

# INTERNATIONAL PROCEEDING

  
STATE ISLAMIC UNIVERSITY  
SUNAN KALIJAGA  
YOGYAKARTA



**PROCEEDING  
INTERNATIONAL SEMINAR**

**“OPTIMIZING OF MULTIPLE INTELLIGENCES  
TO EXAGGERATE HUMAN POTENTIAL TOWARDS  
VIRTUOUS CHARACTER”**

**Editors:**

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Yogyakarta  
December, 19<sup>th</sup> 2013**



# **PROCEEDING INTERNATIONAL SEMINAR**

ON THE 1<sup>st</sup> SUMMIT MEETING ON EDUCATION, THE END OF THE YEAR 2013

**“OPTIMIZING OF MULTIPLE INTELLIGENCES TO EXAGGERATE  
HUMAN POTENTIAL TOWARDS VIRTUOUS CHARACTER”**

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xii, 337 ; 21 x 35 cm

ISBN: 978-602-14483-2-8

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## KATA PENGANTAR

*Bismillahirrohmanirrohiim, Assalamu'alaikum warahmatullaahi wabara-kaatuh. Alhamdulillahirabbil'alamin. Wabihi nasta'in 'ala umuridunnya waddin. Wash-sholawatu wassalamu'ala asrofil anbiya'I walmursalin. Wa'ala alihi wa ashabihi ajmain. Amma ba'du. Robbisrohli shodri wayassirli amri, wahlul 'uqdatan millisani, yafqohu qauli.* Segala puji bagi Allah SWT, shalawat serta salam semoga senantiasa tercurah kepada Nabi Muhammad SAW, beserta para sahabat dan umatnya yang senantiasa mengikuti sunahnya.

Kegiatan ini terselenggara atas dasar perlunya perubahan demi perubahan, inovasi-inovasi pembelajaran senantiasa menjadi perhatian kalian akademik dan praktisi pendidikan.

Dalam hal ini prodi PGMI akan berusaha semaksimal mungkin untuk senantiasa mengembangkan kegiatan yang mendukung peningkatan mutu tersebut, baik untuk dosen, mahasiswa, bahkan bagi alumni dari PGMI itu sendiri, serta masyarakat luas pada umumnya sebagai pengguna dari alumni PGMI Fakultas Ilmu Tarbiyah dan Keguruan UIN Sunan Kalijaga. Peningkatan mutu tersebut di antaranya dilakukan dalam bentuk pelaksanaan 'seminar internasional'. Seminar internasional akan menetapkan tema "*Summit Meeting on Education The End of The Year 2013*" dan Penandatanganan MOU dengan University Kebangsaan Malaysia (UKM).

Adapun kegiatan yang diselenggarakan meliputi kegiatan Seminar Internasional dengan tema Optimalisasi kecerdasan majemuk untuk melejitkan potensi menuju manusia berbudi pekerti. Dilanjutkan Fashion show Tarbiyah *Fashion Week 2015* yang bertajuk "Islami, Trendy and Syar'i". Kegiatan berikutnya adalah Seminar Nasional dengan tema Kurikulum 2013 "Realisasi dan Refleksi Kurikulum 2013". Berikutnya Seminar Peringatan hari Ibu dengan "Peran keluarga dalam pendidikan anak (Kolaborasi catur pusat pendidikan)". Dilanjutkan dengan acara Bedah buku yang bertema "Merajut pendidikan di kota Yogyakarta" karya: Bp. Zainal Abidin, M.Pd. Selanjutnya Seminar Edupreneurship dengan tema "Membangun kreatifitas melalui edupreneurship"

Adapun narasumber dari kegiatan ini dari berbagai negara, yaitu: dari negara Malaysia, Australia, Brunei Darussalam, dan Indonesia. Adapun nama-nama narasumber sebagai berikut: Prof. Dr. Lilia Halim (University Kebangsaan Malaysia), Bapak Setiyo Iswoyo, Drs. HD. Iriyanto, M.M., Dr. Slamet Suyanto (Dosen Pendidikan Biologi, UNY), Hj. Dyah Suminar (SE istri mantan walikota Yogyakarta), Prof. Dr. Taufik Ahmad Dardiri, SU (Dosen Fakultas Adab dan Ilmu Budaya, UIN Sunan kalijaga), M Arief Budiman, S.Sn., Managing Director PT. Petakumpet Yogyakarta. Adapun peserta dari kegiatan ini dari berbagai negara yaitu Turki, Rusia, Thailand, Malaysia.

Dalam hal ini dosen atau pendidik pada umumnya adalah perintis pembangunan di segala bidang kehidupan dalam masyarakat. Seorang dosen atau pendidik yang benar-benar sadar akan tugas dan tanggung jawabnya, tentulah akan selalu mawas diri, mengadakan introspeksi, berusaha selalu ingin berkembang maju, agar bisa menunaikan tugasnya lebih baik, dengan selalu menambah pengetahuan, memperkaya pengalaman, menambah kualitas dirinya melalui membaca buku-buku perpustakaan, mengikuti seminar loka-karya, kursus-kursus penataran, dan sebagainya agar selalu bisa mengikuti gejolak perubahan sosiokultural dalam masyarakat serta kemajuan ilmu dan teknologi modern dewasa ini. Melalui kegiatan *international Summi Meetng* ini diharapkan dosen, guru, dan mahasiswa menjadi lebih profesional, khususnya terkait dengan kompetensi profesional.

Pekerjaan mengajar memang tidak selalu harus diartikan sebagai kegiatan menyajikan materi pelajaran. Meskipun penyajian materi pelajaran memang merupakan bagian dari kegiatan pembelajaran, tetapi bukanlah satu-satunya. Masih banyak cara lain yang dapat dilakukan guru untuk membuat siswa belajar. Peran yang seharusnya dilakukan guru adalah mengusahakan agar setiap siswa dapat berinteraksi secara aktif dengan berbagai sumber belajar yang ada. Guru pun sangat erat kaitannya dengan pendidikan karakter.

Pendidikan karakter yang semakin hangat sering menimbulkan kekhawatiran para guru. Namun sebenarnya hal itu tidak perlu khawatir, masih banyak tugas guru yang lain seperti: memberikan perhatian dan bimbingan secara individual kepada siswa yang selama ini kurang mendapat perhatian. Kondisi ini akan terus terjadi selama guru menganggap dirinya merupakan sumber belajar satu-satunya bagi siswa. Jika guru memanfaatkan berbagai strategi pembelajaran secara baik, guru dapat berbagi peran dengan strategi. Peran guru akan lebih mengarah sebagai manajer pembelajaran dan bertanggung jawab menciptakan kondisi sedemikian rupa agar siswa dapat belajar. Untuk itu guru lebih berfungsi sebagai penasehat, pembimbing, motivator dan fasilitator dalam Kegiatan Belajar Mengajar.

Upaya Pemerintah terhadap tenaga guru sebenarnya telah dilakukan oleh Pemerintah Republik Indonesia, melalui berbagai bentuk kebijakan. Ditetapkannya Undang Undang nomor 14 tahun 2005 tentang guru dan dosen merupakan dasar kebijakan untuk memperkuat eksistensi tenaga kependidikan sebagai tenaga profesional, seperti profesi-profesi yang lainnya. Kualitas profesi tenaga guru selalu diupayakan, baik melalui ketentuan kualifikasi pendidikannya maupun kegiatan in-service training, dengan berbagai bentuknya, seperti: pendidikan dan latihan (diklat), penataran dan pelibatan dalam berbagai seminar untuk memperbarui wawasannya dalam kompetensi pedagogi dan akademik.

Pemerintah mulai menyadari betapa strategisnya peran tenaga guru dalam mengantarkan generasi muda untuk menjadi sumber daya manusia (SDM) yang berkualitas dan kompetitif sehingga mampu mewujudkan suatu kesejahteraan bersama. Sejarah peradaban dan kemajuan bangsa-bangsa di dunia membelajarkan pada kita bahwa bukan sumber daya alam (SDA) melimpah yang dominan mengantarkan bangsa tersebut menuju pada kemakmuran, tetapi ketangguhan daya saing dan keunggulan ilmu pengetahuan dan penguasaan teknologi (ipteks) bangsa tersebutlah yang berperan untuk meraup kesejahteraan. Bahkan SDM yang menguasai ipteks cenderung memanfaatkan teknologinya untuk menguasai SDA bangsa lain. Dalam hal ini pemerintah ingin mengejar ketertinggalan dengan menyempurnakan kurikulum KTSP menjadi Kurikulum 2013.

Kurikulum 2013 yang telah diimplementasikan pada tahun ajaran 2013/2014 menimbulkan pro dan kontra atas kurikulum tersebut masih terus terdengar. Banyak pihak yang mempertanyakan kesiapan implementasinya, pengembangan bahan ajarnya, evaluasinya, dan proses pembelajarannya di kelas. Perwakilan guru di Kota Kupang menilai implementasi kurikulum pendidikan 2013 akan menjadikan guru-guru seperti robot. Alasannya, semua Rencana Pelaksanaan Pembelajaran (RPP) dan Silabus disusun oleh pemerintah pusat. Sedangkan guru hanya siap untuk mengajar dengan RPP yang ada. Pada tahun ajaran 2013/2014, kurikulum baru akan diberlakukan untuk siswa kelas 1 dan 4, sedang siswa kelas 2,3,5, dan 6 masih menggunakan kurikulum lama. Beberapa pendapat pro dan kontra masih terus berlanjut, tapi mau tak mau kurikulum baru akan segera diimplementasikan secara bertahap. Seminar ini memperbincangkan masalah tersebut dari sisi pembuat kebijakan, ahli kurikulum, dan praktisi pendidikan/pengajaran.

Demikian yang dapat kami sampaikan terkait dengan esensi dari penyelenggaraan kegiatan “*Summit Meeting on Education The End of The Year 2013*”. Kami mengucapkan terima kasih banyak atas partisipasi dan dukungan dari berbagai pihak yang tidak dapat kami sebutkan satu per satu. Tanpa bantuan dan partisipasi rekan-rekan semua kegiatan ini tidak dapat terlaksana dengan baik. Semoga kegiatan ini dapat menambah kontribusi pada khasanah keilmuan khususnya pada Pendidikan Dasar dan memberi manfaat kepada para peserta dan pembaca. Amiin

Yogyakarta, 19 Desember 2013

Ketua Panitia

**Dr. Aninditya Sri Nugraheni, M.Pd.**



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## DEVELOPING A PROCESS-BASED IN SCIENCE LEARNING THROUGH PROBLEM BASED LEARNING TO WELCOME THE IMPLEMENTATION OF CURRICULUM 2013

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### ABSTRACT

Science learning essentially consists of the process aspect, product, and attitude. Nowadays, science learning tends to emphasize the only process aspect. Generally, teachers teach science concepts as transfer of knowledge and lack of activity involving students in the science learning process. Consequently, science learning solely sharpens the remembering and understanding aspects which are a low order of thinking. These conditions give less opportunity for students to construct knowledge from their learning experiences. Therefore, the reform of learning science from low order of thinking into higher order thinking needs to be done. One of the reform in science learnings that leads to higher order thinking is applying process-based in science learning. One of the alternative ways to realize the science learning that emphasizes the scientific process aspects and inquiry can be done with the Problem-Based Learning (PBL). PBL is not designed to help teachers convey as much as information to the students. It is designed primarily to assist students in developing thinking skills, problem solving and intellectual skills; to learn about a variety of adult roles by involving students in real or simulated experiences, and to create autonomous and independent learners.

**Keywords:** *process-based in science learning, problem-based learning*

### A. PREFACE

Education has a considerable contribution to the intellectual life of the nation and qualified human resources preparation. Therefore, reform in education should always be done to improve the quality of education. The quality of a nation can be identified from the quality of education. History shows a good nation has a good education. Indonesia as a developing country must work hard to improve the quality of education to be more superior and competitive in globalization era.

In the context of educational reform, there are three main issues that need to be highlighted, namely the renewal of the curriculum, improving the teaching quality and learning effectiveness. Education curriculum should be comprehensive and responsive to social dynamics, relevant, do not overload, and accommodate the diversity of needs and technological advances. The quality of learning should be enhanced to improve the quality of educational outcomes. Specifically, it should be found a strategy or approach for effective learning in the classroom and empowering students potential. They are the focus of education reform in Indonesia (Nurhadi Senduk and Gerrard, 2003).

Renewal and improvement of the quality of education in Indonesia are done continually.

Government, through regulation no.19 of 2005 on National Education Standards, improves education in Indonesia to meet national education quality. In the national education standards there are eight standards that must be realized, i.e. content, process, competency, teachers and educators, facilities and infrastructure, management, financial, and assessment. They serve as a basis for planning, implementation, and monitoring of education in order to realize the quality of national education.

First and urgent step to realize the educational standards is realization standards of quality processes in science learning. Essentially, learning science consists of process, product, and attitude aspects. Nowadays, learning science tends to emphasize the process aspects. Generally, teachers teach science concepts as transfer of knowledge and lack of activity involving students in the science learning process. Consequently, science learning solely sharpens the remembering and understanding aspects which are a low order of thinking. These conditions give less opportunity for students to construct knowledge from their learning experiences. Therefore, the reform of learning science from low order of thinking into higher order thinking needs to be done. One of the ways is applying process-based in science learning.

## **B. DEVELOPING A PROCESS-BASED LEARNING IN SCIENCE**

According to Gagne, learning is a process which enables organisms change their behavior due to experiences. Learning is a set of cognitive processes that change the nature of stimulation from the environment into a number of stages of information processing required to acquire new capabilities (Gagne and Margaret E. Bell Briggs in Gredler, 1994). The capabilities include intellectual skill, cognitive strategies, verbal information, attitudes and motor skills. These can be predicted as a result of learning. Those kinds of learning capabilities describe different actions or performance.

It can be concluded that learning is a process of change in a person's behavior due to experience in order to acquire the knowledge, skills and abilities gained from the process of cognitive and environmental stimuli. In order for learning outcomes as expected, the learning process should be effective.

Learning how to teach is a valuable educational activity. Educative value colors teachers and students interaction. Educative interaction occurs because the learning activities are carried out to achieve certain goals that have been formulated before (Syaiful, 1995). To achieve teaching objectives or competencies that have determined need the right classroom management.

A Good classroom management generates good teaching and learning interactions as well. Learning is a complex process, so it needs the right strategy in teaching to understand the characteristics of students. Student is a unique individual, so that not only cognitive aspects need to be developed, but also affective and psychomotor ones.

Wahidin (2006:9) states that in learning process students should not only have the scientific aspects, but also the skills and attitudes that can be used to solve problems in their life. This is relevant to the four pillars of UNESCO for education, i.e learning to know, learning to do, learning to be, and learning to live together.

Science learning activities can't be separated from a variety of constraints. Hopes that never fade away and always demanded is complete understanding of students in lessons that teachers delivered. But, how to realize an active and interesting learning is still a problem. To overcome these problems require innovative learning.

Innovation in the classroom needs to be done to realize the active, creative, attractive, and

effective learning. Therefore teaching paradigm of teacher must be changed, namely:

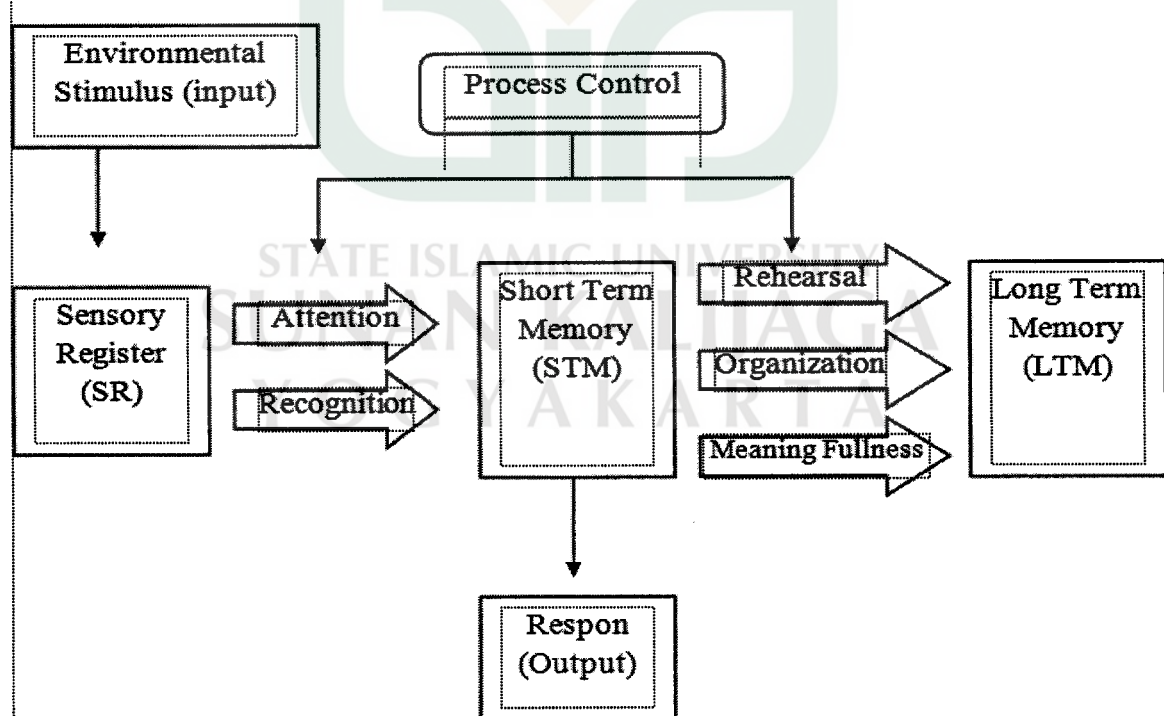
- From teacher centered into learner centered
- From competency-based learning into content-based learning
- From the product of learning into a process of learning
- From the summative evaluation into formative evaluation.

From that explanation, it can be concluded that process aspects need to get attention in learning process. Teachers should not only transfer knowledge to students, but also involve students' activities on how to construct or build the knowledge through the experience of learning.

Process based learning is a necessity to develop learning activities. Students must be trained how to construct knowledge and make it be more meaningful and stored in long term memory. This is in line with the opinion of Thomas M. Duffy and David H. Jonassen (1992), "Learning is active. Learning is an active process in which meaning is developed on the basis of experience".

In the view of constructivism, a human constructs or creates knowledge by trying to give meaning to the knowledge itself as appropriate experiences. That knowledge is a human construction and human gets new experiences constantly, so that is not stable. The understanding will be deeper and stronger after tested through new experiences. In this case the students need to be taught to solve problems, find useful thing, and express ideas that are useful for them.

Process-based science learning helps students store knowledge in long-term memory. Involving actively in learning process, students will get understanding easier. This is in line with the theory of information processing by Seifelt & Hufnung (1994) in Desmita (2005) shown in Figure 1.



**Figure 1.** Cognition Model of Information Processing Theory  
 [Adapted from Seifelt & Hufnung, 1994)

From the information processing model, there are several main components: an environmental stimulus (input) Sensory Register (SR), Short Term Memory (STM), Long Term Memory (LTM) and response (output). When a student receives lessons (information) from the teacher (Environmental stimuli/input) through the senses, it will be stored temporarily in the Sensory Register (SR), a first storage memory. Sensory Registers record the information as what is received initially, but the information will disappear or not appear in two small sections. Information which gets special attention, such as demonstrations, observation, interesting and innovative learning media will be transferred to Short Term Memory (STM), the second storage memory, but the ability of STM accommodate only limited information, so that there is some information lost, the information can be captured then moves to the LTM, as a third storage memory. Information stored will be more permanent in LTM because it has an unlimited capacity, which can be invoked any time.

With the concept of process-based in science learning, it is expected to be a meaningful learning. Students are actively involved in knowledge construction and their thinking skills are more honed.

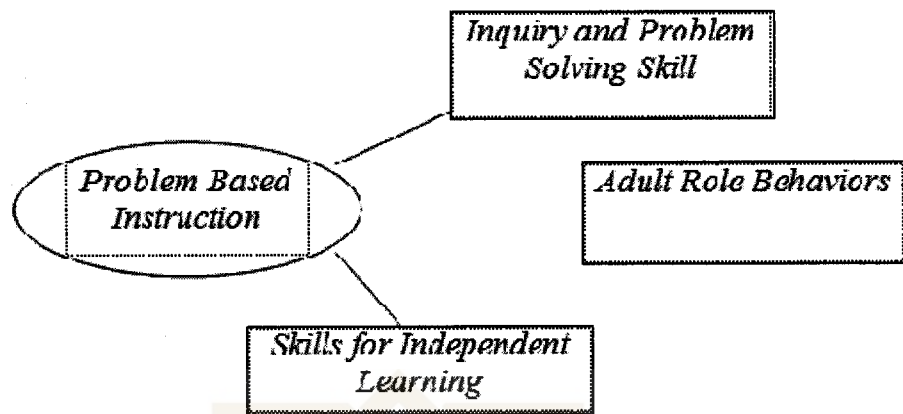
### **C. A PROCESS-BASED LEARNING IMPLEMENTATION THROUGH PROBLEM BASED LEARNING TO WELCOME THE IMPLEMENTATION OF CURRICULUM 2013**

Science learning in curriculum 2013 is more emphasis on inquiry and scientific approach. One of alternative ways realizing the science learning that emphasizes the aspects of the scientific process and inquiry can be done through problem based learning.

Problem-Based Learning (PBL) is a learning model that is oriented towards problem solving developed from John Dewey's theory. To be able to solve the problem is required thinking process. Arends (1997:156) states that "Problem based learning is used in promoting higher-level thinking in problem oriented situations, including learning how to learn". According to Arends, Problem-based learning is a learning model that is used to increase the level of thinking oriented towards problems, including learning how to learn.

Nurhadi and Agus Gerrard Senduk (200:55) argues that "The Problem-Based Learning (PBL) is a teaching approach that uses real-world problems for students to learn about critical thinking and problem solving skills and to acquire the knowledge and the essential concepts of the subject matter". In PBL learning, students are required to be more active (student center), able to think critically, and solve problems. Teachers only present the issues, ask questions, facilitate the investigation, and do dialogue. Nevertheless, PBL teaching can't be implemented without developing a classroom environment that allows the exchange of ideas openly by teachers. Generally, Problem-Based Learning (PBL) presents to students authentic and meaningful problems that provide convenience to the students to conduct the investigation and discovery.

PBL is not designed to help teachers convey as much as information to the students. It is designed primarily to assist students in developing thinking skills, problem solving and intellectual skills; to learn about a variety of adult roles by involving students in real or simulated experiences, and to create autonomous and independent learners. According to Arends (2001:350), an illustration purposes PBL shows in the image below:



**Figure 2. Learner Outcomes for Problem-Based Instruction**

There are 5 special characteristics of problem-based instruction or problem-based learning (Krajcik, et al, 1994; Slavin, et al, 1992, in Arends, 1997:157): (1) Driving question or problems, (2) Interdisciplinary focus, (3) Authentic investigation, (4) Production of artifacts and exhibit, and (5) Collaboration.

PBL characteristics can be described in detail in the following description: Driving question or problems, PBL organizes around the questions or issues that are important socially and personally rather than on a certain academic principles. PBL is addressed to the real situation, avoids simple answers, in which there is a wide range of solutions with a variety of interests.

Interdisciplinary focus, PBL is selected on issues involving multiple disciplines, such as pollution problems due to the use of fertilizers by farmers which will involve biological, economic, social, tourism and government.

Authentic investigation, PBL requires following authentic investigation and looking for a real solution of real problems. Students must analyze and define problems, develop hypotheses and make predictions, collect and analyze information, do an experiment (if necessary), and make conclusions.

Production of artifacts and exhibit, in the PBL students are required to construct a product in an artifact and exhibit that explains or shows the solution. Product could be a report, a physical model, or a computer program. This product was prepared by the students to be demonstrated to the others.

Collaboration, like the cooperative model, PBL is characterized by working with other people, in pairs or small groups. It occur the development of thinking and social skills.

Implementation of Problem Based Instruction (PBL) follows these phases (Arends, 2001:362):

**Table 1. Phase (syntax) Problem Based Learning**

<b>Phases</b>	<b>Teacher activities</b>
Phase 1: Orienting the issues to students	Teachers explain purposes of learning and all that needs to prepare, motivate the students to choose their own problem solving activities.
Phase 2: Organizing students to learn	Teachers help students determine and organize learning tasks related to the problem.
Phase 3: Guiding independent and group inquiry	Teachers encourage students to collect appropriate information, to conduct experiments and to seek explanations and solutions
Phase 4: Developing and presenting the artifacts and exhibits	Teachers guide students in planning and making a worthy artifact such as reports, videos, models, and help them work with other friends.
Phase 5: Analyzing and evaluating the process of problem solving	Teachers assist students in reflecting the investigation and the processes they use.

From that explanation, it shows that the students have the opportunity to engage actively in the learning process. Therefore, Problem-based learning (PBL) could be an alternative way for science teachers to develop students' skills to higher order thinking.

#### **D. CONCLUSION**

Innovation in learning needs to be done to improve the quality of education. Process based learning is an active learning oriented on engaging students actively in constructing knowledge from a series of learning experiences. A process-based learning will make learning will not just be learning or transfer knowledge. It will make learning process be more meaningful. This implementation will ultimately enhance student competence, so it will contribute to the achievement of process standards and national education standards.

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