

**THE DEVELOPMENT OF CIVILIZED EDUCATION MODULES BASED ON  
SCIENTIFIC LEARNING GIVEN BY EXPERT LEARNING DESIGN IN CLASS V  
SD NEGERI 094162 PERDAGANGAN, INDONESIA**

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**ABSTRACT:** *The scientific approach is intended to provide understanding to students in knowing, understanding the various materials using a scientific approach, that information can come from anywhere, anytime, regardless of teacher's in-line information. Therefore, the expected learning conditions created directed to encourage learners in finding out from various sources through observation, and not just be told. From the results of the research on trial II it was found that from 37 students who followed the pretest there were 2 students (5%) who got the value of more than or equal to 70% or at least complete.*

**KEYWORDS:** Education; Civic Education; Learning Design; Students

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## **INTRODUCTION**

Learning with a scientific approach is a learning process designed in such a way that students are actively aware of concepts, laws or principles through observing stages (for identifying or finding problems), formulating problems, proposing or formulating hypotheses, collecting data with various techniques, analyzing data, draw conclusions and communicate a "found" concept, law or principle. Based on the above opinion, it is clear that in scientific students are able to develop thinking skills and solve problems, so that students can naturally discover how the concept is formed, and ultimately students can use and remember longer the concept. In this application, students not only engage in cognitive activities alone but together they develop their affective and psychomotor abilities. So by applying, students will be more free in pouring their ideas without any fear of mistakes from what is made.

The use of contextual problems in the scientific model makes learning more meaningful. Ibrahim and Nur (2000: 56) point out that in scientific is a learning model that organizes learning around questions and problems, through the submission of authentic and meaningful real life situations that encourage students to investigate and inquiry, avoiding simple answers, the existence of various solutions of the situation. Scientific learning on civic learning can instill understanding of understanding and guide students to be able to understand the concepts of civic education. Scientific learning on civic learning can be used as an alternative learning to guide students in understanding concepts in civic education. The main feature of scientific learning on civic learning is the provision of authentic problems or problems close to the real life of the students (Kunandar, 2013: 215). Students will be more enthusiastic in learning when faced directly with problems close to the student's daily life. Therefore, research by applying the model of scientific learning on civic learning in elementary school is expected that problems will be overcome. By applying the scientific learning model to civic learning, it can encourage students' activeness in the learning process, so that the material taught in the classroom is easier to understand and can be used by students to solve the problems faced in daily life. In the scientific model, students are expected to be able to make connections between

their knowledge and application in daily life. To be able to apply scientific learning on civic learning, it is necessary to develop scientific learning devices on civic learning in accordance with the steps in the module development model. Based on the ideas that have been described then the Development of Civic Education Based Student Education module on civic learning is expected to improve student learning outcomes.

## **LITERATURE REVIEW**

### **Nature of Learning**

In the whole process of education in school, learning activities are the most important activities. This means that the success or failure of the achievement of educational goals depends a lot on how the learning process experienced by students as learners. Learning is essentially a process of interaction with all the situations that exist around individual students. Learning can be viewed as a process directed towards the attainment of goals and processes of doing through various experiences created by teachers (*Rusman, Kurniawan & Riyana, 2011: 5*). Further according to Anthony (*Trianto, 2009: 15*) learning is as a process of creating a relationship between something (knowledge) that has been understood and something (knowledge) new. *Hamalik (2003: 36)* strengthen the definition of learning is a process, an activity is not a result or goal. Learning not just remember, but the extent of that is experiencing. Learning is also a mental activity that takes place in a person's mind so that behavior changes occur. Mental activity is very dependent on the acquisition of one's experience. The acquisition of one's experience is derived from the process of assimilation and accommodation so that the more specific experience is the knowledge embedded in one's mind.

### **Nature of Scientific Approach**

Learning that can enable students in teaching and learning activities and learning activities that focus on integrated activities is a form of learning that emphasizes the activities of the discovery. This kind of learning activity is called the scientific learning approach. According to *Sani (2014: 50)* The scientific approach generally involves observation or observation activities required for the formulation of hypotheses or collecting data. Therefore, experimental activities can be replaced by the activity of obtaining information from several sources. Learning by scientific approach is a learning process designed in such a way that learners are actively aware of concepts, laws or principles through observing stages (for identifying or finding problems), formulating problems, proposing or formulating hypotheses, collecting data with various techniques, analyzing data, draw conclusions and communicate a "found" concept, law or principle. The scientific approach is intended to provide an understanding to learners in knowing, understanding the various materials using a scientific approach, that information can come from anywhere, anytime, not dependent on the teacher's in-line information. Therefore the expected learning conditions created directed to encourage participants educated in finding out from various sources through observation, and not just be told.

### **Definition of the Module**

In line with the teacher's book, the preparation of the learning module is always based on the scientific lesson. The material in the module is formulated in the form of problems that will be solved by the students through teacher guidance. The module is one of the teaching materials

in the form of print used by the students as a tool to learn independently and used a teacher to provide materials to students in coherence. The module is a medium used to study independently because in the module there is a learning guide that allows students to learn on their own without the help of teachers. All aspects such as language, design structures and patterns are also arranged in such a way that makes students feel easier in learning. The module is a tool that teachers can use in teaching, because the module is a tool that contains materials, methods, limitations, and how to evaluate systematically designed and interesting to achieve the expected competence in accordance with SK and KD. According Daryanto (1993: 98) Says that the Module is a book written with the aim that learners can learn independently without or with teacher guidance, so that the module contains at least about all the basic components of teaching materials. Addressing Sofwan Amri (2010: 65) The module is a specific unit that is arranged systematically, operationally and directed for use by learners, along with the guidance of its use for teachers. The learning module is the smallest unit of learning, which is learned by the students themselves individually or taught by the students to themselves (Winkel, 2009: 472). The learning module is a systematic and compelling teaching material that includes material content, methods and evaluation that can be used independently to achieve the expected competencies (Anwar, 2010). The module according to Cece Wijaya (1992: 86), can be viewed as a program package which are arranged in the form of certain units for learning purposes. From the above understanding can be concluded that the Module is a tool or means of learning that contains material that aims to learners can learn independently or with teacher guidance in teaching and learning activities and ways to evaluate systematically designed, and interesting to achieve the expected competence to achieve learning objectives. According to Depdiknas (2008) a module is said to be good if it meets several characteristics as follows: A module is said to have the nature of self instructional if it meets some of the conditions below;

- a. Contains clearly defined objectives
- b. Metrics are loaded material divided into small units / specific so as to facilitate students to learn completely.
- c. There are examples and illustrations on abstract concepts to support clarity in the exposure of learning materials.
- d. Displays exercise questions, tasks and the like that students can use to measure their abilities independently.
- e. Contextual, the material presented is related to the environment
- f. Using simple and communicative language
- g. There is a material summary
- h. There is an assessment instrument
- i. There is feedback
- j. Available on referral information.

## RESEARCH METHODOLOGY

### Types of Research

Based on the formulation of the problem and the research objectives set, then this research includes research development (Developmental Research). In this study developed in the form of learning devices, and the necessary instruments. According to *Sugiyono* (2011: 407) Research and development method is a research method used to produce a particular product, and test the effectiveness of the product .to can produce a specific product used research that needs analysis and to test the effectiveness of these products in order to function in the wider community, research is needed to test the effectiveness of the product. So research and development are longitudinal. Research development is the research that produces the product, so the method used is research and development method. The final product is evaluated based on the aspect of product quality specified. Thus the product of this study is an authentic learning and assessment tool based on learning based on valid, effective and all learning tools, and research instruments needed for the development process of the device that is Module.

### Place and time of research

This research will be conducted in SD Negeri 094162 Class V semester Perdagangan even year 2017/2018. The reason researchers chose this school, because similar research has never been implemented in the school. Furthermore, civic education education in SD Negeri 094162 Perdagangan during this time is still conventional with learning dominated by teacher, passive student and always waiting for teacher command, student interaction with student and teacher is rare. Data retrieval starts from February 2018.

### Research Subjects and Research Objects

Subjects in this study were students of Elementary School 094162 Perdagangan class V2 and V3 with each class amounted to 37 people and as object in this study is the civic education learning module using the scientific approach of class V SD Negeri 094162 Perdagangan.

### Instruments and Techniques of Collection Data

To measure the validity and effectiveness of civic education learning tools and the prevalence of scientifically developed modules developed, then developed and developed research instruments. The instruments used in this research include: validation sheet, student activity observation sheet, teacher's observation ability sheet, self-assessment appraisal sheet, performance observation sheet, written test, concept comprehension test and student response question The instrument developed in this trial can be described as follows. All validation sheets in this study were used to measure the validity of learning devices and instruments and required instruments. All of these validation sheets are adapted and modified (adapted to the needs of the PBM model) from the validation sheet of the development of the scientific learning model device. Some validation sheets used include: (a) the validation of the Lesson Plans (RPP); (b) module validation sheet. The validation is required to write the corresponding score by ticking on the corresponding row and column. Validation are also asked to give general conclusions about the lesson plan, the modules with categories, that is: not good, not good enough, good enough, good, excellent, not yet used and still require consultation, can be used with many revisions, can used with little revision, and can be used without revision In detail will be described components, functions and usefulness of each validation sheet, presented as follows:

**a. Plan Learning Validation Sheet (RP)**

The data collected with this validation sheet is data on the validity of the learning plan. The validation of the lesson plan consists of three components, namely the guidance, the assessed aspects, and the results of the assessment. The evaluated validity of the learning plan developed in terms of 3 aspects, namely (1 ) RP format (2) RP content (3) language usage. The criteria for declaring that the developed learning plan is valid consists of 5 (five) rating scales namely, invalid (value 1); less valid (value 2); quite valid (value 3); valid (value 4); and very valid (value 5).

**b. Module Validation Sheet**

The data collected with this validation sheet is the data on the module's congestion. The module's validation sheet consists of 3 components, namely guidance, assessed aspects, and assessment results. The teacher's evaluation of teacher's guidance and guidance was developed in terms of four aspects: (1) the feasibility component of the teacher book format (2) the language feasibility component, (3) the feasibility component of the illustration contained in the Module, (4) the content feasibility component. The criterion to state that the teacher manual developed is valid for 5 (five) scores ie, invalid (value 1); less valid (value 2); quite valid (value 3); valid (value 4); and very valid (value 5). Grid module validation tools are presented in the following Table 1:

Aspects of Assessed	Grain Number				
	1	2	3	4	5
<b>FORMAT</b> 1. Clarity of material distribution. 2. It has appeal. 3. The numbering system is clear. 4. Space settings / layout. 5. The type and size of the letters accordingly. 7. Conformity between physical module and student.					
<b>LANGUAGE</b> 1. The truth of grammar. 2. Kesesuain sentence with the level of thinking and reading ability and age of students. 3. Encourage interest to work. 4. Simplicity of sentence structure. 5. the sentence does not contain a double meaning. 6. clarity of instructions and directions. 7. the communicative nature of the language used.					
<b>ILUSTRATION</b> 1. Support illustrations to clarify. 2. Provide visual stimulation. 3. Have a clear view. 4. Easy to understand.					
<b>CONTENT</b> 1. Truth content / material 2. It is an essential material / task					

3. Grouped in logical sections. 4. Compliance with basic competence K-13. 5. Conformity with the learning model based on the problem. 6. Conformity of task to the order of the material. 7. The role is to encourage students to find the concept / procedure independently. 8. Eligibility as a learning tool					
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Before the concept comprehension test is used, testing is needed to determine the level of reliability, validity, and sensitivity.

#### a) Validity Item Problem

An item has a high validity if the score on the item has a high alignment with a total score. This alignment can be interpreted with correlation, so to know the validity of items can be used product moment correlation formula as follows.

$$r_{xy} = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{((N \sum X^2 - (\sum X)^2)(N \sum Y^2 - (\sum Y)^2))}} \quad (\text{Arikunto, 1999: 69})$$

with  $r_{xy}$  is the test validity coefficient

X is the score of the item

Y is the total score

N is the number of respondents who took the test

To make an interpretation of the magnitude of the correlation coefficient is as follows:

If  $0,80 \leq r_{xy} \leq 1,00$  then the validity is very high

If  $0,60 \leq r_{xy} < 0,80$  then the validity is high

If  $0,40 \leq r_{xy} < 0,60$  then the validity is enough

If  $0,20 \leq r_{xy} < 0,40$  then the validity is low

If  $0,00 \leq r_{xy} < 0,20$  then the validity is very low

## b. Reliability

A measuring instrument is said to have a high reliability if the instrument provides consistent measurement results. The results of such measurements are relatively similar if the measurements are made on the same subject even though it is implemented by different people and different places. As stated by Arikunto (1999: 86) that an evaluation tool (test or non-test) is called reliably if the evaluation results are relatively fixed if used for the same subject but in different situations. Reliability test aims to measure trustworthiness, and consistency of tests in measuring data. A measuring tool has good reliability if the measuring instrument has a consistent reliability even if done by anyone (in the same level). The reliability of the test instrument is calculated to determine the consistency of the test results. For the calculation of test reliability is determined by the formula K-R 20 is used when the use of multiple choice test. The K-R 20 formula principally includes measuring homogeneity in which two aspects are focused, namely the content aspect and the heterogeneity aspects of the test.

$$r_{11} = \left( \frac{n}{n-1} \right) \left( \frac{s^2 - \sum pq}{s^2} \right)$$

Where :

R11: Overall test reliability

Q: The proportion of subjects who answer the question is true

q: The proportion of subjects who answered the wrong item ( $q = 1 - p$ )

$\sum pq$ : The number of multiplications between p and q

n: Number of items

S: Standard deviation of the test

If  $0.00 \alpha < 0.20$  then the degree of reliability is very low.

If  $0.20 \alpha < 0.40$  then the degree of reliability is low.

If  $0.40 \alpha < 0.70$  then the degree of reliability is.

If  $0.70 \alpha < 0.90$  then the degree of reliability is high

If  $0.90 \alpha 1.00$  then the degree of reliability is very high.

## c. Level of Difficulty

The difficulty test is aimed at capturing the subjects who answer the test items correctly. The level of difficulty is the existence of a item whether it is considered difficult, moderate, or easy to work on. To determine the difficulty level problem used the following formula (Arikunto, 1999: 89):

$$TK = \frac{B_A + B_B}{2J_A}$$

Information :

TK = difficulty level

BA = Number of upper group students who answered correctly

BB = Number of lower group students who answered correctly

JA = Number of upper group students

By criterion:

0.00 <P <0.30: Hard

0.31 <P <0.70: Moderate

0.71 <P <1.00: Easy

#### **d. Different Power Test**

Different power test separates clever students and students who are less clever to know the level of goodness of each item question. Different power (D) is the test's ability to distinguish between intelligent (high ability) and intelligent (low ability) learners. How to determine distinguishing power is differentiated between small groups (respondents less than or equal to 30) and large groups (respondents over 30 people). According to *Surakhmad* (1990: 217) with teste (n) > 30, then the division of high group with low group is done by dividing 27% upper group and 27% lower group. While for small groups with testee (n) ≤ 30 then for the upper and lower groups, each taken 50% of the population. *Sudijono* (2012: 123) suggests the formula different power tests and criteria as follows:

$$D = \frac{B_A}{J_A} - \frac{B_B}{J_B}$$

Information:

D : Power difference

BA : The number of upper group students answered the test correctly

BB : The number of students in the lower group answers the test correctly

JA : Number of upper group students

JB : Number of lower group students

By criterion:

0.00 <D <0.20: bad

0.21 <D <0.40: enough

0.41 <D <0.70: good

0.71 <D <1.00: very good

Observation sheets of problem-based learning management are used to measure teachers' ability to manage learning. This instrument was developed based on the syntactic scientific model. In observation, the observer writes the category categories of scores that appear by using a check mark (☐) on the rows and columns available. Assessment consists of 5 criteria that is, not good (value 1), less good (value 2), good enough (value 3), good (4), excellent (5).

## DISCUSSION

The validation of the instructional design experts is done by the graduate lecturer of Medan State University. Learning design experts validate the product on the aspects of instructional design among others on the content feasibility aspect consisting of the quality of instructional design, presentation aspect consisting of information design quality and interaction quality, and aspects of presentation consisting of presentation quality and presentation design quality. Validation result in the form of scoring score Learning instructional module of learning design quality aspect can be seen in column filled by experts contained in attachment. Based on the appraisal of the instructional design expert on the quality aspects of majority learning designs expressed in the criteria of "Very Good", there is only one item that belongs to the "Good" category that is the accuracy of topic selection. Overall from the aspect of the quality of the learning design is considered "Very Good". Validation result of score of assessment to Module on aspect of quality of design The module of learning of science is seen that according to design expert of learning about aspect of quality of design of majority considered "Very Good". There are six items that are considered "Excellent" namely clarity of material description, clarity of examples given, use of new information, feedback on test results of learners, maximization of learning process, and ease of use. Motivation and sequestration "Good", Overall from the information design aspect is rated "Very Good". Assessment scores from the results of validation of design designers on the aspect of design quality seen that the assessment of design designers from the aspect of design quality is rated "Very Good". There are three items that are rated "Very Good" ie the use of learning instructions, explanations of terms and the use of different text to mark important sections. Feedback to the "Good" student response. The scoring summary of each assessment aspect of the Assessment and Response to the Design Expert validation assigns a value greater than or equal to 3.53 ( $\geq 3.0$ ) under the "valid" category, and the overall average score on the Assessment and Response to the Design Expert are in the above four categories with "valid" criteria. So it can be concluded that the Assessment and Response to the Design Experts can be used with small revisions. Overall of the information design aspect is rated "Very Good".

The results of the validation of the design expert of learning shows that the quality of instructional design, the quality of the design is generally declared very good. However there are some point of improvement suggestion put forward by the design expert of learning .validation of the design of learning is the basis of revisions to improve the design. Suggested suggestions by the learning design validation is shown in table 2 below:

**Table 2: Data of Study Result on the Scientific Learning Module by the Learning Design Expert**

Topic	Issues that need to be revised
page	<ul style="list-style-type: none"> <li>- - The need for additional standards of competence, basic competencies, Indicators and learning objectives</li> <li>- - Prior to material depth a skeleton of one semester course content is required in the Module</li> <li>- - Increased motivation</li> <li>- - The addition of new information and news about activity activities that spur the appeal of students to Civics</li> </ul>
Material page	<ul style="list-style-type: none"> <li>- - Before starting the text need to explain the prerequisite test to be able to study the topic</li> <li>- - Variable materials need to be added</li> </ul>

The effectiveness of product development tools in the application of scientific model on the subject of an existing organization in the school environment and the environment, can be seen from 3 indicators, namely: 1) students are said to have understood Results of successful student learning when there are 85% of students who take the test already has Ability of the learning outcomes of students who succeeded at least moderate (gain the value of gain more than or equal to 3.00 or minimal), 2) the ability of teachers to manage the learning is at least in the category good enough, 4) positive student responses to the components of instructional devices and learning activities . Product development tools are said to be effective if they meet the above three indicators. Here is described the results of research product development effectiveness of learning oriented to the scientific model. When evaluated from the data analysis of the ability of teachers to manage the learning, there is an increase in the ability of teachers to manage learning, namely in the first test, the ability of teachers to manage the learning is on the criteria of "good enough" with the average value is 3.88 or 77.67%. In the second trial, the ability of teachers to manage learning is on the "good" criterion with the average value is 4.61 or 92.33%. seen from the results of research conducted capability in managing learning experience improvement conducted on trial I and II. The ability of teachers in managing learning is considered quite effective, teachers are very capable of implementing syntax-syntax that problem-based learning.

When associated with theories that examine the scientific model, the results of the above study are well-founded, as *Vygotsky* states (2008: 47) that in the Scientific model emphasizes scaffolding, providing a large amount of help in the form of questions when congestion (stagnation of thinking) , then gradually reduce the grants and give the students an opportunity to take on greater responsibilities as soon as they can do so. *Vygotsky* also emphasized the role of teachers in providing guidance and active questions when there are difficulties students experience through direction, encouragement, assisting them in the stagnation of thinking and subsequent processes more emphasized on student activity, so that learning is not centered on the teacher. From the teacher above the teacher giving the information aid to the user and the wrong or inappropriate information, the teacher encourages interaction and interaction between the students, and the teacher's role is to create a learning environment / learning environment that helps each other between teacher and student, between students with others students. *Parkay* (2011: 243) states that the role of teachers in the problem-based learning model only as facilitator and organizer, that is only for student learning activities, which provide materials

that are easy to learn and interpreted students. The role of the teacher as a facilitator is to facilitate and adjust the diversity of students' Civic abilities. *Sanjaya* (2014: 1) states that one of the problems facing our education is the problem of weak learning process. In the learning process, children are less encouraged to develop thinking ability. The process of learning in the classroom is directed to the child's ability to memorize information, the child's brain is forced to recall and gather information without being required to understand the information he or she remembers to relate it to daily life. This is due to the level of student intelligence that varies, then the level of difficulty of students in solving problems are very diverse as well. Teachers can cope by dividing students into group work consisting of four to five students. So that students can interact and work together, share ideas / ideas in solving problems. Based on the above description is very reasonable if the problem-based learning model can improve the ability of teachers in managing learning .The results of this study indicate that the authentic assessment based on the 2013 curriculum developed based on the validation result done by the expert can be stated very good and is appropriate so that it can be used or used to evaluate students' attitude during the learning process in class. This is in line with the research conducted by *Samsul Hadi* in the journal *Journal of Education* with the title "Development of authentic assessment tools of subjects of workshop and entrepreneurship in SMK". The results of this study indicate that the implementation of teacher assessment on learning SBK using test techniques, non-test (portfolio and performance) that means the assessment has been carried out authentically. Although the assessment has been done authentically, the assessment is less than the maximum because it has obstacles in the implementation. The constraints experienced by SBK teachers in the implementation of authentic assessment include (1) difficulty in managing time (2) difficulty in managing non-conducive classroom situations (3) less supportive facilities and infrastructures (4) lack of teachers' held. Other studies relevant to the concept to be studied in this research. The research conducted by *Agus et al* (2014) in the *Journal of Social Science Education* is known that, the feasibility of developing scientific-based learning module with problem-based learning model to improve student learning outcomes get value very good achievement ie: material experts 83, 16%, media experts 84, 17% and 88% practitioners. Trial results obtained a very good percentage of achievement of 85.7%, so the module is valid used for research. The aspect of validity assessment and product trial refers to the aspect of textbook assessment by assessing aspects of: 1) content feasibility aspects, 2) language feasibility aspects, 3) feasibility aspects of presentation, 4) feasibility aspects of graphite. Learning followed by students cannot be separated from the conditioning of learning with scientific model, among others: the problems posed on the students derived from the problem of problems close to the real world students or can be reached by the imagination of students to show the use of Civics in the life of students through problem solving . *Soedjadi (Sinaga, 2007)* argued that: establishing real problems in the implementation of Civics learning should always pay attention to the reality and the existing environment, so as to enable and simultaneously motivate students to enjoy learning Civics.

## CONCLUSION

The effectiveness of learning devices developed using the Scientific model can be determined from the results of the experiments on trial I, of the 37 students who followed the pretest there were 0 students (0%) who received grades greater than or equal to 3.00 or moderate. After the learning using learning tools oriented scientific model, the results obtained posting from 37 students there are 10 students (73%) who get the value of more than or equal to 70% or at least

complete). Furthermore, from the results of the research on trial II it was found that from 37 students who followed the pretest there were 2 students (5%) who got the value of more than or equal to 70% or at least complete.

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