



UNIVERSITAS
EKASAKTI,
PADANG



UNIVERSITI
KEBANGSAAN
MALAYSIA

PROCEEDINGS

Konferensi Internasional Pendidikan Global III

*International Conference
on Global Education III*

Tema / Theme

**Pembangunan Sumber Daya Manusia
Ke Arah Ekonomi Global**

*Human Resources Development
Towards Global Economy*

25 - 26 Mei 2015

**Auditorium Universitas Ekasakti - AAI
PADANG - INDONESIA**

*Organised by
Graduate Degree Program*

Universitas Ekasakti

Jl. Veteran Dalam No. 26 Padang

Telp. +62751-28878, 26770, Fax. +62751-32694

REVIEW OF PROBLEM BASED LEARNING AS INNOVATION INTRUCTIONAL

Oleh:

Hasan Maksum

Universitas Negeri Padang

Hasan_maksum@yahoo.id

Abstract

Quality education in the era of science and technology information today is a decisive factor in generating community that has the competence to be able to compete job market, due to the increasingly globalizing modern world (Suyanto, 2006). By implication, the individual who has a high knowledge and proficiency have a greater opportunity to gain the job (Azer 2008). Problem Based Learning which started since the era of Plato and Socrates, meet the demands of a new paradigm of education that emerged in the era of knowledge-based economy is the result of the explosion of information and globalization (Mossuto 2009). Barrow (1999) States the idea of PBL was introduced by Socrates (469-399 BC) which he believed that learning through their own business is one correct way of learning. PBL then entered the main stream of education in the 1960s, the medical school at McMaster University in Ontario Canada, introduced in the medical curriculum (Newfeld et.al., 1989). This was followed by the University of Maastricht, Netherlands in 1974 (Spencer, 1999). Then he has grown throughout North America and worldwide (Albanase & Mitchell 1993). PBM which was originally introduced to medicine program at McMaster university, Canada continues to be fixed and established to be carried out in sixty other health schools (Savery & Duffy 1995) and scattered in other areas such as trade, education, architecture, law, engineering, social work, and high school (Massuto 2009). He also implemented in other learning environments such as distance learning, learning through the internet, the Academy, middle school and elementary school (Wee 2004). So now, PBL is constantly being introduced to new areas more specific such as science and sports (Hui Shin et al. 2007), school police (Pare & Gillis 2007), aviation engineering (Wei & Jansen 2007), molecular biology (Nachamma et al. 2007), and radiography (Pope 2007).

Key point : Problem Based Learning and Innovation Instructional

A. INTRODUCTION

One of the educational critical issues encountered by the Indonesian people is the quality of education at each stage and type is close to the bottom. The results of a survey conducted by Education for All (EFA) Global Monitoring Report 2011 issued by UNESCO and launched in New York, showed that the index of education development in Indonesia ranks 69th out of 127 countries surveyed. Indonesia still lags behind Brunei, which is ranked 34th in the group of high achievements with Japan which reached the number one position in the world (Fasli Jalal, 2011). Various efforts have been made to advance the quality of national education, for example, the development of national and local curricula, improvement of teacher and lecturer competencies through training, procurement of student books and tools, procurement and improvement of educational facilities and infrastructure as well as improving the quality of school management. To this day, the quality of education, nevertheless, has not yet shown significant improvement (Suyanto, 2006).

The predicament of the low quality of education at each stage and type of education is one of the major quandaries in the field of education faced by the Indonesian people. The public and education experts strongly affirm that the quality of education in Indonesia is not in line with the expectations (Yusuf Syakir 2007). The low quality of education in Indonesia can be proven, among others, from the low minimum grade of graduation set for High School students who are prospective students for Higher Education. The last two years data signified that in 2009 the minimum passing grade of the National Final Examination (UAN) was 5.0 and in 2010 the minimum passing grade was 5.5 (Ministry of National Education, 2009). The decision of determining the minimum passing grade is relatively low, far from the highest score that can be achieved by students, namely, 10.0.

Chen (2008) states that a weakness in the teaching and learning process of science in schools is a failure to help students look for connections between new information and experiences between the school world and daily life. Lecturers can use various learning strategies so that teaching becomes more interesting. In general, student-centred teaching strategies such as conversation, contribution, role-playing, game simulation and problem-solving are more interactive (Burden and Byrd, 1994). The selection of teaching strategies that are appropriate for teaching is very much influenced by the changing times, the will of the community, the environment, the culture of the school, the situation of students as well as the lecturers who apply it. According to Graft and Kolmos (2003), in varying teaching so

that it can be influenced by student learning styles, Problem Based Learning (PBL) is one of the alternatives to active learning.

PBL is key to be used to triumph over the problem of low student achievement supported by Khariyah et al. (2005), who reported that PBL was carried out at the Faculty of Engineering, Universiti Teknologi Malaysia. shows a positive impression on students in terms of student achievement and thinking skills. Furthermore, PBL explained that it was used not only to increase students' knowledge and skills but also to support generic skills such as problem-solving skills, working in groups, communication skills and so on. Similar findings were reported for the medical field, Malaysian Nationality University (Edariah, 1990), chemical engineering at Kolej Taylor (Lai 2007) and the study of humanity at the University of Tun Hussin Onn (Hussain 2007). The success of the PBL approach has led to several higher education institutes in Malaysia developing the corresponding approach in their respective programs.

Furthermore, Barrows (1996) states that PBL rational is implemented because in the traditional method students have weaknesses in collaborative problem-solving skills and critical thinking. They only depend on the lecturer as a source of information and do not have awareness about their weaknesses. Students also do not explore the knowledge they are learning. The traditional approach only prepares students who are not critical and passively learn without any hindrances and they do not understand the information conveyed. Indeed, PBL has the potential to resolve the weaknesses inherent in traditional approaches. Furthermore, according to Savin-Baden (2003), quantitative studies conducted by Warbuton and Whitehouse (1998); Pau et al. (1999) and Blight et al (2000) to see the experience of students in PBL, generally shows students are more satisfied to gain experience in PBL compared to conventional programs.

From the description above, it can be noticed that the PBL is significantly implemented instructional processes seeing that the PBL can potentially develop various skills such as problem-solving skills, critical thinking skills, communication skills, investigations and collaborative skills (Chen 2008), the experience provided can meet the demands of the goals education and useful for solving problems in real life.

However, the results of a different study were stated by Mohd Khairuddin Abdul Karim (2004) who used the Barrow PBL Model approach to six graduate students for Management and Organizational subjects using a case study draft. The instruments used were interviews and experimental instrument set to assess student achievement stages. The results of his study found no significant differences in terms of student achievement before

and after using the PBL method. However, once the subject of the study states that the method of solving problems using PBL is better understood. In a study by Norsyahidan Mohd Yusof (2004) of 34 lay students in KUiTTHO, he used a quasi-experimental form design that distributed samples to two groups, namely the conventional collection and the PBL collection. The results of his study showed no significant difference in terms of student academic achievement for the two learning methods. The three variables studied show that PBL is significant in increasing critical thinking, creative thinking and group work skills.

The description disclosed that there are still contradictions obtained from the application of PBL in learning between the results of the investigation of Khariyah et al. (2005) and Norsyahidan Mohd Yusof (2004), so those concrete conclusions may still be studied. On the other hand, Savin-Beden (2003) also emphasized that it is not important to compare groups using PBL methods with conventional methods because there are many achievements which indicate that the conventional methods are better than PBL and no less that there are PBL methods that show better performance compared to conventional methods. What is more important, according to him, is how students may be arranged programs to gain knowledge, knowledge, understanding, and more meaningful experiences in these students through the PBL method. So, for this reason, the PBL method through various studies needs to be done.

B. DISCUSSION

1. Teaching and Learning

Simply put, Robbins defines learning as the process of creating a relationship between something (knowledge) that is already understood and something (knowledge) that is new. From this definition the learning dimension contains several elements, namely: 1) relationship creation, 2) something (knowledge) that has been understood, and 3) something new knowledge. So the meaning of learning here is not departing from something that is completely unknown (zero) but is the linkage of two existing knowledge with new knowledge.

The Anthony Robbins's view is in line with what was stated by Jerome Bruner in (Lambros, 2002), that learning is an active process in which students construct (construct) new knowledge based on the experience/knowledge they already have. In the view of constructivism learning is not merely a transfer of knowledge outside of itself, but rather on how the brain processes and interprets new experiences with the knowledge they already

have in a new format. The development process can be through assimilation or accommodation (Levin 2005).

The complete definition of learning was actually put forward by Slavin (1997), which defines *"Learning as a change in an individual caused by experience. Change caused by development (such as growing taller) are not instance of learning. Neither are characteristics of individual that are present at birth (such as reflexes and responses to hunger or pain). However, human do so much learning from the day of their birth (and some say earlier that learning and development are inseparably linked)".* Furthermore, Slavin also put forwards *"Learning takes place in many ways. Sometimes it is intentional, as when students acquire information presented in a classroom or when they look something up in the encyclopedia. Sometimes it is unintentional, as in the case of the child's reaction to the needle. All sorts of learning are going on all the time."* Learning is generally defined as changes in individuals that occur through experience and not because of the growth or development of the body or a person's characteristics from birth. Humans learn a lot from birth and some even argue before birth, that between learning and development is very closely related.

Arends (1998) affirmed, *"The term teaching model refer to particular approach to instruction that includes its goals syntax, environment, and management system,"* The term of the *teaching model* refers to a particular learning approach including its objectives, its syntax, its environment, and its management system. Furthermore according to Arends (1998) states that the learning model consists of a direct learning model or *direct instruction, cooperative learning, problem based learning, discussion, and learning strategy.*

Problem Based Learning Strategies (PBLs) received attention especially in the field of medicine. This learning strategy arises rather than the criticism that students do not have the effort to solve complex problems due to lack of training in high mental processes such as analysis, synthesis, and assessment (Tan 2003). The strengths associated with this strategy are the emphasis on understanding something that is student, not facts. PBL is said to be able to improve learning towards self-reliance. However, there is still critical that this strategy is less memorable used for students who are weak, especially in giving students a solid conceptual principle about something headline. The shortage of qualified facilitators (Tan, 2004b) is among the problems faced in implementing PBL. The triumph of this strategy depends on the skill of the facilitator in controlling the conversation session so that all findings made by students are appropriately explained and at the same time ensure the assignments made are on the correct foundation.

The definition discloses that the learning model is a conceptual framework that illustrates systematic procedures in coordinating learning experiences to achieve learning goals, which serve as lecturer guidelines in designing and implementing learning activities, managing learning environments and managing classrooms. In designing and implementing learning required learning devices that can be compiled and developed by lecturers. The tools include lecturer books, student books, students' worksheets, media aids such as computers, transparency, films, guidelines for implementing learning, such as curriculum and others.

2. Problem based Learning

Problem Based Learning (PBL) began in the era of Plato and Socrates, which had asked students to assess, search for new information and ideas and discuss them during learning activities (Mossuto 2009). Barrow (1999) states that the PBL idea has been introduced by Socrates (469-399 BC) in which he believes that learning through one's own efforts is a true way of learning. PBL then entered the mainstream education stream in the 1960s at the Medical School, Universiti McMaster in Ontario Canada, introducing it into the medical curriculum (Newfeld et.al. 1989). This was followed by Maastricht University, the Netherlands in 1974 (Spencer 1999). Then it has expanded throughout North America and throughout the world (Albanase & Mitchell 1993).

In a simple phrase, Problem Based Learning (PBL) is a student-centred learning method, using real-life problems and situations in daily life (real-life) to encourage student learning. Chen (2008) states that Problem Based Learning (PBL) meets the demands of a new paradigm of education that emerged in the economic era based on knowledge outcomes rather than the explosion of information and globalization. PBL, which was initially introduced for medical programs at McMaster University, Canada, continues to be improved and strengthened to be implemented in sixty other medical schools (Savery & Duffy 1995) and disseminated in other fields such as business, education, architects, law, engineering, social work, and high school (Massuto 2009). It is also implemented in other learning areas such as distance learning, online learning, colleagues, secondary school, and low school (Wee 2004). So now, PBL continues to be introduced to new fields that are more specific such as sports science (Hui Shin et al. 2007), police practice (Pare & Gillis 2007), air force technical engineering (Wei & Jansen 2007), molecular biology (Nachamma et al. 2007), and radiography (Pope 2007).

PBL allows students to learn the basic principles of a subject or competency in the context of their importance, to solve real situations and problems (Hmelo-Silver 2004; Barrows and Tomblyn 1980). Students analyze problems and solve problems effectively and efficiently. All of this is done by practising, using, and developing mastery skills, group collaboration skills, critical thinking skills, and self-study skills that later refer to problem-solving. The success of PBL depends on students to combine all of these skills under the facilitation of a facilitator or the lecturer. The level of attachment they have to learn has a great effect on the end result to present and provide any solutions or problems they face in real life.

The description seems clear that learning with the PBL model begins with a problem (can be raised by students or lecturers), then students deepen their knowledge of what they already know and what they need to know to solve the problem. Students can choose problems that are considered interesting to solve so they are motivated to play an active role in learning. Problems that are used as the focus of learning can be solved by students through group work so as to provide students with diverse learning experiences such as collaboration and interaction in groups, as well as learning experiences related to problem-solving.

a. Definition of PBL

Problem Based Learning (PBL) is a learning strategy that uses problems (problems) as a first step in integrating new knowledge (Suradijono, 2004). Paulina et al. (2001) states that "PBL" is learning that focuses on presenting problems (simulated or real problems) to students, then students are asked to find a solution through a series of studies based on theories, concepts, principles and students from various fields of science". Another opinion stating that *PBL is a pedagogical strategy of "active learning" often used in higher education, but it can be adapted for use in K-12 education.* In other words, PBL is a pedagogical strategy and active learning that is often used in higher education but can be adapted for use in basic education.

On the other hand, Bond and Felitti (2003) state that PBL is a new philosophy in teaching and learning. This means that lecturers are not the only source of knowledge or reference by students. Indeed, students can get knowledge and information from other sources. According to him, PBL helps students reach a specific learning phase to make them capable and camping. For example, students can adapt to change, can solve problems with critical and creative thinking and look for cause and effect about a phenomenon. In addition,

students can also get to know their strengths and weaknesses and can work together in a memorable way in groups. In the series, PBL is said to help improve their learning more memorable. According to Barrows (2000), PBL is also a system of teaching and learning that builds simultaneously between problem-solving strategies and the principles of knowledge and skills in which students play an active role in problem-solving. Usually, the problems raised are ill-structured problems taken rather than real problems in life.

From some of the above opinions, it can be argued that Problem-based Learning is a learning strategy that presents real-world problems as a first step in collecting and integrating new knowledge through working cooperatively in developing high-level thinking skills and complex problem-solving skills rich in context and to obtain essential knowledge and concepts from student learning material.

b. PBL's Strategy

In the world of education, a strategy is defined as a plan, method, or series of activities designed to achieve a particular educational goal (Davidson and Worsham, 1992). On the other hand, learning strategies can also be interpreted as a plan that contains a series of activities designed to achieve certain educational goals. To implement a particular strategy requires a set of learning methods (Gulo, 2002), one strategy is used several learning methods (Sanjaya, 2007).

To determine the right learning strategy to use, it is important to note what goals are to be achieved, learning material and student characteristics. Each strategy has its own characteristics, as stated by Killen (1998): *"No learning strategy is better than other in all circumstances, so you have to be able to use a variety of learning strategies, and make rational decision about when each of the learning strategies is likely to most effective."* Therefore, educators need to understand the principles of using learning strategies, namely: oriented towards goals, activities, individuality, and integrity of students (Sanjaya, 2007).

Based on the description above it can be stated that the PBL strategy involves several methods such as the problem-solving method, the method of group discussion / cooperative learning, and developing individual responsibility (individual accountability) through independent learning, and developing various skills as *problem-solving skill, critical thinking skills, communication skill, research and collaboration skills* (Chen 2008).

c. Basic Concepts of PBL

PBL is learning that is focused on small groups with a facilitator and supervises a specific, regular step in solving problems. Barrow has started the PBL taxonomy in which the PBL method is categorized based on effectiveness in learning objectives. PBL has been regarded as a learning process in which students from low school ranking up to the high ranking education program are presented with problems that try to apply them to the skills of inquiry, problems, giving cause and critical thinking as being individually or in groups in an effort to find a solution. The problem is used as a principle to motivate students to learn skills and knowledge. This teaching method is student-centred and based on inquiry (Schallert 2006; Schwartz et al. 2001). According to Lambros (2004), PBL is a teaching method based on the principle of using problems as a starting point for gaining new knowledge. Learning effectiveness centres on the use of problems that create learning through new experiences, gaining new content and strengthening existing knowledge. The environment of student learning is in the real world or they recognize.

PBL is often confused with learning based on project (project-based learning), problem-solving learning (Savin Beden & Major 2004). Project-based learning contains more structured problem-solving tasks provided by the facilitator or tutor. Students play a role in preparing a project or becoming a member of a group to build strategies towards solving problems. Problem-solving learning is also carried out through step-by-step supervision of the method of solving logical problems provided by a lecturer. Students in problem learning get knowledge in the initial ranks by designing problem-solving activities (Savin Beden & Major 2004).

d. The Nature of Problems in PBL

The problem presented in the PBL class is unstructured, complex, and realistic. Problems require students to determine what assumptions are needed, why, what information is related and what steps are needed for problem-solving (Duch Groh et al. 2001). Students need to choose the information available because not all information obtained related to problems in PBL is designed at various ranks and given to a collection at a certain time during the problem-solving process. At the beginning of rank, students are confronted with problems to motivate students, activate existing knowledge, and spark learning skills in the process of explaining, understanding, and solving problems (Schmidt 1993).

Problems in PBL are open-ended problems. This means that the answer to the problem is uncertain. Every student, even lecturer, can develop possible answers. Thus, PBL provides an opportunity for students to explore collecting and analyzing data in full to solve the problem at hand. The goal to be achieved by PBL is students' skills to think critically, analytically, systematically, and logically to find alternative solutions to problems through empirical data exploration in order to foster scientific attitudes.

e. Characteristics of PBL

According to Ronis (2001), the initial stage in implementing PBL is whether there is a problem that will be solved by students (determining whether a problem exists). This is supported by Wina Sanjaya (2007) saying that to implement PBL, educators need to choose student material that has a problem that can be solved. In line with that Ronis (2001) suggested that *teacher can begin locating problem by looking through textbooks, curriculum guides, newspapers, and magazines to find situations, dilemmas and issues that need resolution*. What is more, Ronis (2001) states that *“in the problem design phase, the problem may be voiced as question, a case study, an example, a charge, a hypothesis, or a situation”*? Therefore, the problems given to students can be in the form of questions, case studies, examples, orders, hypotheses or problem situations that come from various sources.

The characteristics of PBL are students faced with challenges, open-ended problems, working in small groups; educators play a role as facilitators of learning. In addition, through PBL, students will be able to develop various skills such as critical thinking skills, analysis, solving complex context-rich problems and developing verbal and written communication skills and being able to use various learning resources such as books, journals, reports, online information, etc. There are seven steps in implementing PBL, namely: clarify, define, analyze, review, identify learning objectives, self-study, report, and synthesis. There are four key factors for the effective process of implementing PBL, namely Ideas, Facts, Learning Issues and Action Plans.

f. Implementation of PBL in Various Countries

According to Wee (2004) and Menkher Manjas (2009), there are various models for implementing the PBL process. The following table presents examples of PBL process models used by several educational institutions.

Tabel 1. Examples of Problem Based Learning Process Models

NO	INSTITUTION	PHASES OF PBL
1	Temasek Polytechnic, Singapore	<ol style="list-style-type: none"> 1. Determine learning groups 2. Knowing the problem 3. Exploring ideas 4. Recognizing the topic of learning 5. Doing independent learning 6. Integrating with knowledge 7. Providing Feedback and responses
2	Republic Polytechnic, Singapore	<ol style="list-style-type: none"> 1. Showing less structured problems 2. Thinking and activating relevant knowledge 3. Identifying the known and known 4. The lecturer/instructor guides students to the learning objectives and important issues. Students study independently 5. Collaborating with group members 6. Sharing understanding of knowledge is used to refer to the initial problem 7. Problem-solving 8. Performing feedback and reflection
3	Maastricht University Netherlands	<ol style="list-style-type: none"> 1. Getting to know the unknown terms and concepts of the problem 2. Formulating the problem 3. Analyzing the problem, provide an explanation and activate relevant knowledge Assess the explanation and provide a description of the problem process 4. Designing learning issues 5. Doing learning independently 6. Collaborating in groups for findings and descriptions
4	Southern Illinois University (SIU) School of Medicine Secondary, United States of America	<ol style="list-style-type: none"> 1. Introducing group members 2. Determining the learning environment 3. Setting learning goals 4. Finding problems 5. Identifying facts 6. Exploring and observe ideas 7. Identifying the main content of learning 8. Making a design of what will be done 9. Providing basic learning outcomes 10. Identifying learning sources 11. Doing learning independently 12. Assessing learning resources 13. Answering problems based on new knowledge gained 14. Resolving the problem 15. Criticizing problems individually and through peers

NO	INSTITUTION	PHASES OF PBL
5	University Samford, Alabama	<ol style="list-style-type: none"> 1. Students dealing with problems 2. In groups, students determine relevant knowledge and recognize the nature of the problem 3. Students explore what problems they don't know about 4. Students compile a series of problems and identify the sources needed 5. Students gather information to solve problems 6. The facilitator guides by asking questions
6	McMaster Chemistry - McMaster University	<ol style="list-style-type: none"> 1. Observing problems, proposing hypotheses and 2. identifying learning issues 3. Solving problems based on what is known 4. Identifying the knowledge needed to solve problems 5. Determining the main points of learning and their objectives and identify sources of independent learning 6. Collaborating with other group experts 7. Solving problems with knowledge 8. Composing responses
7	The University of Newcastle, Australia	<ol style="list-style-type: none"> 1. Students are given a problem 2. Understanding problems through the internet 3. Recognizing the problem 4. Recognizing learning issues 5. Carrying out learning independently 6. Using old and new knowledge to solve problems, compile written reports. Conduct self-assessment with problem criteria through "what", "why" and "how" questions, submit reports 7. Getting the facilitator's response 8. Students submit reports based on responses
8	Queensland University of Technology, Australia	<ol style="list-style-type: none"> 1. Determining the initial response to the problem, determine terminology and concepts, define the problem and validate the scope of the problem 2. Using relevant knowledge 3. Designing learning objectives 4. Conducting a study of the objectives of learning independently 5. Reporting and test the information obtained (combining all information) 6. Seeing additional issues 7. Reviewing everything, synthesizing and concluding

NO	INSTITUTION	PHASES OF PBL
9	Gimmer University, United Kingdom	<ol style="list-style-type: none"> 1. Providing the same problem to two groups 2. One group acts as a consultant and one to solve problems 3. One more group acts as a client and uses criteria to assess the issue 4. Preparing a report for each group 5. Meeting between the two groups
10	Stanage Edge to University of Sheffield	<ol style="list-style-type: none"> 1. Providing students with real-world problems 2. Analysis of the problem 3. Identifying the main content of learning 4. Controlling independent learning 5. Discussing 6. Resolving the problem
11	Lembert University, United Kingdom	<ol style="list-style-type: none"> 1. Introducing PBL - Students have a learning journal 2. Giving assignments to students with course guides containing rational contents of the course content 3. Associated with problems in groups and individually 4. Conduct verbally and verbally deliver reports 5. Doing an assessment independently and through peers

Sumber: Wee (2004)

12	Andalas University (Medical School) Method "Seven Jump "	<ol style="list-style-type: none"> 1. Clarifying unknown terms 2. Defining the problem 3. Thinking of possible hypotheses or explanations 4. Organizing explanations into temporary solutions 5. Setting learning goals 6. Collecting information and personal studies 7. Sharing the results of information gathering and personal study
----	---	--

Source: Detty Aryani (2016)

g. Previous Studies of PBL

Sungur et al. (2006) have conducted an investigation into the PBL's impression of skills and knowledge related to the human permeation system for school students. Through random sampling techniques, 30 students of 10 students were given PBL treatments while 31 students of 10 students were assigned to receive traditional biology teaching that

involved a period of four weeks. Through this study, they found PBL students exhibited better achievement compared to students who followed traditional teaching from the aspect of the effort to compile and integrate knowledge related to biology topics with topics on different subjects such as chemistry. Students with regard were also found to be more appreciative of group learning and aware of the importance of applying knowledge in real-life situations for understanding purposes. However, students regarding give an explanation that they need more guidance than teachers to undergo PBL. Because not many PBL studies have been carried out at school ranking, Sungur et al. (2006) argued that the achievement of this study added value from the aspect of the method and the suitability of PBL carried out in the ranking of secondary schools. Some of the reserves put forward by Sungur et al. (2006) based on the study findings that the role of the teacher is important during running PBL for school students, the implementation of PBL supports the interests of the student-centred teaching method. In addition, the problem of teaching a dense lesson has the potential to be overcome through the implementation of PBL because this teaching method is actually designed so that students undertake independent learning that may be carried out outside of school time (Sugur et al. 2006).

Tiwari et al. (2006) in their study made a comparison between the impression of PBL with the impression of a lecture approach to the development of critical thinking skills of nursing students. By involving a three-year study period for students in their studies completing the study, the study sample involved 40 students starting from the first year of nursing following PBL and 39 students starting from the first year of nursing following the traditional lecture approach. The study of investigative questions shows that PBL students exhibit a better improvement in terms of motivation to value and use critical thinking skills compared to students who take the college approach. However, analysis of the subscales shows that each change in each subscale of critical thinking skills requires a different time period. Continuing with mutual discussion, PBL students reported that they felt happy and eager to be actively involved during the learning process especially during the conversation activity in the collection. Based on the results of this study, Tiwari et al. (2006) suggest that how students engage in learning activities determines how students' thinking skills develop. Indeed, they concluded that PBL activities sought to give a significant impression on the development of students' critical thinking skills.

Massaro et al. (2006) examined the PBL's orderliness as a continuing education training method for pharmacists who are in the world of work. Using the case study design, PBL treatments were provided to pharmacists involved with the study for 12 weeks.

Massaro et al (2006) found that PBL can develop the skills needed by pharmacists regarding critical thinking, directed learning, communication and collaboration in one army. However, it was found that pharmacists were concerned about tending to focus on problem-solving while they should pay attention to the problem as opening up learning opportunities to improve their professionalism as a qualified pharmacist. Based on this study, Massaro et al. (2006) suggested that the problems that were reformed need to involve deep learning and study participants need to be informed about the principles of PBL so that they can adjust to PBL.

Downing et al. (2007) in their study tested PBL's impression of metacognition of student housing positions and bookie design. This is done by comparing the development of metacognition between 33 first-year students majoring in housing and designing a full-time bookie who follows PBL and 33 first-year students majoring in housing and designing a half-time bookie who follows a non-PBL program. Equality between the two groups is determined based on gender, place of residence and loose academic achievement. The study showed that the PBL collection showed a higher increase in metacognition compared to the non-PBL collection. Based on the results of this study, Downing et al. (2007) suggested that metacognition and self-reflection need to be developed as skills before they can be used as strategies that can be consciously guarded. Therefore Downing et al. (2007) holds that PBL seeks to develop metacognitive skills with the condition that PBL is carefully designed and defined and that appropriate support can be provided for students undergoing PBL.

Meanwhile, Ramp and Guffey (1999) also summarize several models that are currently used for teaching metacognition. The models concerned tend to fall into two categories: isolation and salvage. Separate techniques (such as taking notes and skills to face examination) are separate techniques from the curriculum. This technique is questioned because it is considered not memorable in the aspects of transfer and its usefulness in a complex and authentic learning environment. The rescue technique also links metacognition to the context of authentic curriculum and assignments. This technique is criticized because it is not suitable for young students, students who are less intellectually mature, who are assumed to be unable to link the content of knowledge with metacognitive techniques (Ramp & Guffey 1999). However, Davidson and Sternberg (1998) make the conclusion that there is a flow of change from the technical teaching of metacognition in isolation to techniques that bring metacognition into the available curriculum. The salvation model for teaching metacognition basically embraces the following characteristics: merging with the main teaching, using the content of available curriculum content and modelling for various

assignments so that transfer of skills is permissible. The metacognitive inventory used is the result of an adaptation of the Metacognitive Awareness Inventory developed by Schraw and Dennison (1994). The definition of metacognition awareness used by Saemah is that metacognition consists of two types of skills, namely knowledge about cognition, and regulation of cognition. Three changes in knowledge about cognition have been measured, namely declarative knowledge, procedural knowledge, and situation knowledge. Five changes in the regulation of cognition have been measured, including design, monitoring, assessment, debugging strategies (strategies used to improve understanding and mistakes), and information management strategies. The results of his study show that there is a relationship between metacognition awareness and academic achievement of students. However, the study sample involved university students at one of the local universities and did not specifically address the specific domain of the discipline.

C. FORMULATION

Problem Based Learning (PBL) grown rapidly which is applied by various educational institutions in various disciplines and makes PBL a variety of versions. This can be seen continuing the PBL definition expressed by certain parties especially if the PBL definition is related to the PBL implementation procedures. However, all of them share almost the same characteristics, namely the use of less structured problems as a starting point for learning, giving more responsibility to students in learning and the role of the teacher or educator as a facilitator in learning. Challenges for perpetuating the characteristics of the PBL principle to be implemented in various educational contexts or different scientific disciplines can be dealt with by using action studies. The importance of action studies to lecturers as investigators is aimed at designing, acting, observing and reflecting on their practices and teaching and learning methods. Furthermore, it is also part of improving the teaching and learning process for both parties, lecturers and students. In addition, the PBL learning approach has been found to be memorable since the time it was introduced in learning. For peer group guidance, which is now the foundation of communication and learning between students, especially, is found in providing opportunities for exploration and improving achievement in learning.

D. REFERENCES

- Akin, A., Abaci, R., & Cetin, B. 2007. The validity and reliability of the Turkish version of the metakognitive awarness inventory. *Educational Science: Theory & Practice* 7 (2) . 671-678.
- Barrows, H & Tamblyn, R 1980, *Problem-based learning: An approach to medical education*, Springer, New York.
- Barrows, H.S. 2000. *Problem based learning applied to medical education*. Springfield Southern Illionis Universiti School of Medicane.
- Barrows, H. S. 1996. *Problem-Based Learning In Medicine And Beyond: A brief overview. New Directions for Teaching and Learning*, 68, 3-12.
- Boud, D & Feletti, G. 1991. *The challenge of problem based learning*. New York: St Martin's Press.
- Busfield, James and Ton Peijs. (2006). *Learning Materials in a Problem Based Course*. Higher Education Academ: UK Centre for Materials Education, Guides
- Detty Aryani. 2016. *Sistem Pembelajaran di Fakultas Kedokteran*. Padang: Fakultas Kedokteran Universitas Andalas, Bagian Pendidikan Kedokteran.
- Gagne, R.M., Wager, W.W., Golas, K.C & Keleer, J.M. 2005. *Principles of Instructional Design. 5th Edition*. Singapore: Wadsworth Thomson Learning Inc.
- Graaff, E. dan A. Kolmos. 2003. Characteristics of Problem-based Learning. *International Journal of Engineering Education*. 19(5): 657-662.
- Harpez, V. 2003. Teaching and learning in a community of thinking. *Journal of Curriculum and Supervision* 20 (2): 136-157.
- Hall, T. 2006. *Problem-based Learning for Technologies*. Symposium I: Curriculum Development. Transnational Symposium on Technical-Vocational Education and Training (TVET). 20-21 April.
- Hong, N.S. 1998. The relationship between well-structured and ill structured problem solving in multimedia simulation. *Thesis Ph.D.* The Pennsylvania University.
- Hoopes. 1979. *Oral History: An Introduction for Students*. The University of North Carolina Press, Chapel Hill.
- Hussain Othman. 2007. Experiential learning in humanities study: A case study on the implementation of problem based learning in tertiary education. *Proceedings of 2007 International Problem Based Learning Symposium*, hlm.82.
- Kelsie A. Dadd. 2009. using problem based learning to bring the workplace into the classroom. *Journal of Geoscience Education* 57 (1): 1-10.

- Killen, Roy. 1998. *Effective Teaching Strategies: Lesson from Research and Practice*, second edition. Australia, Social Science Press.
- Kiesler, C.A., Collen, B.E., & Miller, N. 1969. *Attitude change: a critical analysis of theoretical approach*. New York: John Wiley and Son
- Khairiyah Mohd Yusof. 2005. *Problem-based Learning: A Universiti Teknologi Malaysia Experience*. Active Learning Task Force. Universiti Teknologi Malaysia. Publications.
- Lambros, A. 2004. *Problem-based Learning in Middle and High School Classroom: A Teacher's Guide to Implementation*. California: Corwin Press.
- Lewin, K. 1946. Action research and minority problems. *Journal of social Issues*, 2, 34-36
- Massaro, F.J., Harrison, M.R., & Soares, A. 2006. Use of problem based learning in staff training and development. *American Journal of Health-Systemn Pharmacist* 63 (Nov 15):2256-2259.
- Maxwell, N.L., Mergendoller, J.R., & Bellismo, Y. 2005. Problem-based learning and high school maroeconomics: a comparative study a instructional methods. *Journal of Economic Education* 36 (4):315-331.
- McDonagh, C. 2006. Towards theory of a professional teacher voice: How can I improve my teaching of pupils with specific learning difficulties in the area of language (atas talian). <http://www.jeanmcniff.com/sallyabstract.html>. (3 Sep 2006).
- Moston, Muska. 1972. *Teaching from Command to Diacovery*. California: WadsworthPubliahing Company.
- Mossuto, Mark. 2009. Probelm Based Learning: Student Engagement, Learning and Contextualised Problem-Solving. *National Centre for Vocational Education Research (NCVER)*,
- Nachamma Sockalingam, Screne, C Asheley, C. Jasmine, H. Trence, C. 2007. The PBL experience (molecular biology). *roceedings of 2007 International Problem Based Learning Symposium, hlm. 307*.
- Neufeld, V.R, C.A. Woodward, et. al. 1989. The McMaster Program: A case study of in medical education. *Academic Medicine* 64: 423-432.
- Novak, J.D. and Gowin, D.B. 1985. *Learning How to Learn*. Cambridge: Cambridge University Press
- Norman, GR & Schmidt, HG. 2000. 'Effectiveness of problem-based learning curricula, theory, practice and paper darts', *Medical Education*, vol.34, pp.721-8.
- Olson , J. and Pratt, J. 2000. *Instructuional cycle. teaching children and adolescents with srecial needs*. New York: Prentice – Hall,

- Palinscar, A.S. 1986. The role of dialogue in providing scaffolded instruction. *Educational Psychologist* 21 (2):73-98
- Pare, S., & Gillis, L. 2007. PBL in law enforcement training: from design, delivery to evaluation, and the use of technology (e-learning) to support it. *Proceedings of 2007 International Problem Based Learning Symposium*, hlm. 358.
- Paulina, P et all. 2001. *Konstruktivisme Dalam Pembelajaran*. Jakarta: PAUPPAI Dirjen Dikti Depdiknas.
- Paul, R. W. 1990. Critical and reflective thinking: A philosophical perspective. Dlm. B.F. Jones & L. Idol (pnyt). *Dimension of thinking and cognitive instruction*. Hillsdale, Nj: Lawrence Erlbaum Associates.
- Perterson M. 1997. *Skills To Enhance Problem-Base Learning*. University of Delaware, College of Health and Nursing Sciences. <http://www.utmb.edu/meo/> Retrieved 6 Pebruari 2009
- Pope, E. 2007. Possibly better left?-PBL perspectives of undergraduate radiography students in Wales. *Proceedings of 2007 International Problem Based Learning Symposium*, hlm. 20-21.
- Rampp, L.C. & Guffey, J.S. 1999. Metakognition: A new implementation model for learning. (*ERIC Document Reproduction Service No. ED 44088*).
- Romiszowsky, A.J. 1981. *Design Instructional System: Decision Making in Course Planning and Curriculum Design*. New York: Nichols Publishing.
- Ronis, Diane. 2001. *Problem Based Learning for Math and Science Integrating inquiry and Internet*). USA: Sky Light training and Publishing Inc
- Savin-Beden, M., & Major, C.H. 2004. *Foundation of Problem Based Learning*. Berkshire, England: Open University Press.
- Schmidt, H. 1993. Foundation of problem based learning: Some explanatory notes. *Medical Education* 27: 422-432.
- Schwartz, P., Mennin, S., Webb, G. 2001. Problem based learning case studies. *Experience and Practice*. Sterling, V.A. Stylus Publishing Inc.
- Selmes, I. 2005. *Improving Study Skill (Changing Perspectives in Education Series)*. Denver: Thrift Lift.
- Savery, J. R. and Duffy, T. M. 1995. *Problem Based Learning: An Instructional model and its constructivist framework*, Educational Technology
- Sungur, S., Tekkaya, C. & Geban, O. 2006. Improving achievement through problem based learning. *Journal of Biological Education*. 40 (4): 155-160.

- Suradijono, SHR. 2004. Problem-Based Learning: Apa dan bagaimana? . *Makalah Seminar Penumbuhan Inovasi Sistem Pembelajaran: Pendekatan Problem Based Learning berbasis ICT (Information and Communication Technology)*, 15/5/2004. Yogyakarta.
- Tanner, D. & Tanner, L. 1995. Curriculum development: They into practice. Ed. Ke- York: Merrill.
- Tan, O. S. 2003. *Problem-based Learning Innovation: Using Problems to Power Learning in the 21st Century*. Singapore: Thomson.
- Tiwari, A., Lai, P., & Yuen, K.. 2006. A Comparison Of The Effects Of Problem-Based Learning And Lecturing On The Development Of Students' Critical Thinking. *Medical Education*. 40. 547-554
- Torp, L. dan S. Sage. 2002. *Problems as Possibilities: Problem-based Learning for K-16 Education*. 2nd Edition. Alexandria: Association for Supervision and Curriculum Development.
- Wee, K. N. 2004. *Jump Start Authentic Problem-based Learning*. Prentice Hall: Pearson Publication.
- Zaharatul Laili Abdul Rahim. 2006. *Pembelajaran Berasaskan Masalah bagi Subjek Pengajian Kejuruteraan Elektrik dan Elektronik di Sekolah Menengah Teknik*. Tesis Ijazah Doktor Falsafah. Universiti Kebangsaan Malaysia: Fakulti Pendidikan.



UNES
Universitas Ekasakti



**UNIVERSITI
KEBANGSAAN
MALAYSIA**
*The National University
of Malaysia*

Serial No: 124/2015/ISGE III

Certificate Of Honour

Presented To

HASAN MAKSUM

For Outstanding Contribution As

PRESENTER

**INTERNATIONAL CONFERENCE ON GLOBAL
EDUCATION III**

"Human Resource Development Towards Global Economy"

UNES INDONESIA, MAY, 25 - 26th 2015

**UNIVERSITAS
EKASAKTI PADANG**

**PROF. DR. H. ANDI MUSTARI PIDE,
S.H**

**UNIVERSITI
KEBANGSAAN MALAYSIA**

PROF. DR. LILIA HALIM



UNIVERSITAS
EKASAKTI
PADANG



UNIVERSITI
KEBANGSAAN
MALAYSIA

Booklet Abstract

INTERNATIONAL CONFERENCE ON GLOBAL EDUCATION III

Human Resources Development Towards Global Economy

25 - 26 Mei 2015

Auditorium Universitas Ekasakti - AAI
PADANG - INDONESIA

Jointly Organised By

**UNIVERSITAS EKASAKTI, PADANG - I NDONESIA
&
UNIVERSITI KEBANGSAAN MALAYSIA**

**BOOKLET
INTERNATIONAL CONFERENCE
ON GLOBAL EDUCATION III**

Diterbitkan pertama kali oleh :

Ekasakti Press Universitas Ekasakti

Tim Editor

Prof. Dr. Muhammad Hussin (UKM, Malaysia)

Prof. Dr. Sufyarma Marsidin (UNES, Indonesia)

**Dra. Hj. Erawati Toellis, MM.Ph.D (UNES,
Indonesia)**

Dr. Agussalim, SE, MS (UNES, Indonesia)

ISBN : 978-602-70525-1-2

Cetakan Pertama : 2015

© Hak cipta terpelihara dan dilindungi Undang-Undang Nomor 19 Tahun 2002. Dilarang memperbanyak atau mengutip sebagian atau seluruh isi buku ini dalam bentuk apapun tanpa izin tertulis dari penerbit.

Dicetak oleh Percetakan Haren

Isi di luar tanggung jawab percetakan



**EKASAKTI PRESS
Universitas Ekasakti**

KATA PENGANTAR

Puji syukur kehadiran Allah SWT atas ridho-Nya sehingga dapat terlaksana dan tersusunnya Booklet penyelenggaraan International Conference on Global Education III dengan tema *Pembangunan Sumber Daya Manusia Kearah Ekonomi Global*. Tema ini terbagi dalam sub-subtema; **Kebijakan Pendidikan (KP)**, **Pembangunan Pendidikan (PM)**, **Pembangunan Sumberdaya Manusia (PSDM)**, dan **Pendidikan Ekonomi Global (PEG)**

Konferensi ini merupakan kerja sama antara Universitas Ekasakti (UNES) Padang dengan Universiti Kebangsaan Malaysia (UKM) yang diselenggarakan pada tanggal 25-26 Mei 2015, bertempat di Auditorium Universitas Ekasakti – AAI Padang.

Booklet International Conference ini merupakan karya dari hasil pemikiran dari kalangan pemakalah, baik dari tenaga pendidik dan kependidikan di Indonesia maupun di Malaysia. Berbagai makalah yang disajikan dalam seminar ini didedikasikan untuk membangun cakrawala pembelajaran berkualitas baik di Indonesia maupun di Malaysia dimasa sekarang dan untuk masa depan.

Diharapkan agar seluruh Abstrak makalah yang termuat dalam Booklet ini bermanfaat dalam usaha peningkatan kualitas *Sumber Daya Manusia menuju kompetisi pada Ekonomi Global*. Kiranya pemikiran dan gagasan yang tertuang dalam Booklet ini dapat menjadi langkah awal bagi kita yang berkarya dalam komunitas pendidikan di tanah air untuk merefleksikan diri dan merajut langkah-langkah besar selanjutnya dalam membangun cakrawala pembelajaran berkualitas, sehingga dapat menghasilkan sumberdaya manusia yang berguna bagi bangsa dikedua Negara.

Terimakasih disampaikan kepada berbagai pihak yang telah bekerjasama dalam menyusun dan menerbitkan Booklet ini serta menyukseskan pelaksanaan International Conference on Global Education III.

Sehingga Booklet ini dapat bermanfaat untuk kita dalam upaya membangun sumberdaya manusia sebagaimana yang kita harapkan.

27 Mei 2015

Panitia Penyelenggara Konferensi
Diselenggarakan oleh Universitas Ekasakti
Dan Universiti Kebangsaan Malaysia

DAFTAR ISI

	<i>Hal</i>
Kata Pengantar	i
Daftar Isi	ii
Daftar Abstrak	iii
Susunan Acara	1
Abstrak	7

DAFTAR ABSTRAK

I. SUB-TEMA KEBIJAKAN PENDIDIKAN

- Model Insan Melayu Dalam Novel-novel S. Othman
Kelantan
Robiah Bt Mohamad 7
- Mengenal Pasti Tahap Kemahiran Berfikir Aras Tinggi
Murid Menggunakan Peta Pemikiran dalam Subjek Sains
Site Hadijah Bt Harun 8
- Aplikasi Model Pendidikan Vokasional Polloway, Patton
dan Serna (2001) Dalam Latihan Kemahiran Vokasional
Murid Bermasalah Pembelajaran (Mbp) di Program
Pendidikan Khas Integrasi (Ppki)
Kama Bin Shafteei 9
- Impak Positif Pelaksanaan Pengajaran dan Pembelajaran
Secara "*Work Based Learning*" di Institusi Pengajian Tinggi
Sumaini Che Maid 10
- Kajian Indikator Kebolehpasaran dalam Kalangan Pelajar
IPTA Malaysia
Salina Noh 11
- Kajian Kebolehpasaran Graduan IPT: Perspektif Majikan
dalam Perbezaan Gender
Siti Rohamah Bt Ibrahim 12
- Kajian Analisis Keperluan Pembangunan Kursus
Pengaturcaraan Komputer Bagi Pelajar Novis Sec. Dalam
Talian
Nor Azlyn Bt. Abd. Kadir 13
- Considering the Uniqueness of Student's Learning Styles in
Designing English
Muhammad Yaumi 14

Amalan Kepemimpinan Lestari dan Hubungannya Dengan Komitmen Guru Kolej Islam Sultan Ahmad Shah, Klang Shabita Bt Md Hussian	112
Kepemimpinan Instruksional Pengetua Serta Hubungannya Dengan Kepuasan Kerja Guru: Satu Kajian Kes Zabidah Bt Muhammad	113
Cabaran K-Ekonomi dan Kesannya ke Atas Pendidikan Nurul Anith Nasihah Bt Che Azmi	114
Pengukuran Kualiti Pelayanannya Menggunakan Metode Servqual-Fuzzy Riko Ervil	115
Peningkatan Motivasi Siswa Dengan Penerapan Model Pembelajaran Berbasis Investigasi Rudy Chandra	116
Role of Education and Training Apparatus Position in Improving Performance Maisondra	117
Review Application of Computer Assisted Instruction Model's Fandi Neta	118
Aplikasi E-Edukasi Pembelajaran Interaktif Biologi Berbasis Flash Animation Danyl Mallisza, Jusmita Weriza	119
Pendidikan Anti Korupsi Dikalangan Mahasiswa dan Pelajar Syahdar Makkaroda	121
Kreativitas Dalam Menunjang Hasil Belajar Siswa Kelas X SMK-PP Rappang Kabupaten Sidrap (Studi Kasus Mata Pelajaran Kewirausahaan) Muhrina Abd. Rahman	124
Review Of Problem Based Learning AS Innovation Instructional Hasan Maksum	126

ISBN 9786027052512

A standard EAN-13 barcode with vertical black bars of varying widths on a white background.

9 786027 052512



ISBN 9786027052512



9 786027 052512