Application of scientific learning for primary school social studies material: Strategies to equip students in carrying out the revised 2013 curriculum

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Abstract:
This research was aimed at providing solution to the problems of ujnderstanding and implementing the revised primary school revised 2013 social studies curriculum by developing scientific learning application using discovery learning model for social studies materials in which teacher training students were assigned as teaching model. This study used Research & Development design, assigning 23 teacher training students at Malang State University, Indonesia. Data were collected fromquestionnaire, interview and observation on teaching implementation. Results ofprocess data showed that initially students were confused; shal have consulted to developlesson plans; prepared and consulted under guidance of researchers; consulted lessonplan to researchers; revised lesson plans with advice of researchers; and were ready after aseries of implementation. Results of product were: video captured overall learningsteps of scientific model of discovery learning; model teacher had worked with theguidance of the revised 2013 Curriculum on social sciences teaching materials, and videolearning was eligible for learning resource for scientific learning by discoverylearning model of social-sciences teaching materials for primary school.

Keywords:
Scientific learning, social-sciences, primary school.

Introduction
Pedagogically, curriculum implies educational design that serves students to develop their potential to learn enjoyable in adherence to their own abilities to comply their community and nation hopes.Curriculum can be defined as a set of educational materials and teaching for students whose educational objectives are predetermined to achieve(Idi, 2010:184). In a simple way. Kesuma (2013:31)said that curriculum is a set of lessons and activities offered by schools. Therefore, curriculum is related with education as a set of programs advocated to needs of participants in the efforts to achieve educational objectives.

To follow up the defined curriculum, it is imperative that Indonesian government designs a curriculum that immensely accommodates programs whose national education aims and objectives are set forth. Policy on curriculum reform applicable for the Primary up to Secondary school level in Indonesian is deserved asthe 2013 Curriculum (henceforth, K13). Nowdays, the Indonesian Republic Government through the Ministy of education and culture has revised the 2013 curriculum which has been expected that with overall innovation of the curriculum offered can enhance the quality of education in Indonesia. On the contrary, the fact in the field was not in line with the expectation. The role of student majoring in education which should function as the motor of curriculum development has not been not effective. Based on the interview result conducted to the primary school teacher education students at the last semester in 2016 showed that the students' understanding on the revised 2013 curriculum, public validation, and its principles of development was not adequate. This led the consideration of making students as models to implement the revised 2013 curriculum. By such intervention, students could have experience and habituation of implementing the revised 2013 curriculum, especially for the social studies materials using the *Discovery Learning.*

The offered opportunities to students to be the teaching models were expected to positively influence the enhancement of the students competence in implementing the revised 2013 curriculum. Students taking the roles as teaching models indirectly learned how to teach using the revised 2013 curriculum well. They would designed teaching documents and use them in implementing the revised 201 curriculum.

*Discovery learning*model was chosen due to the consideration that this model was recommended to use in the scientific learning which was the basis of the 2013 curriculum development. *Discovery learning*is the inductive learning model based on the discovery. Learning by discovery is a technique to help students make and manage knowledge (Honomichl & Chen, 2012:1). *Discovery Learning* is a learning theory defined as learning process which can occur when students are not presented the final forms of learning, but are expected to organize their learning themselves (Kemendikbud, 2013:2). In practice, teachers design learning procedures and invite students to be active in doscovery process under the teachers' guidance. Such learning is often implemented using role playing, group projects, and simulasi computer simulation (Cohen, 2008:5). The procedures of the discovery learning can be identified as (1) Stimulationi*,* (2) Statement of problems, (3) Data collection, (4) Data analysis, and (5) Verification or Generalization (Kadri, 2015:32).

Results of previous research by Zainuddin (2016, 236) showed that the Implementaion of Discovery Learningin low grade Islamic Primary School of Ma'arif Blitar was able to bring the scientific attitude on students, high curiosity and spiritual attitudes of students in activities to pray or observe activities which could bring a sense of gratitude toward

God's Power. This is in line with the other research conducted by Boty, et all (2015:117) resulted a conclusion that through self-discovery learning and collaboration among peers, students will have the satisfaction inwhat they are doing and hence will have positive attitudes. The *positive attitudes*were meant as self confidence, fair, and critical thinking.

The social studies learning was chosen, because this usually enforces the social interaction between human beings and their environment. By studying social science, students can improve social sensitivity in adaptation in social environment. Policy of the National Education stipulated in the Law 2013 article 37 states "*subject of study of social sciences among others geography, history, economics, health is intended to develop the knowledge, understanding, and analytical skills of learners to the social conditions of the people*." (in Sapriya, 2014:45).

Based on the above discussion this research was conducted to develop the *discovery learning*model which can be relevant to the scientific learning as implemented in the revised 2013 primary school curriculum and to develop skills of students majoring in the primary school education to implement the revised 201 primary school curriculum as well as develop materials mainly for the social studies. This way, as teacher candidates they can be expected as the driving forces to the implementation of the curriculum.

Method
Research Design
This research employed the Research and Development Approach. This focused on resulting product in the forms of video about the scientific learning model applying thediscovery learningmodel for social studies in primary schools. Such product development is in line with what Ibnu (2013:3) mentioned as Research and Development does not test theory, but develop and test the model effectiveness. Whereas, Akbar (2016: 2) said that such research is aimed to validate and/or result product/equipment/tools for education and learning. Furthermore, the Research and Development mostly has resulted products as a creation functions to enhance the quality of learning.

This research was done at Kardinas Massa Islamic Primary School the so-called SDI Kardinas Massa for grade IV with 35 students. This school as chosen because of having implemented the revised 2013 primary school curriculum. It was expected that the school could provide evaluation and reflection to the teaching models as well as researchers related to the development of the scientific learning applying the *discovery learning*model for primary school social studies. The subjects as teaching models in this research were students of Primary School Teacher Program as teacher candidates at the State University of Malang taking the sevent semester.

Data
Data collected in this research ere process and result data. The process data was obtained through : (1) questionnaires of the students readiness in implementing the revised 2013 curriculum, (2) interview on the students' readiness in implementing the revised 2013 curriculum, (3) observation on the implementation of the scientific learning using the *discovery learning* model application for the social studies materials. The result data was the video of the scientific learning applying the *discovery learning* model for primary school social studies materials. The video was then validated for the suitability towards the revise 2013 curriculum development in primary schools done by experts of curriculum and learning as well as teachers and primary school students.

Procedures

The steps and procedures of this Research and Development was developed by the researchers themselves using their professional experience by the following procedures: (1) Firstly, information collection which was done by reveing literatures, observation on students learning to identify problems, (2) Secondly, Planning which was done by dertemining students' competences, objectives, step, and small scale feseability test, (3) Thridly, initial product design: Learning materials, media, and evaluation instgruments, (4) Fourthly, initial product test which was conducted by assigning the teacher models who are the students majoring in Primary School Education Program and using primary school students, (5) Fifthly: product revision on the basis of the initial product test by experts in curriculum and learning, (6) Sixthly, product improvement as results of the revision by implementing in the primary school learning, and (7) Seventhly, Desimination and sharing to schools ho need the product.

Data Analysis

The data analysis process as done by employing the Research and Development Data Analysis comprising: (1) Data reduction, (2) Data display, and (3) Conclusion. Data reduction as done by selecting or chosing the collected data, focusing to simplify the data and the data display. The data display was conducted after having the data reduction by compiling all reducted information. These information were organized continuously up to the possibility to have conclusion. The information consisted of all the research description for the product testing by the experts and students' responses toards the learning process. The Conclusion process was taking the main model concept of the product results in the form of video about the learning process which was validated by Experts Team. Results of the analysis were used to be the basis for determining the success of product result.

Result
Results of Process Data

Results of process data obtained from questionnaires and interviews were asfollows: (1) Students at the beginning of preparation of lesson plan were stillconfused. (2) Students consulted and sought references to develop lesson plansrelevant to the topic chosen. (3) Students prepared lesson plans carefully andconsulted under researcher guidance. (4) students consulted the lesson plandesignedto the researchers, (5) students revised lesson plans as the researchers advised. (6)Students were equipped to become teachers after a series of planning.

Implementation of this learning process was recorded as a form ofdocumentation and design of initial product for validity test. This implementation wasobserved in all activities undertaken by the model teacher during teaching andlearning.Observations during learning activities found: (1) Students still felt awkwardto implement the chosen model, (2) The steps were not visible model of discovery in awhole, (3) on the five-step model of discovery learning, the second step and the fourthwere not visible for students. (5) Time learning allotment exceeded the planned time,(6) Students were not visible to apply attitudes on nation characters, (7) classes werenot conditioned properly to execute the instructional design set in Teacher Preparation Plan and teachingmaterials.Based on the result, the researcher developed planning and preparation for refloatingthe model. Students did some repairs to learn more about the application ofscientific learning model

of discovery learning, studied characteristics of learning ofsocial studies at Primary School, character of students, and reconstituted the Teacher Preparation Plan according to theresults of discussions with researchers. Finally, students expressed their readiness tobecome a model back. In reimplementation, the researcher recorded teaching andlearning process through observations. The results showed improvements on learningimplementation of scientific discovery learning than before. The improvements were:(1) Students were already confident and less awkward to implement the modelselected. (2) Students already had visible steps on discovery models. (3) The fivestepmodel of discovery learning were already implemented in learning activities (5).Learning time required in accordance with the planned time was appropriatelymanaged. (6). Students already performed attitudes of nation characters, such ascooperation, honest, and appreciate others, critical thinking, curiosity, (7) classes hadbeen conditioned properly. (8) learning activities began with a prayer and respect forthe red and white flag. (9) teaching and learning activities ended with a prayer andcleaning the classroom before going home.

Results of the Product
The results also demonstrated feasibility according to expert validation on instructional video. As a media of scientific discovery learning model, the videoshowed strong evidences. The results were as follows: (1) the video had containedoverall learning steps of scientific model application of discovery learning, (2) the model teacher had worked with instructions of the 2013 curriculum on Studies teaching materials, (3) thevideo learning was eligible for use as a learning resource or reference in scientificdiscovery learning model of Social Studies for Primary Schools.

Discussion
Results of process data showed that model teacher at the beginning of thepreparation of lesson plans still found difficulties to implement scientific learning discovery. Students in developing Teaching Preparation Plan did not yet fully understand of what waswritten. Impacts planned learning did not take place in the process. Measures werenot applied to scientific models, so students could not follow teaching and learningactivities well. In the low grade, student behaviour code did not reveal the nation'sculture and learning objectives were not achieved well. Evidently, a teacher that didnot have a good planning, would not produce a well teaching and learningpresentation. Conversely, a good planning means would produce a good learning.

At the next session of preparation and planning students performed better, resulting teaching and learning activities as planned. Students applied all steps of discovery learning model. The five-step of discovery learning stated by Kadri (2015:32) included (1) Stimulation, (2) Statement of the Problem, (3) The collection of data, (4) dataprocessing, and (5) verification or generalization, were well implemented. Studentteacherperformed attitude of scientists and behaved according to culture of nationcharacter.

The attitude of scientists that appeared in the application of scientificdiscovery learning model was critical thinking, honest, and curiosity. Scientificattitude of students were identified in four aspects: curiosity, respect for facts orevidence, the ability to change the view, and thinking critically. All were includedinto the scientific attitude that needs to be applied early (Harlen in, Widiadnyana, 2014) The emergence of behavioural and scientific attitude after implementation ofthe model of discovery learning also occurred to

improve daring to ask questions tosupport curiosity (Ulumi, et all, 2015:75). In addition, model of discovery learning improved students'scientific attitude because this model applied direct discovery activities, centred onsteps of scientific discovery that more students understood concepts they werestudying (Indarti , 2014). Attitudes and behaviours were indeed required in the development ofthe 2013 curriculum that integrated character of education and teaching materials. In each lessonteacher was required to introduce and developed character values of national culture.Character education was an effort to shape attitudes and mental of students.Character education was process of providing guidance for students to be fullyhuman character in dimensions of heart, think, body, taste, and imagination. Charactereducation was instilled by character values to school community, which includedknowledge, awareness, willingness, and actions. Implementation of these valuesappeared in terms of pray against God Almighty, ourselves, others, environment andnationality to become human beings(Wahyu, 2011:142).

Character education was the creation of aschool environment that assisted students in development of ethics, responsibilitythrough model and teaching good character through universal values Charactereducation was the earnest effort to understand, establish nurture ethical values, bothfor themselves and for all citizens or residents of the country as a whole (Bier and Berkowitz, in Supraptiningrum, 2015:221). Character education had to be implemented in learning activities. Thecharacters included various aspects of life ranging from aspect of state, scientific, andenvironmental society. The characters were implemented as: (1) religious, (2) to behonest, (3) tolerance, (4) discipline, (5) work hard, (6) creative (7) independent, (8)democratic, (9) curiosity, (10) the national spirit, (11) loving the country, (12)rewarding achievement, (13) friendly or communicative, (14) love peace, (15) joy ofreading, (16) environmental care, (17) social care, (18) responsibility (Putri, 2011:9).The results also showed that model teachers observed not only studentlearning outcomes of knowledge, but also attitudes and skills. Such behaviour ofteachers indicated good implementation on the revised 2013 curriculum. Indeed, this curriculum required assessment onstudent learning outcomes in three aspects: knowledge, attitudes, and skills. Actually,the assessment was not new in the system of assessment of learning outcomes inIndonesia. Formerly, the assessment was known as (1) Cognitive, (2) Affective, (3) Psychomotoric.

The results supported diversity of three aspects of students' abilities. Not all students were proficient in the knowledge; some were skilled in the act andsome others were unskilled. These three aspects were identical to (1) skills and habits,(2) knowledge and direction, (3) attitudes and ideals (2013 Revised Curriculum Document, 2013). Teachers applied model of thematic learning well as seen from teacherpreparation model in Teaching Preparation Plan. Teacher elected theme contents relevant to Social Studies thatconformed to models of discovery learning. Thematic learning was a learning conceptdeveloped in 2013. The thematic learning curriculum was the teaching in certainthemes that contained a variety of payloads subjects.

Thematic learning was alearning approach that integrated attitudes, abilities, skills and knowledge in thelearning process as well as the integration of basic concepts related (Majid, 2015:119). Thematiclearning combined multiple payloads in a single theme. Integrated learning approachto teaching and learning involved some fields of study to provide a meaningfulexperience to students. Meaningful in the sense of an integrated learning providedstudents to understand concepts of study and attributable to other

concepts that hadbeen mastered previously.In terms of learning objectives, this study showed that learning objectivesdesigned by the teacher revealed satisfactory results providing improvements from theaspect of knowledge, attitudes, and skills.

The purpose-designed of curriculumobjectives referred to the revised 2013 Curriculum emphasizing on national education goals. Nationaleducation served the ability, character development and civilization of the nation'sdignity in context of intellectual life of the nation, giving focus on students' potentialsto become a man of faith and fear of God Almighty, noble, healthy, knowledgeable, skilled, creative, independent, citizens of a democratic and responsible (Indonesian Republic Law No 20, 2003). These were in line with the message of the Indonesia Republic 1945 law chapter 31 verse 3 stating that The government provides and conducts a national education system which can enhance faith an nobleness of the people in education the nation life.

It has been obvious that the teacher models were able to implement scientific learning using discovery learning model well. Within the model, the teacher models, who were students of the primary teacher education, dveloped the thematic learning with character development basis. Students obviously showed the practices of characters in their learning behaviors. In other words, the students of primary teacher education could implement the revised 2013 curriculum, when they were provided with opportunities and guidance. Such success practice has become a solution towards the Primary Teacher Education students in preparing them to be professional teachers employing the 2013 curriculum.

Conclusion
Based on the result and discussion, it can be deduced that model teachers haveimplemented learning model on scientific discovery learning of Social Studies for primary school. Thelearning model had been prepared well in the video and teaching materials of Social Studies forPrimary Schools. The development of scientific learning model of discovery learning materials byappointing Social Studies for Primary Schools to the Primary School Teacher Education students showed effective and efficient models todevelop competencies and skills in teaching skills in support to curriculum reform onRevised 2013 curriculum in Indonesia.

Recomendation
In developing the sacintific learning using the discovery learning application model for the social studies materials in primary schools, teachers are suggested to objectively and optimaly plan the learning experiences and in practices manage classes to overcome students' noise due to having the discussion and discovery activities.

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