Scientific Inquiry Analysis of 2013 Curriculum and Implementation Biological Learning in South Tangerang & Jakarta High School

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ABSTRACT

This research aims to (1) determine Biology Core Competences from 2013 Curriculum for 10th level of Senior High School, (2) knowing Biological Scientific Inqury profile, (3) determine implementation Scientific Inquiry in Biology teaching and learning. It used mixed methods research with sequential exploratory design. The populations in this study were all biology teachers at SMAN in South Jakarta and Tangerang which implement 2013 curriculum in the academic year 2013/2014 . The samples were 3 people Biology teacher of SMAN 1 , SMAN 6 and SMAN 9 in South Tangerang , and 3 Biology teacher from SMAN 26 , SMAN 43 and SMAN 86 in South Jakarta . For the implementation of the curriculum in 2013 on fungus the concept involved 40 students of SMAN 1 Tangerang Selatan. Instruments used in qualitative research include : (a) an interview guide for teachers who implement Curriculum 2013 (b) a check list to see the distribution of scientific inquiry that appears in the basic competence on Curriculum 2013. Quantitative research instruments include , (a) performance assessment for scientific work, (b) Likert scale to measure students' scientific attitude . Descriptive qualitative data processed while quantitative data obtained were processed using descriptive statistics. The rresults showed (1) Biology curriculum 2013 has four core competencies ; spiritual core competencies (K1), attitude core competence (K2), cognitive core competence (K3), and psychomotor core competencies (K4). Each of these core competencies outlined in the relevant basic competencies. (2) analysis profile of scientific inquiry were not included hypotheses , planning experiments , using the tool on the concept of Animal , Plantae , protists , viruses and biodiversity, the dominant scientific inquiry i.e observation, classification, interpretation, questions, predictions, apply concepts, communication. 2013 curriculum emphasizes on all aspects of cognitive , affective, and psychomotor which is already recommended in the KTSP. Scientific approach in accordance with the nature of science and scientific inquiry . Questionnaire results showed a positive student response (76.46 %) on the application of the scientific inquiry on the concept of Fungus.

Key Word : Scientific Inquiry, Biology, 2013 curriculum, scientific attitude, performance asessment

INTRODUCTION

a. Problems review

Natural Sciences are dealing with the natural way of finding out a systematic way , so that not only the mastery of knowledge in the form of of facts, concepts, or principles, but also a process of discovery. Therefore, science education expected to become vehicle for learners to learn about themselves and the natural surroundings, as well as prospects for further development in applying them in everyday life.

The learning process emphasizes providing hands-on experience to develop competence in order to explore and understand the natural surroundings scientifically. Science education is directed to do inquiry and practice, both can help learners to gain a deeper understanding of the nature around . Action discovery / inquiry in science teaching related to the scientific work of students. Thus, students can build their own understanding to be active in their learning activities.

Scientific work is based on scientific activities (Scientific inquiry)[1], i.e. an action stages of scientists that lead them to scientific knowledge. Even though scientific work as if it were linked to some act of professional scientists, but anyone can practice skills of scientific work in everything and everyday life. The results of scientific work from scientists is finding a new theories into new knowledge. The scientific method gives a systematic structure for processing information inquiry that puts teachers and students in the patterns of information scientists.[2]

The scientific work adopt the scientific method with same pattern, so students can discover new knowledge about science through hands-on observation (learning by doing). This method is not only engage students in cognitive skills but also in affective and psycomotoric skills.

Scientific inquiry is a part of the science eduation in shools. Cain & Evans (1990)[3] states that there are three components of science education in shools. These are products of science, scientific processes, and scientific attitudes. Among these, scientific work is predominantly found in the components of science processes and attitude sciences.

Science as a process covers the skills and attitudes of scientists to achieve a product of science. These skills are called science process skills. So, science process skills is a form of science as a process. While the attitudes of scientists is called the scientific attitude. Therefore the science process skills and scientific attitude are instrumental in achieving the scientific work of students.

Certainly, the contribution of the scientific work that requires students to think in a systematic, logical and critical importance is stimulate a holistic capability which required learners to their lives in the future. Implementation of scientific work can be integrated in the active and constructive learning classroom.

2013 curriculum as a new curriculum that will replace KTSP brings out the pros and cons among academics and practitioners of education. Education and Culture Minister Muhamad Nuh confirmed that the curriculum implemented in July 2013, especially at 7th and 10th level in middle school. The structure of natural science subject is changing either the students learning hours and the competence.

KTSP have two components i.e. SK and KD which directs a teacher to a standard of competency that must belongs to students include the knowledge, skills and attitudes[4]. In

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[1]Rustaman, N.Y, Dirdjosaemarto S., Yudianto, S.A., Ahmad Y., Subekti R., Rochimtaniawati, D., dan Kusumawati,M.N. (2003). *Strategi Belajar Mengajar Biologi*. Common Textbook (Edisi Revisi). Bandung: FPMIPA UPI.

[2] Departemen Pendidikan Nasional (2008). *Strategi Pembelajaran* MIPA Dirjen Peningkatan Mutu Pendidik dan Tenaga Kependidikan[2]

[3] Badan Standard Nasional Pendidikan (2006). *Panduan Penyusunan Kurikulum Tingkat Satuan Pendidikan*, Jakarta.

[4] American Association for the Advancement of Science Project 2061. (1993). *Bencmark For Science Literacy*. Washington: Oxfordford University Press

Published on The 2 nd International Conference on Education in Muslim Society. 11-12 November 2015.*"Building Network and Sharing Best Practises for Strenghtening Quality Education in Muslim Society*".Faculty of Education and Teacher Training UIN Syarif Hidayatullah Jakarta. ISBN 9 786026 804037

2013, the term of SK became the core competencies that have a common terminology with SK. Core competencies serves as the organizes of basic competence. It binds organization vertically and competence base organization horizontally. (Kemendikbud, 2013).

Core competencies are designed into four interrelated groups, namely regard to religious attitudes (group 1 of core competence), social attitudes (group 2 of core competence), science (group 3 of core competence), and application of knowledge (group 4 of core competence). The fourth group has become a reference of basic competencies and should be developed in any situation of integrative learning. Competencies with regard to religious and social attitudes developed indirectly (indirect teaching) that at the time the students learned about knowledge (competence of the Group 3) and the application of knowledge (competence of the core group of 4).[5]

Muhamad Nuh (2013) [6]states core competencies were not to teach, but to be formed through the study of subjects-relevant subjects. Each subject should be subject to the core competencies that have been formulated. In other words, all subjects that are taught and learned in the class should contribute to the establishment of core competencies. Core competencies are the competencies binder of every competence which generated by studying each subject. Here the core competencies serves as a horizontal integrator for every lesson.

The scientific inquiry is an integral part of learning science. Basic competencies of it should be integrated in the basic competence of the understanding and application concept of science. Learning design in school is an activity that reflects the scientific inquiry. Of course, the positive impact of scientific inquiry are growing student creativity and creating fun activities while learning.

There is a link between group 3 and 4 in core competencies. Groups of three is focuses on the nature of science as a product , while the fourth group is focuses on nature of science as a process and attitude . Core competencies in group 4 focuses on learning settings based scientific work . The profile of scientific inquiry contained on core competencies and basic competence in 2013 curriculum should be reviewed critically and seriously . Research which is related to the scientific inquiry profile is in small quantity , but how teachers can apply it in a learning setting without this information . Then teams of researchers interested inobtaining authentic data related to " Scientific Inquiry Analysis of 2013 Curriculum and Implementation **Biological Learning at South Tangerang & Jakarta Senior High School**

b. Research Problems

Based on problems review above, research issues include:

1. How does the core competencies and basic competencies profiles of Biology subject in 2013 Curriculum for 10th grade of Senior High School ?
2. How is the scientific inquiry profiles of Biology subject in 2013 Curriculum for 10th grade of Senior High School ?
3. How is the scientific inquiry application of Biology subject in 2013 Curriculum for 10th grade of Senior High School in South Tangerang and South Selatan ?

c. Research objectives

This research aims to:

1. find out the core competencies and basic competencies profiles in Biology class X Curiculum 2013 at Senior High School level

[5] Kementrian Pendidikan dan Kebudayaan. 2013. *Kompetensi Dasar SMA/MA Kurikulum 2013*.

[6] Nuh, Muhamad (2013). *Jawaban Muhamad Nuh pada Kurikulum 2013* http://www.unm.ac.id/component/content/article/31-kabar-pendidikan/475-jawaban-nuh-tentang-kurikulum-2013.html [26 Maret 2013

2. find out the profile of the scientific inquiry in Biology class X Curiculum 2013 at Senior High School level
3. find out the application of the scientific inquiry in Biology class X Curiculum 2013 at Senior High School level in South Tangerang and South Selatan.

RESEARCH METHODOLOGY

This research was conducted at 3 samples of SMAN in South Jakarta and 3 SMAN in South Tangerang . Research date is from July to October 2013 . This study used a mixed methods (mixed methods) with sequential exploratory design [7]. Sequential exploratory strategy involves the collection and analysis of qualitative data in the first step , which followed by the collection and analysis of quantitative data in the second step based on the results of the first stage . The population in this study were all biology teacher at SMAN in South Jakarta and Tangerang which implement Curriculum 2013 in the academic year 2013/2014 .
The samples were 3 Biology teacher of SMAN 1 , SMAN 6 and SMAN 9 in South Tangerang , and 3 Biology teachers of SMAN 26 , SMAN 43 and SMAN 86 in South Jakarta. For the implementation of the curriculum in 2013 on the concept of fungus involved 40 students of SMAN 1 Tangerang Selatan . Instruments used in qualitative research include : (a) an interview guidelines for biology teachers who implement Curriculum 2013 (b) a check list to see the distribution of scientific inquiry that appears in the basic competence on Curriculum 2013. Quantitative research instruments include , (a) performance assessment for scientific inquiry, (b) Likert scale to measure students' scientific attitude.

RESULTS AND DISCUSSION

a. Results

1. Core competencies and basic competencies in 2013 Curriculum

Core competencies

The structure of 2013 curriculum on Biology subjects has 4 core competencies i.e. spiritual core competencies (KI 1), attitude competence (KI 2), cognitive competence (KI 3), and psychomotor competence (KI 4). Each of the core competencies outlined on the relevant basic competence. For example, at 10th grade, KI1 are outlined with 3 basic competencies, KI 2 are outlined into 2 basic competencies, KI 3 is outlined into 1 basic competence, anda KI 4 is outlined into 1 basic competence. (Table 4.1)

Tabel 4.1 Description of core competencies and basic competencies of Biology at 10th grade

Core competence	
1	Living with and practice students' religion value
Basic competencies	
1.1	Admiring the regularity and complexity of God's creation of biodiversity, ecosystems and the environment .
1.2 .	Recognizing and admiring scientific thinking in the bioprocess observing capabilities
1.3 .	Sensitive and caring towards environmental problems, maintaining and caring for the environment as a manisfestation of the teaching practice of students' religion
Core competence	

[7] Creswell, J W & Clark, Vicki L. Plano. (2007). Designing and Conducting Mixed Methods Research. Thousand Oaks. London. New Delhi: Sage Publications

2	Live and practice honest behavior, discipline, responsibility, caring (mutual, cooperative, tolerant, peaceful), polite, responsive and proactive and demonstrating attitudes as part of solutions to various problems in interacting effectively with the social and natural environments as well as in putting yourself as a reflection of the nation in the Association world.
Basic competencies	
2.1.	Has scientific behaved : finicky, diligent, honest to the data and facts, discipline, responsibility, and care in observation and experimentation, daring and polite in asking questions and arguing, caring environment, mutual cooperation, cooperate, peaceable, mutual cooperation, collaboration, peace-loving, argue scientifically and critically , responsive and proactive in every action and in conducting observations and experiments in the classroom / lab nor outside the classroom / laboratory.
2.2.	Care in self and environment safety by applying the principle of safety while conducting observations and experiments in the laboratory and environment.
Core competence	
3	Understanding, applying, analyzing factual knowledge, conceptual, procedural based on student curiosity about science, technology, arts, culture, and humanities with humaneness vision, nationality, state, and associated with civilization phenomenon and events, applying procedural knowledge in a specific study accordance with student's talents and interets in problems solving .
Basic competence	
3.1	Understanding about the scope of biology (problems on various biology objects and life organization levels), the scientific method and principle of safety based on observations in everyday life.
Core competence	
4	Processing, reasoning, and presenting in the realm of the concrete and abstract domains associated with the development of which he had learned at school independently, and were able to use the method according to the science rules
Basic competence	
4.1	Providing data about biology objects and problems at various levels of life organization accordance with scientific methods and pay attention to safety aspects and presenting it in the form of a written report

The material of any subjects on 2013 curriculum has written detailly on the syllabus. Based on the syllabus version July 2013, there are 10 materials for 10th grade in school with the distribution map of basic cognitive competency and basic psychomotor competency (Table 4.2)

Table 4.2 The distribution map of basic cognitive competency and basic psychomotor competency for Biology 10th grade

Basic competence (cognitive)	Basic competence (Psychomotor)	Material
3.1	4.1	Safety procedures
3.2	4.2	The scope of Biology and scientific method
3.3	4.3	Virus

Basic competence (cognitive)	Basic competence (Psychomotor)	Material
3.4	4.4	Bacteria
3.5	4.5	Protists
3.6	4.6	Fungus
3.7	4.7	Plants
3.8	4.8	Animalia
3.9	4.9	Ecology: ecosystems, flow of energy, biogeochemical cycle, and interactions in the ecosystem
3.10	4.10	Environmental/climate changes and recycling of waste

The basic cognitive competency describes explicitly the knowledge and materials, whereas basic psychomotor competence describes some skills that must be achieved by students. On the syllabus and lesson plan, basic cognitive and psychomotor competence are integrated in learning process. The learning process using a scientific approach includes observation, questioning, experimentation/exploration, association and communication.

2. Scientific Inquiry Profile of Biology Subjects in 2013 Curriculum For 10th Grade of Senior High School

Science learning emphasis on the process of meaningful knowledge constraction. It emphasis on science as a process. Scientific inquiry profile which analyzed consists of 10 KPS (science process skills) i.e. observation, classification, interpretation, questioning, predictions, hypotheses, devises an experiment, using tools and materials, applying the concept of, and communication. The scientific inquiry is shown on the profile table 4.3 below.

Tabel 4.3 CHECK LIST OF BIOLOGY SUBJECT IN 2013 CURRICULUM FOR 10th GRADE OF SENIOR HIGH SCHOOL

		SCIENTIFIC INQUIRY										
	BASIC COMPETENCY	**OBSERVATION**	**CLASSIFICATION**	**INTERPRETATION**	**QUESTIONING**	**PREDICTION**	**HYPOTHESES**	**DEVISES EXPERIMENTS**	**USING TOOLS AND MATERIALS**	**APPLYING THE**	**COMMUNICATION**	**DESCRIPTION**
	1. The Scope of Biology, Scientific Inquiry, Safety Procedures and Careers Based on Technology											
3.1	Comprehension about the scope of biology (problems at different levels of biological organization object lives), the scientific method and the principle of safety	√	√	√	√	√				√	√	

		SCIENTIFIC INQUIRY										
	BASIC COMPETENCY	**OBSERVATION**	**CLASSIFICATION**	**INTERPRETATION**	**QUESTIONING**	**PREDICTION**	**HYPOTHESES**	**DEVISES EXPERIMENTS**	**USING TOOLS AND MATERIALS**	**APPLYING THE**	**COMMUNICATION**	**DESCRIPTION**
	based on observations in everyday life.											
4.1	Providing data about biology objects and problems at various levels of life organization accordance with scientific methods and pay attention to safety aspects and presenting it in the form of a written report						√	√	√	√	√	
	SCIENTIFIC INQUIRY PROFILE	√	√	√	√	√	√	√	√	√	√	
	2 Different levels of Biodiversity in Indonesia											
3.2	Analyze data results observation about various levels of biodiversity (genes, species and ecosystems) in Indonesia	√	√	√	√	√				√	√	
4.2	Providing the identification results of Indonesian biodiversity preservation proposal based on the data analysis of preservation threats of any animals and plants Indonesian typical which are communicated in a variety of media information forms.									√	√	
	SCIENTIFIC INQUIRY PROFILE	√	√	√	√	√	--	--	--	√	√	
	3. Viruses, the features and its role in the life of											
3.3	Apply an comprehension of the viruses concerned about features, replication, and the role of	√	√	√	√	√						

		SCIENTIFIC INQUIRY										
	BASIC COMPETENCY	**OBSERVATION**	**CLASSIFICATION**	**INTERPRETATION**	**QUESTIONING**	**PREDICTION**	**HYPOTHESES**	**DEVISES EXPERIMENTS**	**USING TOOLS AND MATERIALS**	**APPLYING THE**	**COMMUNICATION**	**DESCRIPTION**
	viruses in the aspects of public health.											
4.3	Providing data on the features, replication, and the role of viruses in the aspects of health in the form of model/charta.									√	√	
	SCIENTIFIC INQUIRY PROFILE	√	√	√	√	√	--	--	--	√	√	
	4. Archaebateria dan Eubactaeria, features, characteristic and its role											
3.4	Applying the classification to classify the archaebacteria and eubacteria based on characteristics and forms through finicky and systematic observations.	√	√	√	√	√	√	√	√			
4.4	Providing data about the characteristics and role of archaebacteria and eubacteria in life based on the observations in the form of a written report.						√	√	√	√	√	
	PROFIL KINERJA ILMIAH	√	√	√	√	√	√	√	√	√	√	
	5 **Protists, the features, characteristic, and its role in the life of**											
3.5	Applying the classification to classify protists based on the general characteristics of the class and its role in life through finicky and systematic observations.	√	√	√	√	√						
4.5	Planning and devising									√	√	

		SCIENTIFIC INQUIRY										
	BASIC COMPETENCY	**OBSERVATION**	**CLASSIFICATION**	**INTERPRETATION**	**QUESTIONING**	**PREDICTION**	**HYPOTHESES**	**DEVISES EXPERIMENTS**	**USING TOOLS AND MATERIALS**	**APPLYING THE**	**COMMUNICATION**	**DESCRIPTION**
	observations of the characteristics and role of protists in the life and presents the results of observations in the form of model/charta/image.											
	PROFIL KINERJA ILMIAH	√	√	√	√	√	-	-	-	√	√	
	6. Fungus,the features, characteristic, and it role in the life of											
3.6.	Applying the classification to classify Fungus based on their characteristics and reproduction through finicky and systematic observations.	√	√	√	√	√	√	√	√			
4.6.	Providing the data as the observation results about characteristics and the role of fungus in the lives and the environment in the form of a written report									√	√	
	SCIENTIFIC INQUIRY PROFILE	√	√	√	√	√	√	√	√	√	√	
	7. Plantae, morphological traits, metagenesis, and it role in the sustainability of life on Earth											
3.7.	Applying the classification to classify plants into a division based on observations of morphology and metagenesis plants and face it role in the survival of life on Earth.	√	√	√	√	√						
4.7.	Providing the data about plant morphology and roles on various aspects of life in the									√	√	

		SCIENTIFIC INQUIRY										
	BASIC COMPETENCY	**OBSERVATION**	**CLASSIFICATION**	**INTERPRETATION**	**QUESTIONING**	**PREDICTION**	**HYPOTHESES**	**DEVISES EXPERIMENTS**	**USING TOOLS AND MATERIALS**	**APPLYING THE**	**COMMUNICATION**	**DESCRIPTION**
	form of a written report.											
	SCIENTIFIC INQUIRY PROFILE	√	√	√	√	√	-	-	-	√	√	
	8. Invertebrata											
3.8.	Applying the classification to classify animals into phyla based on their observation of Anatomy and morphology as well as face it role in life.	√	√	√	√	√						
4.8.	Providing the data on the comparison of the complexity of the network of the animal's body and its role in various aspects of life in the form of a written report.									√	√	
	SCIENTIFIC INQUIRY PROFILE	√	√	√	√	√	-	-	-	√	√	
	9. Ecology: ecosystems, flow of energy, biogeochemical cycle, and interactions in the ecosystem											
3.9.	Analyzing the information/data from a variety of sources about the ecosystem and all the interactions that take place in there	√	√	√	√	√						
4.9.	Designing a chart about the interactions between components of the ecosystem and food web which takes place in the ecosystem and presents the results in a variety of media forms.						√	√	√	√	√	

		SCIENTIFIC INQUIRY										
	BASIC COMPETENCY	**OBSERVATION**	**CLASSIFICATION**	**INTERPRETATION**	**QUESTIONING**	**PREDICTION**	**HYPOTHESES**	**DEVISES EXPERIMENTS**	**USING TOOLS AND MATERIALS**	**APPLYING THE**	**COMMUNICATION**	**DESCRIPTION**
	SCIENTIFIC INQUIRY PROFILE	√	√	√	√	√	√	√	√	√	√	
	10. Environmental/climate changes and recycling of waste											
3.10.	Analyzing the data of environmental change and the impact of a change in life	√	√	√	√	√						
4.10.	Solving environmental problems by making wastes recycling product and efforts of environmental preservation						√	√	√	√	√	
	SCIENTIFIC INQUIRY PROFILE	√	√	√	√	√	√	√	√	√	√	
	%	**100**	**100**	**100**	**100**	**100**	**50**	**50**	**50**	**100**	**100**	

Note:

- The percentage of scientific inquiry occurance on basic cognitive and psychomotoric competence. There are 10 items of basic cognitive and psychomotoric ompetencies in 10 material. So, the amount of basic competencies are 20.
- Based on the analysis results for table 4.3, the basic cognitive and psychomotor competence has been integrated. The material for 10th grade of Senior High School requires information retrieval through two techniques of experimentation or exploration. Information retrieval aspects requires a proof that can be done with two techniques i.e. experimentation and exploration. The experiment was conducted as a proof that will acquire a primary data, while exploration is proving the truth of knowledge based on secondary data. The syllabus which issued by ministry of education showing that information retrieval activity is directed alternately between experimentation or exploration.

An experimental activity such as identification of macroscopic and microscopic fungi and it was observed using observation sheets (performance assessment).

After learning the fungi concept, scientific attitude questionnaire conducted on 40 students. The results of the questionnaire showed that the mean (76.46%) of student's response is positively. Characteristics of the scientific attitude were studied including five: inquisitive nature, skepticism, open and wide view, objectivity, and willingness of verifying.

Questionnaire of student's responses reached the high category; it shows that the learning which is applying the scientific work gives high impact to the scientific attitude.

b. discussion

The 2013 curriculum emphasizes the scientific approach that includes learning activities such as observation, questioning, experimentation, and communication associations. The process of learning science in this case was applying scientific performance (Scientific Approach) which is a set of scientific work skills. Scientific work skills (inquiry) always associated with the investigation activity or experimentation.

The results showed the holistic profile of every aspect of scientific performance. Aspects of scientific performance emerged with the highest to the lowest percentage in sequence are observations (100 %), classification (100 %), interpretation (100 %), asking questions (100 %), the prediction (100 %) applying the concept (100 %), communicating (100 %), planning the experiment (50 %), using the tools (50 %) making the hypotheses (50 %).

The results of the analysis of the scientific work profile there were 5 material not leading to hypotheses, planning the experiment, using the tool on the concept of Animalia, Plantae, Protista, Viruses and Biodiversity, the dominant scientific work on observation, classification, interpretation, asking questions, predictions, applying concepts, communication.

The five materials that are Safety Procedure, Scope of Biology and Scientific Methods, Bacteria, Fungi, Ecology: the ecosystem, energy flow, biogeochemical cycles, and interactions within the ecosystem, changes in environment/ climate and recycling of waste, the scientific works are dominant on observation, classification, interpretations, predictions, hypotheses, ask questions, predictions, apply the concept, communication.

Results of the study is in line with the demands of 2013 Curriculum that gives priority to the scientific approach, including observation , questioning, experimentation/ exploration, associations, communicating. Every aspect of the learning stages that refers to a scientific approach could develop attitude competencies, specificaly attitude in observation it could practicing the seriousness, thoroughness, seeking for information, asking stages, developing creativity, curiosity, the ability to formulate questions to establish the critical thinking necessary for educated life and lifelong learning, stages of experimentation/ exploration developing conscientious attitude , honest, polite, respect other people's opinions, practicing communication skills, applying skills on gathering

information through various ways that had been learned. Stage of ssociations developed attitudes such as honest, conscientious, disciplined, law-abiding, hard work, ability to implement procedures and inductive and deductive thinking skills in the concluding, stage of communication to develop honest conscientious attitude, tolerance, the ability to think systematically, express opinions clearly and develop good and right language skill.

In the experiment, the knowledge was proved through a series of experiments, generate primary data with a dominant aspect of scientific performance, such as observation, classification, interpretation, asking questions, hypotheses, planning experiments, using tools and materials, applying concepts, and communication. This is consistent with the results of the study Tarwiyati, L., Zulfiani., Noor, F. Meirry (2013)[8] on the use of worksheets based on the SPS for concept of Mushrooms. Performance of student's science process skill was higher in the experimental class of 76. 4% compared to the controll class of 69% without the use of SPS's worksheets.[9]

In exploration activities, the knowledge was proved through tracking information from secondary data such as text books, encyclopedias, information from Internet, and speakers. Scientific aspects were developed including observation, classification, interpretation, asking questions, predictions, applying concepts, and communication.

The result of the basic competency 2013 curriculum mapping obtain that there was a relevancy between the basic cognitive with the psichomotoric competence. Unlike the case in SBC, details of the basic competencies described in descriptive, not dishtinguished between basic cognitive and psychomotor competencies explicitly. The analysis results obtained that there are 20 basics competencies in class X on biology course including 10 basics cognitive and 10 basic psychomotoric competencies. Each basic competencies need to be mapped so that the liniarity can bee seen. Virus material explicitly stated on the basic of cognitive 3.3 and basic of psychomotor 4.3. competences.

> *"3.3 Applying an understanding of the virus related with the characteristics the, replication, and the role of viruses in the public health aspects.*
>
> *4.3 Presenting data about the characteristics, replication, and the role of viruses in health aspects in the form of the model/ Charta ".*[10]

[8] Tarwiyati, L., Zulfiani., F. Noor, Meiry (2013). *Pengaruh penggunaan LKS berbasis KPS terhadap Hasil Belajar Siswa*. Skripsi. Tidak dipublikasikan

[9] Lampiran SK Permendikbud No 81 A Impelementasi Kuriukulum 2013

[10] Lampiran SK Permendikbud No 69 2013 tentang KD dan Struktur Kurikulum SMA/MA

On the basic cognitive competencies, declarative knowledge such as an understanding of the virus related with the characteristics, replication, and the role of viruses in the public health aspects are required. On the basic psychomotoric competence students are demanded to present data about the characteristics, replication, and the role of viruses in health aspects in the form of the model/Charta " This integration is needs to be understood as a form of holistic learning that developing soft skills and hard skills.

Qualitative analysis and review of relevant research studies showed that 2013 Curriculum on biology class X were developing aspects of student's scientific performance. Scientific performance of students were increasing learning outcomes, developing scientific thinking, and critical thinking of students. In this research, a quantitative study was done, such as distribution of student's scientific attitude questionnaire on students who conducting scientific learning. The results showed that the students responsed positive, a score of 76.46% in the high category. Scientific attitude developed was in line with the opinion of Beyer (1977),[11] states that inquire is not only developing aspects of knowledge, but also the process of scientific attitude of students.

The response of teachers to the implementation of the 2013 Curriculum that the curriculum change is a certain as a response of the time demand changes, which aims to improve the previous curriculum. It is related with improvement of learning strategies, assessment, and flexibility of learning time. A well socialization was advised in to the basic stages (MGMPs) and per subject. Barriers are possible because a reference of 2013 Curriculum implementation is very dynamic. This can be minimized by the Central Government socialization mechanisms to the region continuously.

2013 curriculum emphasizes all aspects of cognitive, affective, and psychomotor which is already recommended in the SBC. Scientific approach is considered good, especially for biology because it is not a new thing. This approach emphasizes the independent information retrieval by students, so that aspect of scientific work implemented in the learning.

Conclusions and Suggestion

Conclusions

[11] B *Beyer, Barry K (1971)* Inquiry in the Social Studies Classroom *(A Strategy for Teaching)*

1. The structure of the 2013 curriculum on Biology class X has 4 main competencies. The main competency subject biology consists of main spiritual (K1), attitude (K2), cognitive (K3), and psychomotor competencies (K4). Each main competencies described in the relevant basic competencies.
2. The results of the analysis of the scientific work profile, there are 5 materials not led to hypotheses, planning experiments, using the tool on the concept of Animalia, Plantae, protista, viruses and biodiversity, the dominant scientific work on observation, classification, interpretation, asking questions, predictions, applying concepts, communication.
3. Five materials consist of Safety Procedure, Scope of Biology and Scientific Methods, Bacteria, Fungi, Ecology: The ecosystem, energy flow, biogeochemical cycles, and interactions within the ecosystem, environmental/climate change and recycling of waste, the dominant scientific work on observation, classification, interpretation, predictions, hypotheses, asking questions, predictions, applying the concept, communication.
4. 2013 Curriculum emphasizes all aspects of cognitive, affective, and psychomotor which is already recommended in the SBC. The scientific approach emphasizes in information retrieval by students independently, so that aspects of scientific work were implemented in the learning. This approach emphasizes the independent information retrieval by students, so that aspect of scientific work implemented in the learning.
5. The results of the questionnaire showed that in average students response is positive (76.46) to the application of the scientific work on the concept of Fungi.

Suggestion

1. Learning need to consider the integration of the basic cognitive and the psychomotor competencies. 2013 Curriculum recommends that the scientific approach which is developing students' scientific performance.
2. Teachers assume that in the scientific approach is no hypothesis, while it is in the scientific work. This statement is important to be understood by related parties, that there is still a hypothesis impression that applied, when applying the KD 4 (Psychomotor) no. If the hypothesis is reviewed in depth it is an important point to establish a set of scientific work especially on experimental learning activities.

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