

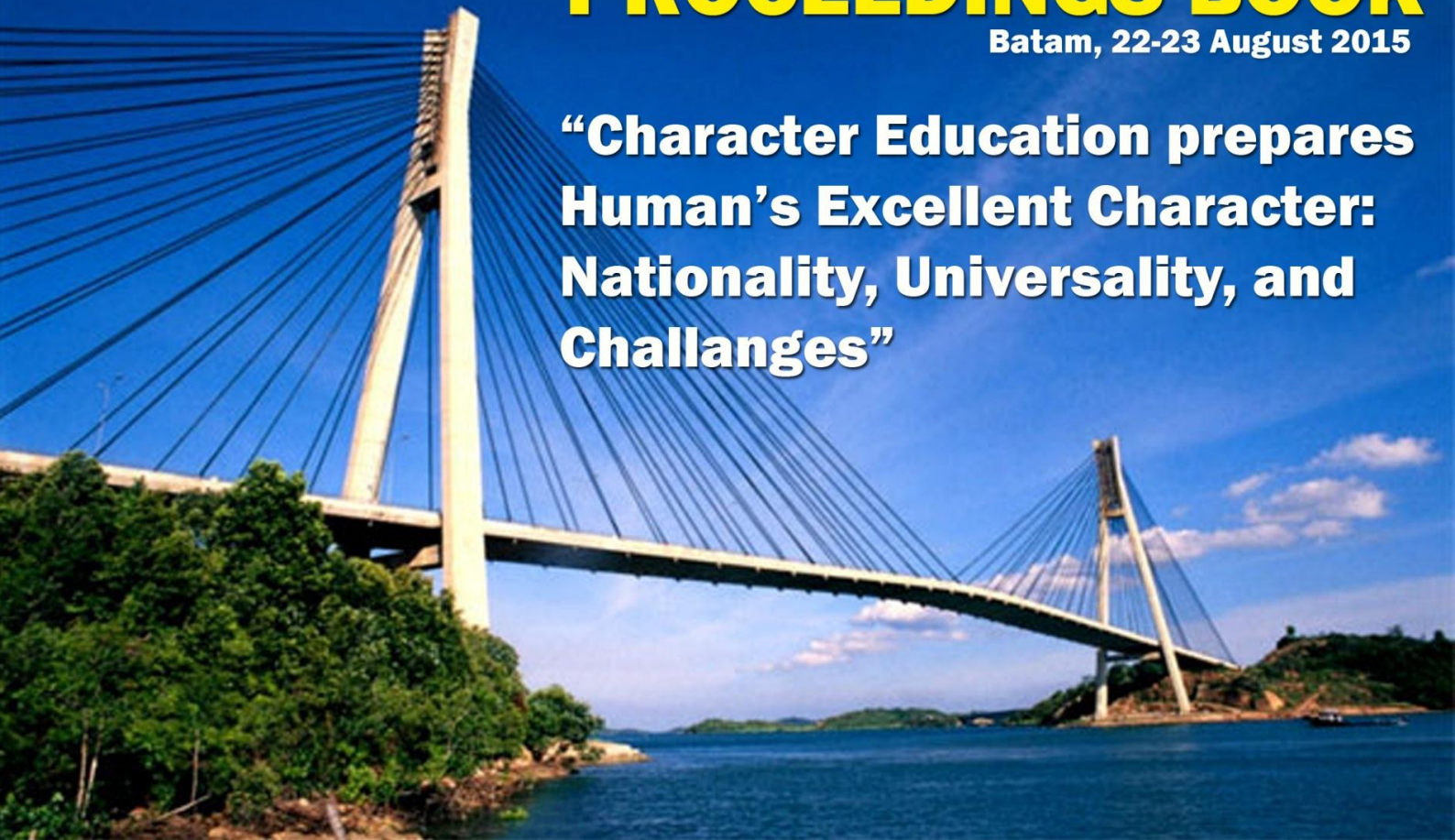
1st ICCE

Proceedings of the 1st International Conference on Character Education

PROCEEDINGS BOOK

Batam, 22-23 August 2015

**“Character Education prepares
Human’s Excellent Character:
Nationality, Universality, and
Challenges”**



Organized by:



**Sekolah Tinggi Agama Islam
(STAI) Sultan Abdurrahman**



**Universiti Tun Hussein Onn
Malaysia (UTHM)**

ISBN 978-602-73043-0-7



©Copyright – STAI Sultan Abdurrahman Tanjung Pinang Indonesia – 2015
Copyright Conditions All rights are reserved. No part of this publication may be reproduced stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical,

photocopying, recording, or otherwise, without the express and prior written permission of the STAI Sultan Abdurrahman.

Edited and compiled by: Alpino Susanto and Hazriyanto

Date: 1st August 2015

Publish by:

International Conference on Character Education and STAI Sultan Abdurrahman,
Tanjung Pinang.

Jl. Lintas Barat KM. 19 Toapaya Bintang Kepulauan Riau

<http://www.stai-sar.ac.id>, contact person: Faisal 62 813 6473 6432.

International Conference on Character Education

Website: <http://icce.web.id>

ISBN 978-602-73043-0-7



FOREWORD

It is our great pleasure to welcome you to 1st International Conference on Character Education (ICCE) 2015. The ICCE is an international conference, organized by PHD Students of Faculty of Technical and Vocational Education, Universiti Tun Hussein Onn Malaysia and STAI Sultan Abdurrahman Tanjung Pinang as the host in Batam. The theme for ICCE 2015 is "Character Education Prepares Human Excellence's character: Nationality, Universality and Challenges". This conference is the 1st International Conference in Riau Archipelago Province of Indonesia. It is to increase understanding and knowledge of concepts and practices of moral, values, citizenship and character education, and their application and development, national and universal. Promote and provide a forum for regional, national and global networking, collaboration and the exchange of ideas and perspectives in relation to character education through interdisciplinary and intercultural discussion. Disseminate research findings on character education approaches, projects and practices in various countries. Provide participants a glimpse of the practice of character education in Indonesia and other countries in South East Asia, and the challenges.

We would like to express our sincere gratitude to all the authors who submitted contribution for inclusion. We hope that you will find this program interesting and thought-provoking and that the conference will provide you with a valuable opportunity to share ideas with other researchers and practitioners from institutions among the participants.

Editors

Alpino Susanto & Hazriyanto

Message from Dean of Faculty of Technical and Vocational Education (UTHM)

I wish to express my heartiest gratitude to the ICCE team as part of UTHM Ph. D students of FPTV for organizing the 1st International Conference on Character Education. I would like to thank our strategic partners, STAI Sultan Abdurrahman, Universitas Riau Kepulauan, Universitas Batam, Universitas Putera Batam, Indonesian Government and all individual contributions towards the realization of this conference.

The theme for the 1st ICCE is “*Character Education prepares Human’s Excellent Character: Nationality, Universality, and Challenges*”

The highlight of this even is to increase understanding and knowledge of concepts and practices of moral, values, citizenship and character education, and their application and development, national and universal. Promote and provide a forum for regional, national and global networking, collaboration and the exchange of ideas and perspectives in relation to character education through interdisciplinary and intercultural discussion. Disseminate research findings on character education approaches, projects and practices in various countries. Provide participants a glimpse of the practice of character education.

I sincerely hope that everyone will play an active role in discussing, disseminating and sharing their insights and experiences on International conference on Character Education.

Regards,

ASSOC. PROF DR. RAZALI BIN HASSAN

Dean, Faculty of Technical and Vocational Education

Message from Chairman of International Conference on Character Education

Assalamualaikum Warahmatullahi Wabarakatuh.

It gives me great pleasure to invite you to the 1st International Conference on Character Education which held on 23 August 2015.

Education has been considered as the centre of excellence in preparing human's excellent characters. This belief drives every single person to be ready to face the global challenges. Now days, education is considered to be the best place to prepare the agent of change of the nation that will bring prosperous to others. Education institution is no longer a place to transfer knowledge only, but it is also a place to form youth's attitude, behaviour, character, and leadership. Thus, it is justifiable to reflect some basic value and character of one country and cultivate them to all young generation in the form of national character building through education.

Different countries may have its' own identity to build their nations character. In Indonesia context, Indonesia's president JokoWidodo and his Vice President JusufKalla designed a nine priorities agenda called "NawaCita" for his presidency in 2014 to 2019. The priority of the agenda for Indonesia's political sovereignty and independence in economy and culture. One of his nine priorities agenda is to revolutionize the nation's character through a policy of restructuring the national education curriculum with advanced civic education; to teach the history of the nation, the values of patriotism and to love the country, as well as to build the passion and character to defend the state through national education.

We look forward to welcoming researchers, academics, practitioners, leaders, educators and policy makers from all parts of Indonesia, and Malaysia to participate on this event.

We look forward to opening our doors to everyone to participate in the 1st ice 2015.

Regards

DR. CHABLULLAH WIBISONO

Chairman of International Conference on Character Education 2015

REVIEWERS

Prof. Madya Dr Kamarolzaman Bin Mohd Jidi (Universiti Tun Hussein Onn Malaysia)

PM Dr. Razali Bin Hassan (Universiti Tun Hussein Onn Malaysia)

PM Dr. Mohd Arif Bin Agam (Universiti Tun Hussein Onn Malaysia)

Dr. Mimi Mohaffyza Binti Mohamad (Universiti Tun Hussein Onn Malaysia)

Dr. Fazlinda Binti Ab Halim (Universiti Tun Hussein Onn Malaysia)

Dr. Badaruddin Bin Ibrahim (Universiti Tun Hussein Onn Malaysia)

Dr. Md Akbal bin Abdullah (Universiti Tun Hussein Onn Malaysia)

Dr. Rafiuddin Afkari (Universiti Tun Hussein Onn Malaysia)

Puan Robijah Binti Kamarulzaman (Universiti Tun Hussein Onn Malaysia)

CONTENTS

FOREWORD.....	iii
Message from Dean of Faculty of Technical and Vocational Education (UTHM).....	iv
Message from Chairman of International Conference on Character Education.....	v
REVIEWERS	vi
CONTENTS.....	vii

TRACK 1: EDUCATION

<i>Competency of Integrated Living Skills Teachers in Inculcating Critical Thinking Skill in Learning and Teaching Process.....</i>	<i>1</i>
<i>Rasidayanty Saion¹, Siti Salwa Ab. Manap², Jamil Abd Baser³</i>	
<i>Student's Cognitive Level at Advanced Technology Center Batu Pahat on Development of Creativity & Innovation.....</i>	<i>10</i>
<i>Abdul Rahim Bin Md Tahir¹, Jamil Bin Abd. Baser²</i>	
<i>The Competence Of The Integrated Living Skill Subject Teacher In Applying Communication Skill In The Process In The Process Of Learning And Teaching.....</i>	<i>19</i>
<i>Siti Salwa binti Ab. Manap¹, Rasidayanty binti Saion², Jamil bin Abd. Baser³</i>	
<i>An Analysis of Positive Politeness Strategies In Teaching.....</i>	<i>28</i>
<i>Dahrul Aman Harahap¹, Suswnato Ismadi Megah S²</i>	
<i>The Profile of Teaching Skill Readiness Of Candidate Teachers Through Micro Teaching Practice in Unrika Batam</i>	<i>33</i>
<i>Sri Sugiharti</i>	
<i>Aplications Moving Average Methods to Forecast the Number of Student SMPN 11 Batam Academic Years 2016-2020.....</i>	<i>38</i>
<i>Tubagus Pamungkas¹, Umi Rofiqoh²</i>	
<i>A Review of Selected Theories and Their Applications to Encourage Higher Order Thinking Skills Using the Questioning Method by Teachers</i>	<i>43</i>
<i>Nelly Ezatul Fazlina binti Md Sah¹, Siti Mizarina binti Ghazali², Abdul Rashid bin Abdullah³, Halizah binti Awang⁴,</i>	
<i>Effectiveness of Teaching and Learning Science in Higher Order Thinking Skills 21st Century: A Review Literature.....</i>	<i>54</i>
<i>Nor Hayati binti Ismail¹, Kamarolzaman bin Hj Mohd Jidi²</i>	

<i>Empowering Novice Teacher Professionalism through Effective Mentoring</i>	65
<i>Rosmizana Binti Yahya¹, Hamidah Binti Mohamed², Shamsiah Binti Sidek³, Yusof Bin Boon⁴</i>	
<i>The Influence Factors of Teachers' Attitude When Using Computers in the Classroom: A Review</i>	76
<i>Shamsiah binti Sidek¹, Muhammad Amin bin Simon², Rosmizana binti Yahya³, Nor Hayati binti Ismail⁴, Azman bin Hasan⁵</i>	
<i>Approaches in The Implementation Of Character Education</i>	85
<i>Erni Munastiwi</i>	
<i>Character Education Philosophy</i>	91
<i>Istiningsih</i>	
<i>School Based Management in Improving The Quality Of Education</i>	97
<i>Said Maskur¹, Sudirman Anwar², Syarifah Normawati³, Hardi Selamat Hood⁴</i>	
<i>Cultural Distortion When the Character Education Incessantly Towards Children of Civilized Nation Which Is Uncivilized Nation</i>	101
<i>Yunisa Oktavia</i>	
<i>Developing tolerant attitude through character education in family environment</i>	106
<i>Sri Sumarni</i>	
<i>The Implementation of Problem Posing Approach in Mathematic Learning on Improving Students' Logical Mathematical Thinking and Problem Solving Ability in High School</i>	106
<i>Dahrul Aman Harahap¹, Fauzan Jafri², Dwi Afrini Risma³</i>	
<i>School Model Development Enterprise Techno to Produce Entrepreneurs among Vocational College Graduates</i>	121
<i>Hamidah Binti Mohamed¹, Dr Badarudin Bin Ibrahim², Nur Bahiyah Binti Abdul Wahab³, Rosmizana Binti Yahya⁴</i>	
<i>Improving Learning Motivation by Employing Library</i>	129
<i>Shabri Saleh Anwar¹, Said maskur², Alpino Susanto³, Sudirman Anwar⁴</i>	
<i>A Review on Moral Values in Education and the Impact of Student Discipline</i>	132
<i>Siti Mizarina Binti Ghazali¹, Nelly Ezatul Fhazlina binti Md Sa², Dr Yusmarwati Binti Yusof³</i>	

<i>How Does University Student's Language Anxiety in Final Thesis Defense Influence Their English Speaking Ability?.....</i>	142
<i>Alpino Susanto, Rafiuddin Afkari, Mukmin, Amir Daus</i>	
<i>Social factors and English achievement of junior high school students</i>	152
<i>Alpino Susanto¹, Kamarolzaman Bin Mohd Jidi², Rafiuddin Afkari³, Khairudin Said⁴</i>	
<i>Evaluation On The Indonesian Language Instruction In Higher Education</i>	167
<i>Sri Yuliawati¹, Jamil, P, Razali bin Hasan², Rafiuddin Afkari³, Noraini binti Kaprawi⁴</i>	
<i>Excellent Character Education of Students Lecturing a Concept and its Implementary.....</i>	179
<i>Na'imah</i>	
<i>The Handling of Juvenile Delinquency Through the Arrangement of Senior Secondary School (SMA) Islamic Education Curriculum", aimed at formulating the Lesson Plan.....</i>	186
<i>Pudjo Sumedi ¹,Ihsana El Khuluqo ², Jamil³, Rogayah⁴, Syarifah⁵</i>	
<i>Socio-Educational in Students' English Language Achievement.....</i>	195
<i>Alpino Susanto¹, Fazlinda Binti Ab Halim², Rafiuddin Afkari³, Syarifah⁴</i>	
<i>Monitoring Education Problem on Coastal Society in the Small Islands Region</i>	205
<i>Rianto¹, Azman bin Hasan², Md. Akbal bin Abdullah³</i>	
<i>Character Education and Its Implementation in Guidance Counseling Services.....</i>	210
<i>Tohirin</i>	

TRACK 2: ISLAMIC STUDY

<i>Shalat Determination Toward Employees Performance</i>	218
<i>Chablullah Wibisono¹, Hardi Selamat Hood²</i>	
<i>Educational Characteristics of Sufi Brotherhoods.....</i>	234
<i>Muhammad Faisal¹, Pauzi², Rafiuddin Afkari³</i>	
<i>An Islamic education guidance in prison: improvsing women prisoner's faith</i>	242
<i>Siti Marfuah¹ , Rafiuddin Afkari², Razali Hassan³, Alpino Susanto⁴</i>	

<i>Transformation of sufi teachings in the Malay literature sufism: effort to strengthening the character education based on local wisdom in Kepulauan Riau</i>	253
<i>Muhammad Faisal¹, Rafiuddin Afkari², Sudanto³</i>	
<i>Determination of faith to book of Allah towards religious performance</i>	261
<i>Chablullah Wibisono¹, Hardi Selamat Hood²</i>	
<i>The Idea of Neo-Sufism and its Contribution for Humanity : A Brief Analysis</i>	276
<i>Muhammad Faisal¹, Rafiuddin Afkari², Pauzi³</i>	

TRACK 3: SOCIAL SCIENCES

<i>The Locating Pictures on a Map Activity: Developing the Young Children's Spatial Ability and Spatial Reasoning</i>	285
<i>Dahrul Aman Harahap¹, Dwi Afrini Risma²</i>	
<i>Effect of Investment, Labor Against the Gross Domestic Product of Riau Islands Province.....</i>	295
<i>Albert Gamot Malau</i>	
<i>The Effect of Commitment and Motivation Toward Teacher's Performance at Tanjung Balai Karimun in Indonesia</i>	303
<i>Hazriyanto¹, DR. Badaruddin Bin Ibrahim², Franky³, Mu'min⁴, Amir Daus⁵</i>	
<i>The Effect of Inventory Turnover to Operating Profit Case Study at PT Astra Agro Lestari Tbk Listed on The Indonesia Stock Exchange for the Period of 2012-2014</i>	317
<i>Hazriyanto¹, Mohd Arif Agam², Abd. Basith³, Rafiuddin Afkari⁴, Amir Daus⁵</i>	
<i>The Role of Information Communication & Technology as enabler of Knowledge Management Process to Bring Innovation in Creative Industries (Batam Case)</i>	329
<i>Cosmas Eko Suharyanto^a, Fergyanto E Gunawan^b, Syarifah Normawati^c, Rogayah^d</i>	
<i>The Role Of Parliaments In Strengthening The National System Of Public Health.....</i>	338
<i>Hardi Selamat Hood¹, Alpino Susanto², Hazriyanto³</i>	
<i>Act of analysis Number 40 In 2007 about Response Company Seen from difference listing Response Company Citizen of Indonesian toward Financial Capital Construct by Citizen of foreign (Study Case at Notary Office Andri Yuko, S.H., M.Kn)</i>	343
<i>Irene Svinarky</i>	

TRACK 4: MANAGEMENT & LEADERSHIP

<i>The Development Model of K-Workers among Technical Graduates in Batam Universities</i>	352
<i>Teguh Iman Santoso,¹Razali Bin Hassan²</i>	
<i>Incentives, Discipline, and Work Unit Performance at SMP Negeri 1 Moro on Tanjung Balai Karimun in Riau Islands Province, Indonesia.....</i>	359
<i>Hazriyanto ¹,Badaruddin Bin Ibrahim ², Mu'min³,Frangky Silitonga⁴</i>	
<i>The Effect Of Organizational Culture, Teaching Experience And Education Level Towardslecturer Professionalism At Riau Kepulauan University Academic Year 2012/2013.....</i>	373
<i>Fitri Yanti</i>	
<i>Moral Education through wearing Ihram cloth during Hajj season.....</i>	386
<i>Erizal¹, Halimi Bt. Md. Khalid², Azita Bt Ali ³</i>	
<i>Effect of Application Services of Customer Service, SMS Banking and Customer Relationship on Customer Satisfaction at PT Bank Mestika Dharma.....</i>	393
<i>Hendi Sama</i>	
<i>Implication of Problem-Based Learning Model Learning toward Mathematical Problem Solving Skills and Self-Regulation of SMPN 20 Students in Pekanbaru</i>	401
<i>Risnawati</i>	
<i>Organizational Climate and Job Motivation to Job Satisfaction for PNS Province the Archipelago of Riau</i>	409
<i>Hazriyanto ¹, Khairudin Said², Sadi Maskur³, Syarifah Normawati⁴, Hardi Selamat Hood⁵</i>	
<i>User Perspective Analysis DPACK-R System Yamaha</i>	420
<i>Heri Nuryanto, Syaifullah</i>	
<i>Waste management environmental in Batam City.....</i>	427
<i>Timbul Dompok¹, Ul Qadri², Ganda Sirait³</i>	

Implication of Problem-Based Learning Model Learning toward Mathematical Problem Solving Skills and Self-Regulation of SMPN 20 Students in Pekanbaru

Risnawati,

Lecturer in Mathematics Education UIN Riau
rwati04@gmail.com

ABSTRACT

This study is started from the lack of mathematical problem solving ability of junior high school students. It can be seen from the test results obtained from Students' problem solving ability, interviews and observations by math teacher. Through the observation was also found that the lack of students' independence in learning. Problem Based Instruction (PBI) is a learning model that uses the issue as a starting point for acquiring new knowledge. Self-regulation is the ability of self-regulation in learning constructively and actively with the students self-learning strategies design, to enable the aspects of meta-cognition, motivation and can make students able to solve the problems of mathematics. The purpose of this study is to assess and analyze (1) the students' ability in mathematical problem solving with the PBI model, (2) Students self-regulation with PBI model. The sample was the eight- grade students of four classes of SMPN 20 Pekanbaru as experimental sample class and five classes of the same grade and school as control classes, with 42 students each classes. This research is a Quasi Experiment in Randomized Control Group design. The data was collected using observation, questionnaire, and mathematical problem solving ability test. The data analyzed technique used in this study is namely the t-test. The results showed that (1) the students' ability of mathematical problem solving taught using models PBI were higher than the students ability of mathematical problem solving who were taught using conventional learning (2) Self-regulation or students' independent learning who were taught using models PBI higher than students' self- regulation who were taught using conventional learning.

Keywords: regulation, self-regulation, mathematical problem solving ability

1. INTRODUCTION

Mathematics is an important basic science to be mastered by the students, as mathematics has an important role in various sciences to advance human thinking. Another reason is the need of student to learn mathematics as a clear mind and logical thinking, a mean to solve problems in everyday life. Mathematics is also as a means to know the patterns of relationships and to develop creativity as well as raise awareness of cultural development. According to Russefendi the importance of mathematic is not only as guide patterns of thinking but also as forming attitudes. This is in line with that expected in the goal of learning mathematics in school. As stated in the National Council of Teachers of Mathematics (NCTM) in 2000 in a book entitled "Principles and Standards for School Mathematics" explains that the five mathematical abilities of students should have: (1) learn to communicate (mathematical communication); (2) learn to reason (mathematical reasoning); (3) learn to solve problems (mathematical problem solving); (4) learn to associate the idea of (mathematical connection); (5) learn to represent ideas (mathematical representation). This suggests that mathematics was when studied in

earnest to form personal creative, critical, scientific thinking, honest, disciplined, frugal, and resilient.

Based on those mentioned objectives, it is clear that a teacher should be able to develop students' mathematical abilities. One of the mathematical ability that is mostly discussed is students' ability to solve a problem, or a so-called mathematical problem solving ability. This problem-solving ability of the students is very important as it would have a positive impact in their lives, settle issues related to mathematics in daily life. But the facts show a mathematical problem-solving ability is still low. It is based on research results from research institutions Programme for International Student Assessment (PISA) in 2012 upon the 15 -year -old student proved that the ability of students to identify and understand and use the basics mathematics in daily life is still low. This can be seen from Indonesia that were ranked in the top 64 of the 65 participants (Puspindik, 2014).

Based on the pre-study that has been done on 30 students of eight grade in SMPN 20 Pekanbaru shows that students do not just memorize concepts and able to use these concepts when they have a problem in real life associated with the concept possessed. Furthermore, even students cannot pinpoint the problem and formulate it, students are also not able to argue properly and clearly when answering questions given by the teacher. Students only focus on problem-solving examples given by teacher during the learning time, but are not able to translate case study into mathematical model/ problems cannot be solved properly.

The success of learning to achieve is not only on the field of cognitive sector, but also influenced by the affective field, one of which is the student self-regulation in learning. Teacher during the learning process is supposed to be able to condition students to gather information and new knowledge that is not taken for granted gathered through explanation but able to able to build their own concepts and learning principle. This condition requires self-regulation or independent learning which can be formed from being used learning. Sumarno (2004) stated that self - monitoring is plannin process and careful review of the cognitive and affective processes in an academic portion. Furthermore Hargis (Sumarmo, 2004) also argues that self - regulation is not mental skill ability or specific academic ability, but it is a process of self-direction in transforming mental into specific academic ability.

When the problem solving question is given, there are students who are not trying to complete the task on time for various reasons. Students who surrendered to the state when faced with problems, and students who are not punctual when entering the classroom and collect assignments, less attention in summarizing and taking notes, lack of attention to the explanation from the teacher, others are cheating and embarrassed to ask the teacher about the material that has not been understood. Those students behavior indicates that the student self-regulation is not good in planning, self-control and ability to self- evaluate.

The result of relevant research shows that there are students who are afraid of math material because it is always associated with a lot of formulas. In accordance with some students' opinion, mathematic is difficult to learn, especially geometry. Geometry is the fields that related to the real world, therefore as they need to learn and regulate themselves as the exercises and direct observation in the certain fields require analysis. The growing students' self-regulation ability could indicate its significance to their community and neighborhood. The PBI learning model build relationship on every student to be able to direct their self learning in order to achieve deep understanding of the subject matter being studied, and students positive character, such as independence and

self-confidence. Due to the implementation of the PBI model to the students, they are expected to be trained gradually, and self-regulated learner. Arends found PBI is a model of learning in which students work on authentic problems with a view to preparing their own knowledge, develop inquiry and thinking skills a higher level, to develop self-reliance, and confidence (Arends, 2009). Furthermore, according to Rusman (2011), the problem can be pushed seriousness, inquiry, and thinking in a way that is meaningful and powerful.

In the learning course, the PBI model has five special characteristics Trianto (2011), stated: 1) Submission of questions or problems; the problems presented in the form of an authentic real-life situations that avoids simple answers and provide a wide range of solutions. 2) Focusing on inter-disciplines linkage; although PBI is centered on one subject, but investigated problem should really tangible to the students to solve the problem from many subjects point of view. 3). The authentic investigation; PBI requires students to conduct authentic investigations to find a solution to a real problem. 4) Generate product / work and display; PBI requires students to produce a particular product in the form of real work that describes or represents a form of solving problems they found. 5) Cooperation; work together to provide continuous motivation, engaged in complex tasks, and increase the opportunities in sharing the questions and dialogue and develop social skills and thinking skill.

Model PBI has 5 syntaxes that are students' orientation to the problem, organize students to learn, guiding individual and group investigations, develop and present the work, analyze and evaluate the process of problem solving. For details can be seen in Table 1 below:

Table 1. Models of syntax PBI

Phase	Teacher Behavior
Students orientation of the problem	Teacher explains the purpose of learning, explains the logistic needed, motivate students involved in selected problem solving activity.
Organize students to learn	Teacher helps students to define and organize the learning tasks related to the problem.
Guide individual or group investigation.	Teacher encourages students to collect appropriate information, do experiment, to get an explanation of problem solving.
Develop and present the work	Teacher helps student in planning and preparing the work appropriate with report, video and model and help them to share duty with their friend.
Analyze and evaluate process of problem solving	Teacher helps students to do reflection or evaluation toward their investigation and the processes that they use.

(Source: Trianto, 2011)

PBI learning model is adapted from syntax by using planning to set learning goals, design appropriate problem situations and organize the resources needed. In addition, students are oriented to the problems so it will appear questions and learning motivation. The

individual or group investigation need monitoring and self-control to set time and effort in order to test hypothesis, organize and analyze data. Furthermore, when analyzing the process of problem-solving, it does reflection and evaluation concern on the problem that has been resolved to help students analyze the process of thinking, and analyze stages of the investigation that student has done (Ibrahim: 2005). Regulatory processes are grouped into four phases (Pintrich), namely planning, self-monitoring, control, and evaluation. Each phase of self-regulation activities are arranged into four areas, namely cognitive, motivational affective, behavioral, and contextual (Mukhid: 2008).

The implementation of PBI learning model is appropriated with the indicator of self-regulation ability namely *rehearsal*, the effort to remember material by repeating continually with reading Curriculum 2013 student books related to the geometry material. Elaboration, using their own words to summarize material that has been concluded together related to the elements of cubes, blocks, prism and pyramid: ribs, the field side, diagonal field, diagonal, and diagonal field. Organizing, use tactics of noting, drawing diagrams or charts to organize learning material in presenting report of experimental results. Mastery self-talk, satisfy curiosity, become more competent or increase the autonomy feeling by reading other sources such as articles related to the geometry material. Extrinsic self-talk, try as well as possible in the classroom as a way to convince their self to continue learning while doing student worksheets and find formulas related with geometry. Relative ability self-talk, do effort better than others in order to keep trying hard in presenting the results of the experiment. Relevance enhancement, involves student effort in increasing connectedness or the importance task with students' life or personal interest that they owned by analyzing the results of student worksheet that has been done. Self-consequating, use reward and punishment verbally as a form of consequences through praise or additional value that is given to motivate students. Effort regulation, regulates the effort in punctually enters the class and help-seeking, get support from peers, teachers and adult when they encounter difficulty in studying geometry material so the PBI learning model can be used in the learning activities to be able to solve the problem of student learning and able to create students become independent learners (self-regulated learner).

Based on background of the problem above, the researcher intends to conduct research entitle " Implications of the Model Problem Based Instruction toward Mathematical Problem Solving Ability and Self-Regulation Students of Class VIII SMP 20 Pekanbaru on the Geometry Material" with the formulation of the problem as follows: (1) Is the mathematical problem solving ability of students are taught using PBI model higher than mathematical problem solving ability of students who are taught using conventional learning on the geometry material in class VIII SMP 20 Pekanbaru ? (2) Is self - regulation or students' independence learning by using PBI model higher than self - regulation students who are taught using conventional learning in geometry material in class VIII SMP 20 Pekanbaru?

2. METHOD

This study uses quantitative method in the form of Quasi Experimental Design where the selected sample group has been there before with research design *Posttest-only Design with Nonequivalent Group*. Besides quantitative method, it also used qualitative method to analyze data observation learning in the PBI model The research is conducted in SMP 20 Pekanbaru, students of VIII (eight grade) 4 classes as experimental class and 5 classes as control class. Technique of collecting data in this study is observation, questionnaire method, and test problem-solving ability.

Technique of analyzing data that will be performed in this study is t-test. T-test is one of the statistical test used to determine whether there is exist or no significant difference of the two samples mean (two comparative variables) (Anas Sudijono, 2009). Mathematical problem solving ability test is organized in the form of description test. Question that given is arranged based on the mathematical problem solving indicators, that are: (1) Understanding the problem / propose the problem; (2) Making settlement plan; (3) Implementing the settlement / calculations; (4) Summarizing up the answers.

Table 2. Scoring Guidelines Problem Solving Ability

Score	Understanding the problem / propose the problem	Making settlement plan	Implementing the settlement	Conclude
0	Misinterpret / do not understand the problem/ no answer	There is no settlement plan	There is no settlement at all	There is no conclusion
1	Less precise in interpreting the question/misinterpret question	Less relevant in settlement plan	Implementing the correct procedure but incomplete settlement and wrong result	There is conclusion but it is not complete and correct
2	Truly understanding the problem of question and be able to propose problem	Making relevant settlement plan but incomplete	Implementing the correct procedures but incomplete settlement and correct result	Appropriate conclusion with prose/procedure
3		Making relevant planning & leading to the correct answer	Implementing the correct procedure and complete settlement and correct result	
Max score	2	3	3	2

(Source, Fauzan: 2012)

Observation method used to obtain observational data management feasibility study that appropriate with PBI models which learned in the RPP. Through this technique the

researcher cooperate with the teacher, where researcher becomes an observer who has duty to take data implementation activity of PBI model. Data processing in observation used descriptively statistics in which to see the activities that arise in the implementation of research either from teacher or students. Determining teacher's activity in the learning process is by using scoring techniques, where the maximum score is 80 (16×5) and the lowest score of 16 (16×1). Determining the desired amount of classification that is in 5 classification consisting of very perfect, perfect, quite perfect, less perfect, and imperfect (Gimin, 2008). Determining the use of standard classification table PBI learning model, namely: It is very perfect, if the score is 63-75; Perfect, if the score is 51-62; Perfect enough, when the score is 39-50; Less than perfect, if the score is 27-38; Not perfect, if the score is 15-26.

3. RESULT AND DISCUSSION

Feasibility study that is observed includes feasibility of syntax / phase in accordance with PBI learning model. Its feasibility is measured according to the RPP which has been arranged to 5 x meetings on geometry material. Data result of study that is described is data about the final test students' mathematical problem solving ability, both overall or in terms of students' self-regulation that are taught by Problem Based Instruction (PBI) model and conventional learning model. The result calculation of the first hypothesis is: $t_0 = 4.75$ with has difference $77.74 > 67.62$, while t_{tabel} (5% and 1%) is 1.99 and 2.64.

Based on t_0 about student's mathematical problem solving ability in the subject of cubes and beams that mean refers to the ability of students to solve a mathematical problem that uses PBI model higher than mean of students of problem solving ability in the class that uses conventional learning model. It shows that the application of the PBI in mathematics learning has positive impact on students' mathematical problem solving ability because of the differences with students who received conventional learning model. This is appropriate with adopted theory of PBI model that is constructivism theory which states students are accustomed to solve a problem. This is confirmed by Nurhadi's opinion, student needs to be taught to solve problems, find something useful for him, and wrestle with ideas (Baharuddin, 2007). With the habit of finding and solving a problem in student's self, it will be increasing students' mathematical problem solving ability. Thus, the application of PBI model makes student habitually will solve a problem with its own initiative.

Based on the result of observation, the significant improvement problem solving ability in experimental class is due to the teacher applies steps of PBI model perfectly, that is when active students find their own or group problem solving of a problem that was brought to their self individually or group. Because in this study the students solve problems related to everyday life in the form of mathematical story by formulating the problem, propose the answer or hypothesis that they have, collect data or search information related to the problem, test the hypothesis that they provide with obtained data then give conclusion toward on the result of a problem solving. Thus, the results of this analysis support formulation of the problem that exist significant differences of mathematical problem solving ability of students who learn in using PBI model with students who learn with conventional learning.

The result of calculation on the second hypothesis is: $t_0 = 4.45$ with distinction $122.36 > 114.52$, while t_{tabel} (5% and 1%) is 1.99 and 2.64. Thus, it can be concluded self-regulation or individual student learning in using PBI models higher than self-regulation of students who are taught by using conventional learning on the geometry subject. As Sugiyono said

that if a treatment group is better than control group, so the given treatment has positive effect (Sugiyono, 2010).

The result of posttest calculation on the experimental and control class that was conducted is assessment of students' self-regulation ability. Aspects of self-regulation include metacognition, motivation and behavior. Indicators of metacognition is *rehearsal* (the effort to remember material by repeating continually); *elaboration* (using his own words to summarize the material), and *organizing* (the using tactics of noting, drawing diagrams or charts to organize the subject material). Indicators of motivation is *mastery self-talk*, satisfy the curiosity, become more competent or increasing autonomy feelings, *extrinsic self-talk*, try as good as possible in the classroom as a way to convince their self to continue learning activities, *relative ability of self-talk*, run effort better than others in order to keep trying hard, *relevance enhancement*, involves students' effort in increasing connectedness or the importance task with students' life or personal interest, and *self-consequating*, use reward and punishment verbally as a form of consequence and the behavior with indicators of effort regulation, regulate the effort and help-seeking, get support from peers, teachers and adult as Zimmerman (1989) argues that students who have self-regulation in self-regulated learning is students who metacognitive, motivationally, and behaviorally is active participant in learning process.

4. CONCLUSION

Based on the research implications of Problem Based Instruction toward mathematical problem-solving ability and Self-regulation student of class VIII SMP 20 Pekanbaru on the geometry material can be concluded that:

1. Mathematical problem solving ability of students who are taught by using PBI models were higher than the problem solving ability of students who are taught using conventional learning. This is indicated by the mean difference between experimental class that uses PBI model is 77.74 and control class that use conventional learning model is 67.62.
2. Self-regulation of the students who taught by using PBI model were higher than self-regulation of students who are taught using conventional learning. This is indicated by the mean difference between experimental class that uses PBI model is 122.76 and control class that use conventional learning model is 114.52.

From the conclusions above PBI models can be used as an alternative to improvement in learning process and improve students' mathematical ability particularly in mathematical problem solving ability and be able to form students' independence learning in accordance with the educational goals that is expected by the government. The advantages of PBI learning model is mathematical concepts that found by the students, so all students can understand the learning material well and responsibly. Students are given the opportunity to discuss mathematical problem solving ability and present about what they have learned. In addition, the presence of group discussions can improve and deepen students' understanding toward on concepts learned. So, with this activity, students interact with

their friends until there is positive interdependence, help each other, give each other motivation until there is a positive interaction. While the teacher serves as a guide of student learning.

From the results obtained, in order the learning activity is optimum, the researcher recommends the following:

1. For the teacher should, apply the PBI model at the beginning of the first semester, and in a longer time so that students are accustomed to applying the learning process is based on real life issues so that learning is more meaningful, and can make students able to solve mathematical problems and self-regulation for students growing and rise higher.
2. During the PBI model learning takes place, teachers should be able to condition students to stay focused on learning provided, in order to create an effective and efficient learning.
3. It is expected that mathematics teachers are able to condition the group in homogeneous characteristics, therefore the worksheets are not only be done by smart students merely.
4. To apply the PBI model learning, teachers should create a scenario and planning, so that learning can take place systematically in accordance with the plan, and the effective use of time and not wasted a lot of time on irrelevant things.

REFERENCES

1. Bandura, Albert. 1986. *Sosial Fondation of Thought and a Chon a social Cognitive Theory*. Englewood Cliffs, NJ: Prestice Hall.
2. Baharuddin dan Esa Nur Wahyuni, 2007, *Teori Belajar dan Pembelajaran*, Jogjakarta: Ar-Ruz Media
3. Depdiknas. 2003. *Kurikulum Berbasis Kompetensi*. Jakarta: Depdiknas.
4. _____. 2006. *Permendiknas No. 22 tentang SI dan SKL*. Jakarta: Sinar Grafika.
5. Dimiyati dan Mudjiono. 2006. *Belajar dan Pembelajaran*. Jakarta: PT Adi Mahasatya.
6. Fauzan, Ahmad. 2012. Modul 1 Evaluasi Pembelajaran Matematika. *Pemecahan Masalah Matematika*. Evaluasimatematika.net: Universitas Negeri Padang.
7. Ibrahim, Muslimin. 2005. *Pembelajaran Berdasarkan Masalah*. Surabaya: University Press UNESA.
8. Mukhid, Abdul. 2008. *Strategi Self-Regulated Learning (Perspektif Teoritik)* [pdf] diakses pada 9 Oktober 2014.
9. Mulyasa. 2013. *Pengembangan Implementasi Kurikulum 2013*. Bandung: PT Remaja Rosdakarya.
10. NCTM. 1989. *Curriculum and Evaluation Standart for School Mathematics*. Reston, V.A. Author.
11. Sudijono Anas, 2009, *Pengantar Statistik Pendidikan*, Jakarta: PT Raja Grafindo Persada
12. Sugiyono, 2011, *Metode Penelitian Pendidikan*, Bandung: Alfabeta
13. Zimmerman, B.J. 2002. *Becoming a self regulated learner: An overview*. Theory into Practice, Vol 41, No. 2 page 64-70.

Partners:

