Conference Proceeding

INTERNATIONAL CONFERENCE ON MATHEMATICS, SCIENCES, TECHNOLOGY, EDUCATION AND THEIR APPLICATIONS

Makassar, 20th – 21st August 2013

RECENT RESEARCH AND ISSUES ON MATHEMATICS, SCIENCE, TECHNOLOGY, EDUCATION AND THEIR APPLICATIONS

ISBN 979-604-151-0

Mathematics and Science Faculty
Makassar State University
ICMSTEA 2014: RECENT RESEARCH AND ISSUES ON MATHEMATICS, SCIENCE, TECHNOLOGY, EDUCATION AND THEIR APPLICATIONS

Editorial Board:

Syafruddin Side
Iwan Dini
Rahmat Syam
Sumarlin Muis
Ahmad Fudhail
Andi Irma Suryani
Ansari Saleh Ahmar
Muh. Aqil Rusli
Bustang
Muh. Hijrah
Irwan
Iswan Achlan Setiawan
Nur Wahidin Ashari
Wahyuuddin Bara
Zulkifli Rais

Reviewer Board:

Prof. Max Warshauer
Prof. Susie Groves
Prof. Peter Hubber
Prof. Naoki Sato
Prof. Baharuddin Aris
Prof. Ismail bin Kailani
Prof. Duangjai Nacapricha
Prof. Muhammad Arif Tiro
Dr. Fran van Galen
Prof. Suratman Woro Suprodjo
Dr. Siti Nuramaliiati Prijono
Osian Jumadi, Ph.D.
Prof. Gufron D. Dirawan
Muhammad Abdy, Ph.D.
Dr. Ramlawaty

©August 2014
WELCOME SPEECH

Forewords from the Head of Committee

Assalamu’alaykum wa Rahmatullahi wa Barakatuh
First, I want to give our welcome to all the delegates, speakers, and participants coming today.
Welcome to State University of Makassar, UNM.
This conference titled International Conference on Recent Research and issues in Mathematics, Sciences, Technology, Education and Their Applications (ICMSTEA) 2014 is assigned to the 53rd Dies Natalies of UNM. It is primarily organized by Faculty of Mathematics and Natural Science in conjunction with several committee members from other faculties within State University of Makassar.
This conference is conducted in two days from 20th of August to 21st of August in Theater Room, Pinisi Building, State University of Makassar. It involves eleven keynote speakers, ten invited speakers, and approximately 150 parallel speakers.

Ladies and gentlemen, as I previously said, the conference proudly invites twelve keynote speakers coming from several countries. Therefore, on behalf of the committee members, I would like to express my sincere thanks to the keynote speakers, specifically:
1. Professor Max Warxhauwer (Texas State University, USA)
2. Professor Naoki Sato (Osaka Prefecture University, Japan)
3. Professor Peter Hubber (Deakin University, Australia)
4. Professor Susie Groves (Deakin University, Australia)
5. Dr. Frans Van Galen (Utrecht University, the Netherlands)
6. Assistant Professor Duangjai Nacapricha (Mahidol University, Thailand)
7. Dr. Siti Nuramaliati Prijono (the Indonesian Institute of Sciences)
8. Professor Baharuddin Aris (Universiti Teknologi Malaysia)
9. Professor Ismail bin Kailani (Universiti Teknologi Malaysia)
10. Professor Muhammad Arif Tiro (Iowa State University & State University of Makassar)
11. Professor Suratman Woro Suprodjo (Gadjah Mada University, Indonesia)

Next, it is my privilege to thank all organizing committee members who have been showing good work and determination for the accomplishment of this conference. All of them have been working since the beginning of the planning stage and they are still here today for all of us, even though they are very busy with their personal responsibilities.

On this occasion, I would like to apologize to all of you when there are some inconvenience things during the implementation of this conference since we, the organizing committee, as just human being.

Finally, I would like to thank to the speakers and the participants listed in this conference. May I wish you all two fruitful days of interesting and beneficial conference and also that you have a very pleasant stay in Makassar.
Thank you very much for all the attention.
Assalamu’alaykum wa Rahmatullahi wa Barakatuh.

Head of Committee,

Suwardi Annas, Ph.D.
# TABLE OF CONTENTS

WELCOME SPEECH ................................................................................................................... i

TABLE OF CONTENTS ............................................................................................................... iv

Designing and Design Research .............................................................................................. 1
Frans van Galen, Utrecht University

Mathworks, Math Problems and Math Education Research ...................................................... 2
Max, Texas State University

Job Orientation Of Undergraduate Statistics Students of FMIPA Universitas Negeri Makassar ........................................................................................................................... 3
Muhammad Arif Tiro, Makassar State University

Membraneless Vaporization Devices: Effective On-Line Tools For Separation of Volatile Compounds In Flow-Based Analysis .............................................................................. 4
Nacapricha, D, Uraisin, K, Choengchan, N, Ratanawimarnwong, N. and Wilairat, P, Mahidol University

Correlation Between Structures And Electronic Properties Of Organic Semiconductor Thin Films .......................................................................................................................... 5
Naoki Sato, Kyoto University

Stem and Oer To Stimulate Student Engagement .................................................................... 6
Baharuddin Aris, Universiti Teknologi Malaysia

Representation Construction: A Research Developed Inquiry Pedagogy For Science Education ................................................................................................................................. 7
Peter Hubber, Deakin University

Improving Mathematics Teaching Through Lesson Study ...................................................... 8
Susie Groves, Deakin University

Introduction To Modelling For Geographical Resources Management ................................ 9
Suratman, Gajah Mada University

Role of Biological Sciences In Developing The Scientific Basis For Sustainable Development .......................................................................................................................... 10
Siti Nuramaliati Prijono, The Indonesian Institute of Sciences (LIPI)

Mathematics Leadership .......................................................................................................... 11
Ismail Kailani, Universiti Teknologi Malaysia

Developing Of School-Based Management Training Model For Principals ...................... 12
Arismunandar, Nurhikmah H., Widya Karmilasari Ahmad, Makassar State University
Multiple-Choice Exams With Pictorial-To-Pictorial Format Representation of Density of Liquid And Aspect Cognitive Measured..........................................................346
Helmi Abdullah, Jasruddin, D. Malago, Patta Bundu, Syamsul Bachri Thalib, Makassar State University

Developing Of Physics Teaching Materials On Based Environmental..........................353
Jasruddin, D. Malago, Helmi Abdullah, Makassar State University

The Influence of Learning Strategies and Cognitive Learning Styles on Learning Outcomes In Physics of Students at SMAN 5 Bulukumba..............................................................359
Kaharuddin Arafah, Kasmiati, Makassar State University

Development of Web Based Physics Learning Media for 10th Grade Senior High School In Dynamic Electricity Topic...........................................................................368
Kiar Vansa Febrianti, Fakhrizal Arsi, State University of Jakarta

Innovative Learning Development Model For Improving High Level Thinking Skills And Student Learning Culture..............................................................................379
Raharjo, Wahono Widodo, Wasis, Surabaya State University

National Test Quality (UN) at 2012/2013 School Year Of Subjects Physics Lesson Is Evaluated From Difficult Level And Different Poweritem In Level SMA/MA Study Program Natural Sciences (IPA) In Makassar City...........................................386
S. Salmiah Sari, Makassar State University

The Influence Of Cooperative Learning Strategies Think Pair Share (TPS) Toward Capability In Problem Solving Of Ecology With Different Cognitive Style.........................398
Amiruddin Kasim, Tadulako University

Correlation Student Activity of Creating Concept Map and Concept Map Product That Created by Student With Learning Outcomes On The Nervous System Material In SMA Negeri 10 Bulukumba..........................................................406
Asmayani, Makassar State University

Study on Learning Process (Project Based Learning) In Environment Science Course...414
Baiq Fatmawati, STKIP Hamzanwadi-Selong

The Development Of Chart-Based Instructional Media Of Biology As Biocompass For Protists Subject Grade X Semester I .................................................................418
Engka Rukmana, Nurhayati B, Andi Rahmat Saleh, Makassar State University

Scientific Inquiry Skills of Preserved Biology Teacher In Laboratory Activity..............425
Fenny Roshayanti, Sumarno, Muhammad Syaipul Hayat, PGRI University of Semarang

Utilization of Simple Microscope as Alternative Media at Basic Competency 6.3 Describe The Diversity of Life Organizational System From Cells To Organism at Class VII MTSN Turikale Kabupaten Maros.................................................................433
Kasmiatang Kadir, MTSN Turikale Kabupaten Maros
STUDY ON LEARNING PROCESS (PROJECT BASED LEARNING) IN ENVIRONMENT SCIENCE COURSE

Baiq Fatmawati
Program Studi Pendidikan Biologi - STKIP Hamzanwadi-Selong
E-mail address: f_baiq@yahoo.com

Abstract

The learning developed tendency of: (1) repetitive and memorizing, (2) rarely of exercise in problems solving and (3) do not empower student teachers to be actively thinking. The learning process in college not more teacher centered learning but student centered learning and emphasize to contextual learning. This research was focused to get information about learning methods in learning process in environmental science course. The subject is students of biology education in STKIP Hamzanwadi-Selong (N=44). A instrument research is questionnaire about the experience students during learning process in Environmental science course especially learning methods. A analysis data with descriptive quantitative. The result of analysis data was found;(1) The form content is handout (68%). (2) The experience learning is field study (77, 27%). (3) Learning methods is discussion (93, 18%). (4) Student obstacle during learning process 79, 54 %. (5) Students can’t design worksheet (81, 82%). (6) Student not teaches about entrepreneurship 86, 36 %. (7) Student doesn’t know about project based learning (75 %). (8) and teacher not applied project based learning (100 %). Based on result, learning methods in learning process tend to memorized and verification, decrease directed to inquiry, to design and prove the activity.

Keywords: Study, Project based learning, Environment science course

1. Introduction

The Learning process in college is not more teachers centered but student centered and contextual learning process, this is training to think process student about what will be done to solve a problem in around them. Generally, in learning process lecturers apply talkative method, discussion, and sometimes given a task to fulfilled a contentin one of semester like make a paper, and make a summary that sourced from internet or other articles, rarely use strategies or method that make students active and creative. This is causes students habitual to convergent thinking and not trained for divergent thinking. Depdiknas (2002) states learning biology tendency use talkative methods, discussion and sometimes executed practice but is like verification. Learning biology given as memorized, verbal learns and decrease to relate with life issues students.

Biology as one of the basic science always have a progressing, especially in the XXI century, it can be understand that the biology will thrive. If education have purpose to educate the children and deliver them to understand the environment and manage it well, it’s meant the concept should be rhythm with the advancement of science and technology. A change of biological status is challenge for biologists and biology educators. To face these challenges need to prepare strong person, including the educators or other words prepare qualified human resources. Prepare qualified human resources it’s meant empowering a whole person that is the physical aspect and way of thinking. The Indonesian young generation needs prepared to enter the globalization era. They are obviously critical and have importance awareness of preserving the environment for utility generation and next generations will be managing natural resources (Rustaman, 2004). Through learning biology, students can understand the concepts and train of thinking skills.
De Porter and Hernacki (2000) suggested the curriculum contains three elements of presented, that is: (1) academic skills, (2) life skills, and (3) physical challenges. Therefore, the students in learning process not enough to own the concepts acquired during at course, but also willing and want to apply for the role and solve the problems in their life and social life.

Environmental Science is one of the branches of biology that is taught in universities, especially at Program Study biology education STKIP Hamzanwadi-Selong. In course, one of them is discusses about the impact of environmental pollution. One of the real phenomenon easily observable by students is about environmental pollution caused by sewage wastes both organic and inorganic wastes that result from human activities.

In this case, needed to handling and necessity takes a critical - creative thinking skills to find an alternative solution to utilize the waste that it can produce economically valuable products (Fatmawati, 2013). Result from observation learning have done, the lecturer do not emphasis to train critical and creative thinking each learning, and still limited of paper presentations and discussions.

2. Material and Method
This research used descriptive statistics to description or describe the object through sample or population data, without make the analysis and conclusions are generally (Sugiyono, 2011). A sample study is students biology (N=44) have through of environmental science course were held on June 14, 2014.

The instrument research is a questionnaire to get information about implementation the environmental science at program study biology education STKIP Hamzanwadi-Selong.

The form of questionnaire is presented as follows.

<table>
<thead>
<tr>
<th>Name</th>
<th>Identification number</th>
<th>Student</th>
<th>Semester/program study</th>
<th>Date</th>
</tr>
</thead>
</table>

Instruction:
You are required to put (x) on the answer that is considered appropriate

Question
1. What the form content you get in the Environmental Science?
   a. textual  b. textbook
c. Handout  d. Module

2. What the experience learning you get during present in the environment science course?
   a. Field study  b. Practicum
c. Make a product  d. No one the mention

3. What the learning method used by lecture at environment pollution content?
   a. Talkative  b. Discussion
c. Practicum  d. Tasks

4. Have you feel obstacle during accept a contents at course?
   a. Yes  b. No

5. Can you design worksheet?
   a. Yes  b. No

6. Do you get about entrepreneurship at course?
   a. Yes  b. No

7. Do you know about project based learning?
   a. Yes  b. No

8. Has your lecturer applied project based learning at course?
   a. Yes  b. No

4. Result and Discussion
   A Learning is process become more know before learn than ever that
occurs in certain environments such as at home, school, and in the organization. Specifically for the school, a learning process undertaking by students, interaction with teachers and other students, and learning resources. This is accordance with UUSisdiwis No 2 tahun 2003 which stated that learning is interaction between educators, students and learning resources in the environment learning.

To find the learning process has been done during lectures, especially the environmental science courses, so used a questionnaire and distributed to students. The analysis data using the percentage (%), the results of analysis is (form presented at graph):

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher not applied project based learning</td>
<td>100</td>
</tr>
<tr>
<td>Student don’t know about project based learning</td>
<td>75</td>
</tr>
<tr>
<td>Student not teach about entrepreneurship</td>
<td>86.36</td>
</tr>
<tr>
<td>Students can’t design worksheet</td>
<td>81.82</td>
</tr>
<tr>
<td>Student obstacle during learning process</td>
<td>79.54</td>
</tr>
<tr>
<td>Learning methods is discussion</td>
<td>93.18</td>
</tr>
<tr>
<td>The experience learning student is field study</td>
<td>77.27</td>
</tr>
<tr>
<td>Form of content is handout</td>
<td>68</td>
</tr>
</tbody>
</table>

Several factors that influential in the learning process among: students, lecturer, and other external factors. Generally, students just accept contents from lecturer, assignment to search journals or article in internet that associated with material course. The lecturer, rarely apply learning methods that engage students actively in the learning process. Other factor is limited facilities and infrastructure owned by a college to supporting of implementation the learning process. Dominant factor causing lows interest student toward a decrease on is implementation of learning in the classroom which is tend used talkative and discussion method.

During take on education in college, students not enough to simply accept a theory but they need to be equipped with life skills, creative learning strategy, and inculcate soul of entrepreneurship, that is soul courage and willingness to face problems and life naturally, soul of creative to solve and find solutions the problems, soul of independent and not depend on others persons (Dewajani, 2008). The inculcate of entrepreneurship is not meant to teach students become an entrepreneur but equip them how to overcome the problems on creative, by utilizing natural resources in surrounding them.
The learning orientation of life skills gives a new situation, after take education students has owned life skills that can be used to overcome the problems of life by using a variety facilities in the around them. Equipping students with the life skills, at least the students have confidence in their life. One of learning strategy to apply it using a project-based learning. Project-based learning is a systematic teaching strategy and engages learners to acquire knowledge and skills through a structured process of inquiry toward authentic a question and complex, and designed carefully to obtain the product (BIE, 2007: Dikti, 2008).

5. Conclusion
Equipping students with life skills in learning process through project-based learning is one way to teach and educate students in order to overcome the problems faced, to enterprise, and have confidence to compete in globalized era.

Acknowledgements
Thanks to my students of program study biology education STKIP Hamzanwadi Selong academic years in 2013, 2012, 2011, and 2010 which have helped in collected data.

References