



# Development of Electronic-Citizens Education Book Based on Mind Mapping as Practical Teaching Materials

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**Abstract.** This study aims to determine the results of the development of an electronic book on Citizenship Education based on mind mapping for students in the Personality Development Unit of Personality Formation Course. This research is a type of research and development (Research and Development) which refers to the R&D Cycle Borg and Gall. The subjects of this study were students who took the Citizenship Education course, namely the odd batch of 2022 students in the Indralaya and Palembang classes. Data collection techniques were carried out through documentation and questionnaires. While the data analysis was done descriptively. The results showed that at the preliminary study stage through the analysis of student needs, 92.3% of students and 92% of lecturers agreed to develop mind mapping-based electronic books, product development was also carried out through the development of prototypes using mind mapping and special html. software to create this e-book in pdf format, and product trials are being collected in the field. While the product development stage shows the material validation test is 96.4% which means it is valid and the language validation test is carried out twice and obtained an average of 90% which means it is valid. Prior to product testing, revisions were also made according to the input and suggestions from the two validators. While the results of the trial obtained data one to one 75%, small group 80% and field evaluation 88%.

**Keywords:** E-book · Mind Mapping · Citizen Education

## 1 Introduction

The improvement of the curriculum from the 2013 curriculum to the Independent Learning Campus (MBKM) curriculum is solely aimed at improving the quality of learning and further strengthening the student center approach. These improvements will have a major impact on the quality of education in Indonesia at the primary and secondary levels to higher education. Therefore, all stages in education must be considered and synergized in order to achieve the desired goals. In the independent curriculum, independent

campus learning is interpreted through 2 concepts, namely independent learning, freedom of thought and freedom of innovation [1, 2]. Meanwhile, the independent campus is a continuation of the independent learning program for higher education. The transformation of education through the policy of independent learning is one of the steps to realize Indonesia's Superior Human Resources who have the Pancasila Student Profile. Students must have 16 skills in the 21st century [3]. Broadly speaking, these 16 skills are divided into three, namely literacy, competence, and character quality. In addition, to face changes in social and culture, the world of work, the business world, and rapid technological advances, students must be prepared to be able to follow these changes. Therefore, every educational institution must prepare new literacy and guided orientation in the field of education [4]. Higher education preparation can be done by designing and implementing innovative learning processes so that students can achieve learning outcomes covering cognitive, affective, and psychomotor aspects optimally and always relevant through the MBKM curriculum.

The existence of the MBKM curriculum invites teachers as facilitators to prepare themselves to receive wide and fast information disclosure from students. However, the fact that it is still being found is that the quality of teaching materials is still low and difficult for students to access. Moreover, some of the teaching materials on the internet today, many of which have unclear sources, are even commercial in nature. So that students become limited in mastering the learning material. In terms of the readiness of teaching materials from lecturers, it is also still low because when preparing teaching materials it takes time and a long process.

This is also reinforced by the problems often faced by teachers with regard to teaching materials, namely that teachers provide teaching materials or learning materials that are too broad or too little, too deep or too shallow, the order of presentation is not appropriate, and the type of teaching material is not in accordance with competence. what students want to achieve. With regard to source books, it often happens every semester or year changes books. In connection with that, it is necessary to arrange signs for the selection and use of teaching materials to help teachers be able to choose learning materials or teaching materials and use them appropriately [5].

Teaching materials that have been packaged electronically are also very compatible with the learning characteristics of today's generation z students. The existence of an electronic book that is easy to access and use at any time will help students achieve independent learning. The developed electronic book is also included with mind mapping at the beginning of the chapter, making it easier to understand the concept of the material and increase student creativity with up-to-date presentations.

Previous research also showed that the development of mind mapping-based pocket books was developed because the books used by students tend to be larger and heavier. If it is made in an electronic book, it will be more effective and efficient. Suharman the presence of pictures can increase reading interest because pictures can help readers

imagine [6]. Imagination can help a person improve memory performance. The developed pocket book is also based on mind mapping or mind maps. Because the textbooks owned by students do not contain many pictures and are not colored and what students usually do is record what the teacher writes on the blackboard. Even though there is a way of taking notes that is easier and easier to understand, namely using mind mapping. Therefore, the purpose of this study is to develop a mind mapping-based Citizenship Education e-book, examine the validity and feasibility of a mind mapping-based Citizenship Education E-book.

## 2 Methods

The research method used is the research and development approach (RnD) through 3 steps, namely information gathering, product prototypes, and product trials [7]. The data discussed in this study focuses on product prototypes and product trials. The technique of collecting data is through a questionnaire.

The respondents were lecturers of linguistic experts who are influential lecturers in the Indonesian language course at the Indonesian Language Study Program, FKIP Sriwijaya University. At this stage, the language validation test will be seen twice in accordance with the suggestions for improvement. Besides the lecturers, 50 students were also involved in product trials starting from the individual stage (one to one), the small group stage and the field test stage.

The use of quantitative descriptive data analysis used in processing product validity test questionnaires. The results of processing the questionnaire data will be in the form of percentages, especially the validity test of experts and students who are respondents in the development of mind mapping-based citizenship education e-books according to the assessment criteria [8]. Furthermore, the results of data processing will be described in the form of sentences with the criteria set by the researcher. The assessment criteria are described in Table 1.

Product trials are carried out by students individually, in small groups and then tested in large groups with heterogeneous selected student criteria. Validation of student responses is done by using a questionnaire. The student's response is calculated by Equation:

$$\text{Percentage} = \frac{\text{total score}}{\text{maximum score}} \times 100\% \quad (1)$$

**Table 1.** Percentage data assessment criteria for product validation

No	Score (%)	Conclusion and Follow Up
1.	80–100	Not Revised/Valid
2.	65–80	Must Revised/Enough Valid
3.	<65	Revised/ Not Valid

**Table 2.** Student Needs Analysis

No	Statement	Percentage (%)
1.	Already have a smartphone	100
2.	The importance of digital learning resources	85.2
3.	Online experiences help use media literacy	63
4.	Constitutional materials is considered difficult	56
5.	Human rights enforcement material is considered difficult	12
6.	Teaching materials that can be accessed anytime and anywhere	88
7.	The lecturer conducts an initial assessment of the material	98
8.	The existence of an ebook can be more practical	75
9.	The ebook is also interactive	63
10.	Students agree that there is an ebook based on mind mapping	92.3
11.	Students do not understand much about the meaning of mind mapping	23

### 3 Result and Discussion

#### 3.1 Introduction

##### 3.1.1 Student Needs Analysis

With this needs analysis, the result of the questionnaire obtained that 54 students in the technical service unit for the personality formation course, 100% of students have adequate smartphones for use in learning, especially in the Civic Education Course. The use of material online must also be carried out even though it is face to face at 85.2%. And also the result of 63% media literacy skills must also be continued to be developed by lecturers so that student learning experiences are more diverse. One of them is using electronic book access. This will help the learning process in class (Table 2).

##### 3.1.2 Lecturer Needs Analysis

To obtain the results of the analysis of the needs of the lecturers, questionnaires were given to 10 lecturers of Civic Education courses. The sampling technique was carried out randomly according to research needs. This is further strengthened by the ability of lecturers to provide opinions on the development of Civic Education E-book which will be in accordance with the needs of the subject matter.

##### 3.1.3 Document Analysis

Identification of document analysis as student needs is also carried out through several things, namely Semester learning Plans (RPS) and reference books. And obtained the result that several problems were found and suitability of the result (Table 3).

**Table 3.** Lecturer Needs Analysis

No	Item Statement	Percentage (%)
1.	Already familiar with learning resources from online learning	75
2.	Ebook is still used even though it's face to face	85
3.	Ebook is considered more practical and cost-effective	75
4.	Lecturers have not used mind mapping	25
5.	No of the reasons is because they don't understand how to make a mind map	17.5
6.	The lecturer agrees on the development of mind mapping-based ebooks	92

## 3.2 Product Development

### 3.2.1 Language Validation Test

At this stage, a Mind Mapping-based Civic Education e-book prototype has been made starting from e-book handouts, teaching materials obtained through various references and several mind mapping features that adjust to learning outcomes in Citizenship Education courses. Product development activities start from the validation process by experts (lecturers appointed by researchers), because the existing Mind Mapping-based Citizenship Education E-books are still prototypes. At this stage, improvements will also be made according to the validator's suggestions.

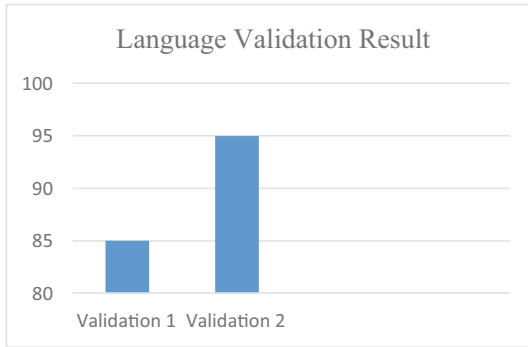
Based on the validation results from the linguist, the Mind Mapping-Based Civics E-book is categorized as valid with a validation value of 85%. Although it has been declared valid, there are several comments from the validator for the improvement of the Mind Mapping-Based Civics E-book before it is tested. The validator asks 1) to improve the writing and writing technique according to the EYD, 2) the validator asks for an interesting Mind Mapping presentation, and 3) the validator asks for the presentation of language that is easy for students to understand. After repairs were made according to the first input, then a trial was carried out to the second expert validation with results.

The validation from the linguist is categorized as a valid Mind Mapping-Based Civics E-book with a validation value of 95% which means it is valid and can be tested. The results of this validation are valid and without revision so that they can be directly tested. For more details, the validation test results are described in Fig. 1.

Based on the results of the recapitulation of the Language validation test that the Mind Mapping-based Citizenship Education E-book was obtained an average of 90%, which means it is valid without further revision.

### 3.2.2 Material Validation Test

After the language validation test was carried out, material validation was also carried out by one of the Civic Education lecturers, namely RS. By adjusting the learning outcomes in the lesson plan (RPS), the depth and relevance of the material to current cases. At this stage, improvements will also be made according to the validator's suggestions. Based on the validation results from the linguist, the Mind Mapping-Based Civics E-book is



**Fig. 1.** Recapitulation of Language Validation Test Results

categorized as valid with a validation value of 96.4%. With some notes, there are the latest case studies and more illustrations of higher order thinking (HOTS).

### 3.3 Product Trial

Product trials are carried out after going through the stages of testing by experts, teaching materials have been revised based on comments and suggestions from language experts. Furthermore, trials were carried out starting from individuals (one to one), small groups (small groups) and large groups in the field (Field Test). The aspects sought in this individual (one to one) validation include (1) display, (2) presentation of material, and (3) the benefits of teaching materials that have been developed. The results of the first product trial, namely the individual stage (one to one) by selecting 5 students based on their varying cognitive abilities. The results obtained from the 10 items asked in the questionnaire obtained 75%. Accompanied by some comments is the accuracy of mind mapping in making mind maps. And if converted, in the good category. Second small group test After going through the individual testing stage, small group validation was carried out by involving 15 students. The results obtained in small groups are 80% and if converted also become good and without any further comments. Third Field Test (field evaluation) After validating the small group, it was not revised because it was seen from the comments of students who did not provide suggestions for improvements to the Mind Mapping-Based E-book, getting 88% results. Which converts very well. In response to this, this Mind Mapping-Based E-book is ready to be tested on students by applying the E-book in learning. Table 4 presents the results of individual, small group and field trials.

Based on these three stages, the development of this Mind Mapping-Based Civics E-Book can be valid and is ready to be used in Civics learning. This is in accordance with the advantages of the mind map used in learning. Mind maps are the easiest way to put and retrieve information in the brain through making route maps about the information obtained by students [9]. With the mind map that contains many pictures and colors, it is hoped that students can more easily and clearly understand the learning material. The stronger the concept is understood will facilitate learning at a higher level. With the ebook also facilitates learning that can be accessed anywhere and anytime. The existence

of online learning activities causes a lack of direct interaction between teachers and students, so students must have good, easy, and effective learning media to help learn independently [10].

Mind Mapping is very good to use for students' prior knowledge or to find alternative answers. Mind Mapping is a creative, effective and practical note-taking technique. In essence, Mind Mapping is used to brainstorm a topic as well as being a powerful strategy for student learning [11–13].

With the development of mind mapping-based e-books, it is clear that students will be trained to take creative notes. When writing the main topic, the teacher always guides students in understanding the material. Teachers can explain back to students about the material. This is in accordance with one of the principles of learning which states that learning is the formation of a relationship between stimulus and response, and repetition of those experiences increases the chances of a major response. The implication in this learning is that repetition is done to help students remember important information so that it can be written down in a mind map [14–16].

Of course this mind mapping activity starts from reading activities, therefore the E-book developed will be a place for students to get used to reading. By facilitating students to read, students can be empowered in obtaining, processing, and producing information which is an important aspect for making decisions and solving problems.

However, it should also be noted that the weakness of using the Mind Mapping method is that if the teacher does not facilitate in an orderly manner then only active students will be involved, so that only a few people will have a meaningful learning experience, and it takes sufficient time for the teacher to provide an assessment on student creativity which is very varied [17, 18].

The need for this electronic book also needs to be optimized because technology can be used by humans to make it easier to do any task and work. This important role of technology has brought human civilization into the digital era for all activities. One of the conveniences obtained in the digital era is the existence of a digital library which then processes the change of printed books into e-books [19–21].

There are various popular ebook formats, including; plaintext, pdf, jpeg, doc lit and html. Each format has its own advantages and disadvantages, and also depends on the tool used to read the e-book. In this development the format used is PDF [22, 23].

Thus Science and Technology has been very fast in various fields, one of which is in the world of education. All forms of the learning process can be done easily. Digital technology has now begun to be used in the field of education as a means to support

**Table 4.** Result of Individual, Small Group and Field Trials.

<b>Trials</b>	<b>Range (%)</b>	<b>Criteria</b>	<b>Qualification</b>
One To One	75	Good	Worthy
Small Group	80	Good	Worthy
Field Evaluation	88	Very Good	Very Worthy

learning, either as an information tool (a means of accessing information) or as a learning tool (supporting learning activities and assignments) [24, 25].

## 4 Conclusions

The development of this Mind Mapping-based E-Book has been carried out in 3 stages, namely preliminary study, product and implementation. The results showed that at the preliminary study stage through analysis of student needs, 92.3% of students and 92% of lecturers agreed to develop mind mapping-based electronic books, product development was also carried out through prototype development using mind mapping and special html. Software to create this e-book in pdf format, and product trials are being collected in the field. While the product development stage shows a material validation test of 96.4% which means it is valid and the language validation test is carried out twice and an average of 90% is obtained which means it is valid. Prior to product testing, revisions were also made according to the input and suggestions from the two validators. While the results of the trial obtained data one to one 75%, small group 80% and field evaluation 88%.

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