Development of Instructional Materials Model Based on Inquiry-Transactional Approach

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Descriptors for use in the index: *inquiry transactional, development, design instructional.*

**Abstract**

The purpose of this study was to develop instructional materials model. The process is develop a conceptual model of instructional materials, procedural modeling in the design instructional through systematic measures, effective, and efficient, and produce physical models for the new of instructional materials. This study uses research and development that combines two methods. The first method, taken from the initial step of research and development by Borg & Gall (1979) and the second method taken from the Systematic Design of Instructional Dick, Carey, & Carey (2009). The Systematic Design was adopted by Borg, Gall, & Gall (2007) as research and development method. The instructional materials developed based on inquiry-transactional approach. The final result will be the physical model of instructional materials based on inquiry-transactional approach. Those are printed and interactive CD instructional materials plus student’s and teacher’s guides.

**Introduction**

One of the subsystems in the class lesson is the availability of instructional materials and teaching methods. Instructional materials can be in form of books or printed materials, instructional CDs, online material, television broadcast material, radio broadcast material, or combination of these various forms. When seen from how the presentation of the content, instructional materials can use specific method or approach. The definition of instructional method is the way of teachers in delivering instructional materials so that the instructional objectives achieved well.

Until now the availability of instructional materials such as text books for Vocational High School students especially for Educational of Islam Relegion (PAI) subjects is still limited. This limitation is not just about numbers but also especially regarding the book quality which have not met the standard. Based on the early research outcomes, methods of teachers in delivering instructional materials especially the material of Islam development history in the World which is still in less motivating ways for the students to be more active, creative, innovative, and have a joyful instructional. To create such an atmosphere used inkuirri-transactional approach.

Instructional approach with inquiry-transactional is an instructional process that combines method of inquiry and market strategy. Method of inquiry has the key feature that emphasizes learning activities in the process of thinking critically and analytically students to seek and find their own answers to the question of a problem. Transactional method has the key feature of the adopted transaction information transaction between buyers and sellers of goods on the market. In the market there are strategic of transaction of information activities. Transaction information is intended as trading conditions in the atmosphere such as market information. Information is the subject of the transaction is a matter of Islamic education in the field of History of Islam in the World.
This study was made to develop instructional materials of Islamic Education in History which is appropriate for the students of Vocational High School. Referring to the objectives of the study then it is necessary to determine the appropriate method.

This study uses research and development that combines two models, namely, first, Gall model, Gall, & Borg eighth edition (of 2007) which adopted the Systematic Design of Instructional by Dick, Carey, & Carey and second, Borg & Gall model fourth edition (of 1979). The step of early research of this study uses concept of research and collection of information from the model of Borg & Gall (of 1979) included the “research and information collecting – includes review of literature, classroom observations, and preparation of report of state of the art”. The initial research includes gathering of information-including literature review, classroom observation, and the current state.

Research and development method that uses this initial research are considered appropriate to be used in this study for two reasons. First, using initial research which has been useful to get three important information, namely (a) the implementation of instructional over the years, including the use of PAISMK text book of grade XII 2nd semester in the field of history as well as identifying its weaknesses; (b) information on the expectation of stakeholders regarding instructional of PAISMK grade XII 2nd semester in the field of ideal history. (c) The formulation of instructional objectives of PAISMK grade XII 2nd semester in the relevant field of history for vocational high school students. Second, literature study which is part of the initial research to help getting the theoretical concept of ideal instructional for PAISMK grade XII 2nd semester in the field of history.

The steps of research and development of PAI instructional material model – in History for Vocational High School.

Step 1: Initial research. At this initial step conducted after the outcomes of proposal seminar and obtained research permit from Post-graduate program of State University of Jakarta in February 2013. The activities done at the initial research is to find the information or data regarding PAI instructional problems in the field of Islam development history in the world which is about the instructional materials, the sequence of instructional activities, the content outline, methods, media, time, and solutions on Islamic Education (PAI) instructional on the materials of history, namely history of the development of Islam on the materials of history, namely history of the development of Islam in the World in Vocational High School (SMK) for the next grade XII 2nd semester. Richard A. Schwier & Farl R. Misanchuk said that “studying the audience will also provide some indications as to whether interactive multimedia is necessary or desirable”. From this sentence it can be understood that when looking for information from many sides such as students or teachers will be known the things that is really wanted in the instructional process, such as whether interactive multimedia is needed in schools. The data obtained through interviews, questionnaires, and observations in the environment of SMKN 1 Kotamadya Pagar Alam, namely from the principal, teachers, students, education department and the society.

Step 2: Identifying the General Instructional Objectives. On the second step, after knowing the information and need on the initial research step, the next is to determine what is the general behavior (information) that are
expected to be mastered by the students after studying the historical development of Islam in the world. The formulation of the general instructional objectives obtained from various sources. First, from the curriculum of PAI which is a reflection of the government expectations as graduates user. Second, from the opinion of teachers, principals, and officials of Education Department of Pagar Alam as the education organizers. Third, from the opinion of the students of Vocational High School as the instructional subject actors. Based on the third party then it is formulated the general behavior expected to be achieved by the students after studying PAI of Islam development history in the world. This expected general behavior made as the general instructional objectives of PAI of Islam development history in the world for the Vocational High School.

**Step 3: Performing Instructional Analysis.** On the third step, the next step is to outline the general behavior of into particular behavior and the connection of those particular behavior one and another. The connection shows the behavior structure. There is hierarchical structure, procedural, grouping or combination. in this step, it is obtained the behavior map or competence that show the sequence of behavior from the simplest or low to the complex or high behavior.

**Step 4: Analyzing the Students and Context.** On the fourth step, the next step is to analyze the current students. Through interviews with the teachers identified two things. First, early behavior or early competency which has been mastered by the students before instructional PAI of Islam development history in the world. By knowing the early competence then it can determine the list of behavior which do not need to be taught and the behavior that needs to be taught. The limit of both lists is realized by dotted line called the input behavior line. The map of behavior with the dotted line is shown in Chapter IV. Second, the initial characteristic of Vocational High School which is related about the age of Vocational High School Students grade XII, information about the history of Islam development in addition to the Islam development history in the world they studied at grade X, XI, and XII in the odd semester, as well as the subjects they get in relation with the level of reasoning. At his step it can be obtained the information about the characteristic of Vocational High School Students grade XII 2nd semester who study about the history of Islam development in the world and know about the diversity in understanding the history of Islam development in the world.

**Step 5: Writing the Objectives of Performance or Objectives of Specific Instructional.** On the fifth step, the next step taken is to write the objectives of specific instructional about the competence expected to be mastered by the students after the instructional. The specific instructional objectives are the outcomes of instructional analysis. It contains four elements namely A element (audience) of the students, which in this case the student of Vocational High School, B element (behavior) the behavior expected to be mastered by the students after the end of the instructional, C element (Condition) the condition at the time behavior is tested and D element (degree) criteria for successful behavior.

**Step 6: Developing the Assessment Instrument.** On the sixth step, the next step made is to develop the assessment that can measure behavior or competence of the student such as those set forth in the objectives of general and specific instructional. The development of assessment instrument prepared by way of making instrument plan and continued with preparing test items consistent with the competencies contained in the instructional objectives. Assessment instrument of instructional outcomes developed consist of 10 test items of multiple choice to measure the comprehension of students (ability to explain) about the history of Islam development in the world. In addition, the assessment of student instructional outcomes using various criteria namely attendance, creativity in making and displaying attributes, activeness at the time of information transaction, and the making of paper.

**Step 7: Developing Instructional Strategy.** On the seventh step, the next step made is to identify the strategy used in the instructional to achieve the objectives. This strategy started by encouraging student instructional as pre-instructional activities. The activity stimulates the motivation and focus the attention of the students to the material discussed. Furthermore the instructional strategy followed by the presentation of the material, giving examples and demonstrations, participation and active student assessment, and follow-up of activities related to newly learned skills to be applied in the real world. This instructional strategy prepared using inquiry-transactional approach with the following steps:

a. First step Preparation : Praying, Classifying the Group, Displaying test items, and Preparing Data
b. Second step Initial Activities : Praying, Aperception, Presenting TIU and ICT, Watching Filmstrip, and Displaying test items
c. Third step Core activity 1 : Setting the Stand
d. Fourth step Core activity 2: information transaction  

e. Fifth step Core activity 3: confirmation  

f. Sixth step Core activity 4: evaluation  

g. Seventh step Final Activity: Closing  

*Chart 2 shows 7 steps inquiri-transactional process*  

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**Step 8: Developing Instructional Materials.** On the eighth step, the next step made is using the instructional strategy to have instructional materials. The instructional materials to be instructional physical models developed in the research in the form of:  


b. Teachers Manual, on how to use the instructional materials in the implementation of instructional.  

c. Students Manual, which is about how the students learn printed materials like text book and CD. This student manual directly integrated or blends into the textbooks and not made separately as Teacher Manual. The integration is to facilitate and accelerate the students in instructional instructional materials and ensure that surely read by students.  

*Chart 3 shows 8 steps of research and development*
Result

Step 1: initial research result. The first step in the research is initial research made in September 2012 to February 2013. This activity is to find information and data about instructional needs, problems, and ideas on Islamic Education instructional solutions (PAI) in the material of history of the development of Islam in the world at the Vocational High School (SMK) grade XII 2nd semester. Information and data obtained through interviews with various people in SMKN 1 Kotamadya Pagar Alam, namely the principal, 3 teachers of PAI, 3 graduate students, 2 officials of Department of Education, 2 officials of the Ministry of Religious Affairs of city and province, Mayor of Pagar Alam, and the surrounding community (including the students’ parents).

The information and data of the initial research includes the instructional on the development of Islam in the world which is used now and suggestions on its improvement for the future. This information covers all aspects of instructional. In detail, the information includes the material scope, currency, completeness, and vastness, the use of teacher manual, student manual, the availability of instructional textbooks and CD / VCD, simplicity to be understood, the obstacles encountered when teachers teach the material of history, sequence of instructional activities, outline of the existing contents / materials, the next instructional materials, measurements of student instructional outcomes, the most effective measurement, classroom situation, instructional methods, media and instructional instruments, and available instructional time.

The outcomes of the initial research are as follows:

1. The textbook used is the PAI textbook of SMK grade XII published by the Ministry of Religious Affairs, Yudistira, and Armico. The three textbooks used by the teachers in this school known that seen from its scope is adequate and complete because it covers 5 continents. Asia, Africa, America, Australia, and Europe. But one of the 3 textbooks used do not describe the scope in detail, but only briefly. According to the respondents, the material of history of the development of Islam in the world that is in the three of these textbooks is less advanced for it is not up to date. The explanation of material in the book just a glimpse of the five continents and the vastness considered to be less because only explain about some countries for each continent.

2. The instructional objective in the field of history for the students of SMK grade XII 2nd semester is referring to contents standard of 2006 which has the competence standard which contained to understand the history of Islam development in the world. While its basic competency is explaining, giving examples, and taking lessons of development of Islam in the world. But the expectations of the teachers that students can learn in detail about the development of Islam in the five continents and at the end of the lesson students can make a report or paper on history of the development of Islam in the world according to their understanding.

3. In the instructional process, the teacher uses guideline in the form of lesson plan and syllabus. In the textbooks used by teachers in teaching have not found teacher manual, student manual and other media, including CD / VCD.

4. Instructional instruments used by teachers just textbooks guidance, syllabi and lesson plans, markers and whiteboards. Expectations of teachers in the future that the instructional process can use instruments and media that can support the instructional process that is active, creative, and fun, for example by using the instruments and media such as movies, maps, globes, and pictures of Muslim leaders that packed in CD / VCD.

5. Method or model of instructional that is used by almost all teachers is lecture method and occasionally alternated with question and answer, discussion, and summarize the material assignment. According to the teachers, only by this method it is considered appropriate with the material because they lack of instruments and media, the students seem do not like the history material. This is proved because many students get sleepy during the instructional process and some others (about 20%) rarely go to class. According to one of the teachers, said that Mechanical Engineering in the school is less concerned with the material of Islam development history in the world. The expectations of teachers in the future there will be a method of instructional of Islam development history in the world that make the students to be active, creative, and happy supported by the effective and efficient instruments and media. If it happens, then the students will certainly have a long memory of the history of the development of Islam in the world.

According to some respondents recently that the teachers in Pagar Alam is not implementing the instructional models appropriate to the material yet. They still use the conventional method or the old model of teaching methods such as lectures. So far, most teachers just explain and the students just noted. The instructional process continues without any innovation. The teachers realize that they should find new innovation by using model of instructional that can improve student instructional outcomes, but they did not do that because they do not feel to responsible for that. For the promotion of teachers it is required to make scientific work in the form of CAR (Classroom Action Research), so inevitably the teacher should make this scientific work.
Department of Education expects by the presence of new models of instructional so that the students can be active and teachers can also be active. Some suggestions that arose in relation to the model or method of teachers in teaching is that the material of history of the development of Islam can be presented using some teaching strategies such as holding fragment, role play, the students play practical history so that easier to understand and interesting, then uncover and tell the facts of history through films about the history of the development of Islam in different continents, so that the students learn not only about worship but also to know the differences so that not only can blame others.

(6) The media used by the teachers should be in the form of slide by displaying map with the red or yellow dots to show the location of states with the Islam development, displaying historical films, globe, pictures, etc. The research result of: "Professionalism Portrait of Yogyakarta Teachers in Teaching and Instructional Activities" conducted by the Education Research Network of Yogyakarta (JP2KY) in early 2010 showed that 75 percents teachers of the research participant have not use the instructional media in teaching.

(7) Time. The instructional of history of Islam development in the world listed in the curriculum of 2006 was 6 hours lessons or 3 times meeting. But often do not have time because the material of history of Islam development in the world is in the last meeting and the teachers are running out of time. Uninteresting instructional process make absorptive capacity of students in the subject is not optimal. The students expected that this material has a instructional process that can make them active, not sleepy, can listen to the songs and watch movie, interact with friends, learning in group, and feels fun.

Step 2: Identifying the general instructional objectives. The general instructional objectives in the curriculum of 2006 used the competence standard term. Competency standards for the material of history of the development of Islam in the world for Vocational High School are to understand the development of Islam in the world. Particular instructional objectives in the curriculum of 2006 used the term basic competence. This research identified objectives of instructional about the historical development of Islam in the world for PAI subject of SMK grade XII 2nd semester which can be regarded terminal objectives of historical development of Islamic instructional in the world are:

“the students are able to make a report or papers on historical development of Islam in the world”.

The instructional objectives are more appropriately called the terminal objectives of historical development of Islamic instructional in the world, because the general instructional objectives used for PAI as a whole.

Step 3: Instructional analysis result. The third step, this research and development is to determine step by step competence that should be achieved by the students to achieve the terminal objectives by looking at the sub-skills needed for the final objectives mastery of the historical development of Islam in the world. The special skills are cognitive skills or knowledge, and attitudes needed by the students to achieve the terminal objectives. The instructional analyzes objectives shown in the following chart:
Chart 4 shows a result of instructional analysis

**Step 4:** Analysis outcomes of students and contexts. The fourth step in this research and development is analyzing the students in parallel, context in which they will learn the skills, and the context in which they will use it. Current students' skills, preferences, and attitudes are determined along with the characteristics of instructional settings and the settings in which skills will eventually be used. At this step the information obtained from the initial research outcomes on the characteristic of students of Vocational High School grade XII 2nd semester who learn about the history of the development of Islam in the world.

The characteristics of students of Pagar Alam Vocational High School grade XII who will study about the history of the development of Islam in the world are:

(1) All students of grade XII 100% Muslim (data attached). The students will be better able to absorb the Islam values when the instructional process of history of Islam development in the world than if there is non-Muslim student. This characteristic provides an opportunity for the teachers to be better to instill the Islamic values through inquiry-transactional instructional approach.

(2) Aged about 15-17 years. At this age the students of Vocational High School already has the ability to develop the reasoning in the study of historical development of Islam in the world. Vocational High School students who are over 15 years old already has enough maturity in thinking and reasoning so they categorized able to study the history of development of and values of Islam.

(3) Have studied and learned about the historical development of Islam during Bani Umayyad and Bani Abbasid in PAI subject of grade X, Middle Ages and modern age in PAI subject of grade XI, and historical development of Islam in Indonesia on PAI subject grade XII 1st semester. They also have studied several subjects that support reasoning creativity such as mathematics and physics that allows students to absorb the abstract material such as history which aims instilling values of Islam through the instructional analysis of historical development of Islamic in different continents.

(4) Having diverse competencies namely smart, moderate, and not smart. These characteristics suggest the need of instructional that involves discussion and group work as well as instructional from the students in the other groups, like become one of the main features of inquiry-transactional approach.

(5) In general have been able to operate the computer and can access the internet. It is produced from the a practical subject in the computer laboratory, while for internet access the students still using the internet access via mobile phones and internet cafe because at the school there is no access to the internet. Based on the characteristics in this research the instructional material used are taken from various sources such as text books, general books about the historical development of Islam, the internet (via mobile phone and internet cafe), newspapers, and magazines.
(6) In general having a tendency to get bored quickly and sleepy when following lessons with a boring presentation. Therefore, by this research it is presented with the inquiry-transactional approach, not dominated by the lecture method. Thus instructional materials become more enjoyable.

*Step 5:* Performance objective formulation outcomes. The fifth step in the research and development is to write performance objectives or specific instructional objectives in the curriculum of current PAI called basic competence. The performance objective contains competence which is expected to be mastered by the students when they finish the instructional. The specific competence identified in the analysis process of terminal objectives, identifying the skills to be learned, the conditions in which the skills will be demonstrated, and the criteria for successful performance. At this step will be formulated the specific instructional objectives on historical development of Islam in the world are that students are expected to be able to:

1. Compare the development of Islam in five continents.
2. Show examples of the development of Islam in the world (figures, relics, various fields of science, etc.).
3. Take the values from the historical development of Islam in the world.

*Step 6:* Instrument development outcomes of instructional outcomes assessment. On the sixth step of this research and development is to develop the assessment instrument that can measure the students’ competence as desired in the objectives. At this step, the research continued on the development of assessment instrument designed to measure the students’ achievements in the competency in the instructional objective of PAI of Vocational High School grade XII 2nd semester which is making report or paper on the historical development of Islam in the world. The table of blueprint of process assessment instrument and instructional outcomes looks as follows:

*Table 1: elements of instructional process assessment*

<table>
<thead>
<tr>
<th>No</th>
<th>Elements to be valued</th>
<th>Quality</th>
<th>Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Individual</td>
</tr>
<tr>
<td>1</td>
<td>Attendance</td>
<td>5 %</td>
<td>√</td>
</tr>
<tr>
<td>2</td>
<td>Creativity in making and displaying attributes</td>
<td>20 %</td>
<td>√</td>
</tr>
<tr>
<td>3</td>
<td>Their activeness at the time of information transaction</td>
<td>10 %</td>
<td>√</td>
</tr>
<tr>
<td>4</td>
<td>Multiple Choice Test</td>
<td>15 %</td>
<td>√</td>
</tr>
<tr>
<td>5</td>
<td>Paper</td>
<td>50 %</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

From the table shown in the attachment it can be interpreted that the instructional outcome value of each student is very depending on the success of group instructional process and less depending on the individual instructional process. This is one of the characteristic of instructional based on inquiry-transactional approach. The instructional approach emphasizes on the role of collaboration in the instructional process and the results are joint result. So, the instructional outcomes value in the inquiry-transactional emphasizes on the group instructional process.

Before making list of question or instructional outcomes test, the blueprint was made first. Richard I. Arends explains that “the test blueprint is a devise invented by evaluations specialist to help make these decisions and to determine how much space to allocate to certain kinds of knowledge and to the different levels of student cognitive processes”.

*Step 7:* Instructional strategy development outcomes. On the seventh step in this research and development is to identify the strategy to be used in the instructional to reach the objectives. This strategy will emphasizes the component to encourage the students instructional including pre-instructional activities such as stimulates the
motivation and focus of the attention, the presentation of new material using inquiry-Transactional and the assessment of students activeness, and follow-up of the activities related to newly learned skills to be applied in the real world.

Table 2 shows the instructional strategy

<table>
<thead>
<tr>
<th>Steps of Instruction Activity</th>
<th>Content</th>
<th>Method</th>
<th>Media</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td><strong>Step of Introduction</strong></td>
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<tr>
<td>First step Preparation</td>
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<tr>
<td>Preparing the Group</td>
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<tr>
<td>Displaying test items</td>
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<tr>
<td>Preparing Data</td>
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<tr>
<td><strong>Step of Presentation</strong></td>
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<tr>
<td>Second step Initial Activities</td>
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<tr>
<td>Preparing Assessment</td>
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<tr>
<td>Presenting TIU and ICT</td>
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<tr>
<td>Watching filmstrip</td>
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<tr>
<td>Displaying text items</td>
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<tr>
<td>Third step Core activity 1</td>
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<tr>
<td>Setting the Stand</td>
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<tr>
<td>Fourth step Core activity 2</td>
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<td>Information transaction</td>
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<td>Fifth step Core activity 3</td>
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<tr>
<td>Confirmation</td>
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<td>Sixth step Core activity 4</td>
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<tr>
<td>Evaluation</td>
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<tr>
<td><strong>Step of Closing</strong></td>
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<tr>
<td>Seventh step Final Activity</td>
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<tr>
<td>Discuss the test, the teacher</td>
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<tr>
<td>Teaching, games, and closing</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Total of Time</td>
<td></td>
<td></td>
<td></td>
<td>180 minutes</td>
</tr>
</tbody>
</table>

Step 8: Instructional materials development result. The eighth step in this research and development is to use the instructional strategy and instrument of process and instructional outcomes assessment to have instructional materials draft. This instructional materials draft includes the instructional material (textbooks and CD) which the students manual, teachers manual, and instructional outcomes assessment instrument are integrated in it.

Conclusion

The development of instructional materials based on inquiry-transactional includes 8 steps, namely initial research, identification of objectives, instructional analysis, analysis of students and context, writing performance objectives, developing assessment instruments, developing instructional strategy, and developing instructional materials. The result is in the form of one set of instructional materials draft, namely 1 of textbook for the students, 1 of teachers manual, and 1 of interactive CD. The draft of the instructional materials still need to be evaluated in the next research efforts.

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