial real-life examples; d) collaboration with authentic materials, which develop

students' critical thinking; and e) the links between the unknown terms and related pictures and video. The responses from students in the implementation of Civicpedia in civic education learning show a very good assessment. The design aspect of the website is considered good and the interactivity aspect is deemed very well. So that, the Civicpedia is regarded as a suitable media to be implemented in the learning process.

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