



# INTERNATIONAL SEMINAR 2015

**Integrated View To International Development:  
Society Empowerment Through Psychology  
and Education Approach**

## PROCEEDING

Held by an affiliation of :



**INTERNATIONAL SEMINAR 2015**  
**Integrated View To International Development**

**Society Empowerment Through Psychology and Education Approach**

**PROCEEDING**

**HEAD**

Dr. Ir. Bambang Nugroho, M.P.

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**Organized By:**

Direcorate of Development and Cooperation  
University of Mercu Buana Yogyakarta

## **FOREWORD**

This proceeding was arranged based on the International Seminar on Society Empowerment through Multidimensional Approach: an Integrated View to International Development. The Seminar was held by University of Mercu Buana Yogyakarta (UMBY). It was also a realization of MoU between UMBY with foreign universities such as Budapest Business School (Hungary) and Lyceum of the Philippines University (the Philippines).

The Seminar was 2-day seminar with plenary session on the first day during which the prominent speakers from Indonesia and other countries such as Australia, the Philippines and Hungary had give the presentations. Parallel session was held at the end of the first day and on the second day during which about 51 papers had presented. The purpose of the seminar is strengthening the academic partnership among higher education institutions from Indonesia and other countries especially those who was participated in this seminar, and bridging closer collaboration between educational and non-educational institutions.

The purpose of arranging this proceeding is to deliver the ideas and research finding was presented in the seminar into the broader society. This effort is in order to make many discussion about variative and integrated ways to empower the society. According to the purpose of this seminar, we hope the proceeding can make harmoniously together in empowering society to meet the international development, and achieve the goals of international development. We realize that this proceeding still need many improvement to be better. So that we ask for any suggestion. We wish this proceeding will give benefit for all concerning to the better world development.

Yogyakarta, January 18, 2016

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## **HEAD OF COMMITTEE SPEECH**

Dear participants,

On behalf of the International Seminar Committee, I am very pleased to welcome you to the International Seminar on Society Empowerment through Multidimensional Approach: an Integrated View to International Development.

The Seminar is organized by the International Seminar Committee of University of Mercu Buana Yogyakarta (UMBY) in coordination with APTISI V Yogyakarta. It is also a realization of MoU between UMBY with foreign universities such as Budapest Business School (Hungary) and Lyceum of the Philippines University (the Philippines).

The Seminar is 2-day seminar with plenary session on the first day during which the prominent speakers from Indonesia and other countries such as Australia, the Philippines and Hungaria will give their presentations. Parallel session will be held at the end of the first day and on the second day during which about 51 papers will be presented.

The purpose of the seminar is strengtening the academic partnership among higher education institutions from Indonesia and other countries especially those are participating in this seminar, bridging closer collaboration between educational and non-educational instituions to harmoniuosly together in empowering society to meet the international development, and formulating and providing an integrated approach or strategy in empowering society to achieve the goals of international development.

The seminar is held in Yogyakarta. Yogyakarta is well known as a city of education and a city of tourism as well. The seminar participants can enjoy the specific nuance of the city after participating in the seminar. I sincerely look forward to sharing some wonderful and fruitful seminar days with you. It will be my great pleasure to host you together with UMBY team.

Dr. Ir. Bambang Nugroho, M.P.

## **RECTOR SPEECH**

### **UNIVERSITY OF MERCU BUANA YOGYAKARTA**

Assalamu alaikum warohmatullaahi wa barokaatuuh,

Praise goes to the most merciful God Allah SWT for the blessings of life and knowledge for us to gather in this meaningful occasion.

To start with I would like to warmly welcome

1. Sri Sultan Hamengkubuwono X, Governor of Yogyakarta Special Province
2. Prof. Haryono Suyono, Damandiri Foundation
3. Eva SÁNDOR-KRISZT, the Rector of Budapest Business School, Hungary and Prof. Judit Hidasi, Director for International Relations
4. Dr. Jose Ma S.E. Gonzales and Dr. Siegfred L. Manaois, Lyceum of the Philippines University, Manila
5. Peter Craven, Australia Indonesia Business Council
6. Dr. Bambang Supriyadi, KOPERTIS V Yogyakarta
7. Dr. Kasiyarno, APTISI V Yogyakarta
8. Rectors or leaders of invited universities and higher education institutions
9. All distinguished guests and participants to Inna Garuda Hotel Yogyakarta.

It is a great pleasure to have you all with us today.

Ladies and Gentlemen.

The International Seminar of “Society Empowerment through Multidimensional Approach: an Integrated View to International Development” is a cooperation between University of Mercu Buana Yogyakarta (UMBY), Budapest Business School (BBS, Hungary), Lyceum of the Philippines University (LPU, the Philippines), and supported by APTISI V Yogyakarta and Australia Indonesia Business Council.

This event is a reflection of UMBY’s commitment to always escalates education quality and accomodates more and more opportunities in academic

collaborations and is a UMBY's awareness and concern in empowering society that is very important in facing upcoming international development.

Society empowerment is a concept of economic development summarizing social values and illustrating a new paradigm of development as a people-centered, participatory, empowering, and sustainable. Development ideas focusing on society empowerment is important to understand as a transformation process in social relationship, economy, culture, and politic. Structural changes should be a natural process toward improving and increasing social capacity building.

The question is how could the developed dan developing countries move forward collaboratively and appropriately in addressing international development and empowering their societies to achieve the development goals in a harmony ? Therefore I believe this International Seminar will be able to present an interesting discussion on the aforementioned topic, with a prominent speakers from Indonesia, Hungary, the Philippines and Australia, giving a contribution to formulating an integrated approach or strategy to achieve the international development goals. In this wonderful opportunity I would like to congratulate the International Seminar Committee for organizing this seminar. May it will support UMBY's effort to become an international university in the near future.

Finally, once again I would like to convey a warmest welcome to all the distinguished guests and participants of the International seminar. UMBY is giving the best to assist you in everyway, therefore please enjoy our hospitality and have a delightful experience in the seminar.

Wassalamu alaikum warohmatullaahi wa barokaatuuh.

Dr. Alimatus Sahrah, M.Si., M.M.

**COMMITTEE OF INTERNATIONAL SEMINAR 2015 -  
UNIVERSITY OF MERCU BUANA YOGYAKARTA**

**“SOCIETY EMPOWERMENT THROUGH MULTIDIMENSIONAL  
APPROACH: AN INTEGRATED VIEW TO INTERNATIONAL  
DEVELOPMENT”**

- A. Condescent** : Rector UMB Yogya  
(Dr. Alimatus Sahrah, M.Si, MM)
- B. Responsible Persons** : 1. Rector UMB Yogya  
(Dr. Alimatus Sahrah, M.Si, MM)  
2. Vice Rector I (Dr. Ir. Wisnu Adi Yulianto, MP)  
3. Vice Rector Bidang II (Hasim As'ari, SE, MM)
- C. Head of Committee** : Director of Cooperation and Development  
(Dr. Ir. Bambang Nugroho, MP)
- D. Vice Head** : Vice Director of Cooperation and Development  
(Audita Nuvriasari, SE, MM)
- E. Treasury** : 1. Endang Sri Utami, SE, M.Si, Ak  
2. Brigita Hari Mulyani, Amd
- F. General Secretariat**
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3. Ermi Rachmawati



- Public Relation : 1. Niken Puspitasari, SIP, MA  
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3. Esang Suspranggono
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2. Imam Suharjo, ST,M.Eng  
3. David Nugroho, A.md  
4. Ristalia Dwi Utami, S.Kom

#### **G. Plenary**

- Koordinator : Dr. Ir. CH. Wariyah, MP
- Sub Theme 1 : 1. Dr. Kamsih Astuti, M.Si  
2. Dr. Dra. Hermayawati, S.Pd, MPd
- Sub Theme 2 : 1. Drs. Raswan Udjang, M.Si  
2. Tutut Dewi Astuti, SE, M.Si, Ak
- Sub Theme 3 : 1. Prof. Dr. Ir. Dwiwati Pujimulyani, MP  
2. Ir. Wafit Dinarto, M.Si
- Sub Theme 4 : 1. Supatman, ST, MT  
2. Anief Fauzan Rozi, S.Kom, M.Eng  
3. Rosalia Prismarini, S.Sos

#### **Notes:**

- Sub Theme 1 : Psychological and educational approach to society empowerment.
- Sub Theme 2 : Economic development and Strengthening entrepreneurship in society empowerment.
- Sub Theme 3 : Agriculture revitalization to achieve food sovereignty and society empowerment.

- Sub Theme 4 : Society empowerment through technological approach.

## **H. Procceding**

- Coordinator : Awan Santosa, SE, M.Sc
- Staff : 1. Dr. Triana Noor Edwina DS, S.Psi, M.Si  
2. Rina Dwiarti, SE, M.Si  
3. Indah Susilawati, ST, M.Eng  
4. Restu Arini, S.Pd. M.Pd  
5. Mamilisti susiati, Drh, MP  
6. Kristina Andryani, S.Sos, M.I.Kom

## **I. General Supporting**

- Coordinator : Santi Esterilta P, Psikolog, M.Si
- Transportation and Equipment : 1. Sunardi  
2. Tugiyat
- Studentship : 1. Martinus Budiantara, SE, M.Si, Ak  
2. Nur Fachmi Budi Setyawan, M.Si
- Ceremony : 1. Asep Rokhyadi Permana S, SE, M.Si  
2. Elysa Hartati, S.Pd, M.Pd  
3. Widarta, SE
- Receiving Guest : 1. Ir. Warmanti Mildaryani, MP  
2. Sri Suswati
- Logistic : 1. Dra. Sumiyati  
2. Dorothea Ari  
3. Ngatiyah

- Connecting Guest : 1. Agus Slamet, S.TP, MP  
2. Agustinus Hari Setyawan, S.Pd, MA
  
- City Tour : 1. Reny Yuniasanti, S.Psi., M.Psi.  
2. Nuryadi, S.Pd., M.Pd.

## **SCHEDULE OF INTERNATIONAL SEMINAR**

**INNA GARUDA HOTEL, YOGYAKARTA  
NOVEMBER 26-27, 2015**

### **First Day, 26 November 2015**

<b>Schedule</b>	<b>Session</b>	<b>Theme &amp; Presenters</b>
8.00 – 8.45	Re-registration	
8.45 – 9.00	Welcoming dance	Naviri, Dance of Pudiastuti
9.00 – 9.10	Opening speech	Welcome & opening speech by the Rector, University of Mercu Buana Yogyakarta
9.10 - 9.20	Welcome speech	APTISI
9.20 – 9.30	Welcome speech	KOPERTIS V YOGYAKARTA
9.30 – 10.00	Keynote speech 1	Governor of Yogyakarta Province (ASEK I)
10.00 – 10.30	Keynote speech 2	Prof. Haryono Suyono
10.30 – 10.45	Coffee break	
10.45 – 11.45	1 <sup>st</sup> Session	Dr. Judit HIDASI/ Dr. Éva Sándor-Kriszt (Budapest Business School, Hungaria)
11.45 – 12.45	2 <sup>nd</sup> Session	DR. SIEGFRED L. MANAOIS (Lyceum of the Philippines University, Philippines)
12.45 - 13.45	Lunch break	Media partner
13.45 – 14.45	3 <sup>rd</sup> session	Peter Craven (Australia Indonesia Business Council)
14.45 – 15.00	Coffee break	
15.00 – 16.30	Parallel session 1	

**Day 1 A**

Time : 14.00-16.00  
Venue : Ballroom  
Moderator : Dr. Triana Noor Edwina, M.Si  
Petugas Ruang : Aldi, Riri, Jefri

No	Name	Tittle	Group
1	Asina Christina Rosito	The Correlation Between Peer Social Support And Self-Regulated Learning	Psychology/ Education
2	Ati Kusmawati	Cognitive Piaget In Learning Motivation To Adolescence Tunalaras Delinquent	Psychology/ Education
3	Gunarhadi	Needs assesment of educational services For children with disabilities in inclusive schools in municipality of surakarta	Psychology/ Education
4	Nurul Hidayah	The Model of School Satisfaction in Junior High School Students	Psychology/ Education
5	Petrus Ana Andung	Gender relations in mass media (gender discriminative discourse of news on violence against women in “pos kupang.com”)	Psychology/ Education
6	Clara r.p. Ajisuksmo	Education For The Disadvantaged Children In Indonesia	Psychology/ Education
7	Fany Rifqoh	The Role Of School And Methods To Manage Slow Learners Students	Psychology/ Education

**Day 1 B**

Time : 14.00-16.00  
Venue : Ballroom  
Moderator : Prof Dwiwati Pujimulyani. MP  
Petugas Ruang : Resti, Fenti, Arvina

No	Name	Title	Group
1	Eri Yusnita Arvianti	Youth Interest On Transformation Farmer Agricultural Sector In District Ponorogo	Agriculture
2	Bayu Kanetro	Community Empowerment Of Kaliorejo Kulonprogo Special Region Of Yogyakarta For Developing Oyek Into Artificial Rice As Staple Food	Agriculture
3	Yunida Sofiana	Economic Challenges Versus Creative Design (Case Study In Banjarharjo Village, Bantul, Yogyakarta)	Economics and Business
4	Khoirul Hikmah, SE, M.Si	Advantages And Limitations Of Antecedents Effect Against Company For Investment Opportunities Set And Influence On Funding Policy In Agency Theory Perspective	Economics and Business
5	Kurnia Martikasari	The Evaluation Of Financial Performance For Economic Sustainability In Credit Union	Economics and Business
6	Ria Arafiah	The Expert Systems Prevention Of Epidemic Dengue Hemorrhagic Fever Based Community Development	Economics/ Information System
7	Alimuddin/Fatah Sulaiman	Early Warning System Analysis Of Accident Due To Weather Conditions Flood Parameters Of Temperature On The Rail Scale Laboratory	Information System
8	Alimuddin	Design Of Automation Control System Parameter Humidity Fertigation Aeroponics System In Caisim	

## Day 2 Sesi I A

Time : 08.15-09.45  
Venue : Kalasan  
Moderator : Dr. Ir. Wisnu Adi Yulianto, MP  
Petugas ruang : Wawan, Lova, Ami, Indra

No	Name	Tittle	Group
1	Dumasari Tri Septin Muji Rahayu	Strategic Marketing Design Of Creative Souvenir Processed By Coconut Waste According To Market Trend	Agriculture
2	Imam Santosa	Empowerment of Peasant Through The Development of Ecotechnopreneurship Behavior in Managing Mix Farming (Based Social Capital)	Agriculture
3	Wiwik Widyo Widjanti	Effects Of Settlement Potential And Problem Toward Settlement Development Strategy In Coastal Marine Probolinggo East Java	Agriculture
4	Yushardi	Mango Farmers Increasing Competences Development Through Media Green House At Studio Learning Activities Situbondo	Agriculture
5	Tintin Febrianti	Social functioning as strategy for fishermen's empowerment Case in coastal areas at district of tasikmalaya	Agriculture
6	Eri Yusnita Arvianti	Youth Interest On Transformation Farmer Agricultural Sector In District Ponorogo	Agriculture

## Day 2 Sesi I B

Time : 08.15-09.45  
Venue : Sambisari  
Moderator : Santi Esterlita Purnamasari, S.Psi, M.Psi, Psikolog  
Petugas : Sakti, Aldi, Fenti, Arvina

No	Name	Title	Group
1	Said Alhadi	The Role Of Education To Improving Human Resources	Psychology/ Education
2	Triana Noor Edwina	Construct Husband's Support, Indigenous Psychology Approach	Psychology
3	Alimatus Sahrah/Ranni Merli Savitri	Destination image of yogyakarta and Student's subjective well-being (swb)	Psychology/ Education
4	Wahyu Kuncoro	The Justice Judgement Model In Participation Of Disaster Mitigation Program	Psychology
5	Sri Muliati Abdullah	Identification of ideal softskill profile and youth's softskill development strategy for job success Through society empowerment	Psychology
6	Reny Yuniasanti	Job Satisfaction on Academic staff Viewed from Co-workers Social Support at the University of Mercu Buana Yogyakarta	Psychology
7	Novina Suprobo	The role of passion for teaching to promote teachers' adaptive outcomes: A perspective of teachers in Indonesia	Psychology



## Day 2 Sesi I C

Time : 08.15-09.45  
Venue : Prambanan  
Moderator : Gumirlang Wicaksono, S.E., MBA.  
Petugas : Resti, Kelvin, Riri, Ajat

No	Name	Title	Group
1	Muhammad Suliswanto	Acceleration Strategy in Achieving Millennium Development Goals (MDGs) through Human Resources Planning Based on Local Economy Potencies (The Application on Regencies/ Cities in East Java)	Economics and Business
2	Ni Wayan Sri Astiti	Model Through The Empowerment Of Women In Household Industrial District Abang Karangasem	Economics and Business
3	Nujmatul Laily	Relationship Between Moral Development And Ethical Judgement: Evidence From East Java	Economics and Business
4	Polniwati Salim	The Application Of Toraja Ornament Into Interior Furniture In Efforts To Strengthen Efforts Local Culture And Entrepreneurship In Jakarta	Economics and Business
5	Dr. sri pujinin gsih	Emancipatory Accounting: University Accounting Alternative Preventing Education Commercialization	Economics and Business
6	Awan Santosa	Performance Evaluation of Science and Technology for Export Product Program of Goat Leather and Vinile Handcraft in Bantul Regency	Economics and Business

## Day 2 Sesi II A

Time : 10.00-11.30  
Venue : Kalasan  
Moderator : Indah Susilawati, ST., M.Eng.  
Petugas Ruang : Wawan, Lova, Ami, Indra

No	Name	Title	Group
1	Anif Fatma Chawa	Ongoing Communication and Assistance of Mining Company's Community Development Programs	Communication
2	Herdianto	Electric Light Control System Using Computer Network Based On Module Usb-Relay	Information Technology
3	Martinus Budiantara		Economics and Business
4	Nuryadi	Implementation Of Creative Problem Solving (Cps) With Figure Tools For Improving Student Achievement In Mathematics Learning Smp N 2 Godean Class Viii	Mathematic/ Education
5	Marleni, M.Pd	Entrepreneurship Development of Woman Handycrafter in West Sumatera	Economics and Business
6	Dasrizal		

**Day 2 Sesi II B**

Time : 10.00-11.30  
Venue : Sambisari  
Moderator : Sowanya Adi Prahara, S.Psi., M.A.  
Petugas ruang : Sakti, Aldi, Arvina, Fenti

No	Name	Tittle	Group
1	Alimatus Sahrah	Effectiveness Of Social Support Training Custodian To Enhancing Subjective Well Being Prisoners At Penitentiary Class Ii.A Yogyakarta	Psychology
2	Kamsih Astuti	The Social Cognitive Model Of Smoking Initiation Prevention In Adolescents	Psychology
3	Komsi Koranti	Analysis Strategy Problem-Focused Coping And Emotion-Focused Coping In Women Victims Of Domestic Violence In Jakarta	Psychology/ Education
4	Santi Esterlita Purnamasari	Attitude of Premarital Sexual Behavior, Sexual Knowledge And Control of Premarital Sexual Behavior On Junior High School Students In Yogyakarta	Psychology
5	Ranni Merli Safitri	Brand Image And Service Quality As Predictors Of Brand Loyalty Of Students	Psychology
6	Achmad Fauzan	Upaya Meningkatkan Niat Beli Konsumen Ditinjau Dari Kredibilitas Selebriti, Citra Visual dan Verbal Iklan	Psychology

## **Day 2 Sesi II C**

Time : 10.00-11.30

Venue : Prambanan

Moderator : Awan Santosa, S.E, M.Sc

Petugas ruang: Resti, Kelvin, Riri, Ajat

No	Name	Tittle	Group
1	Audita Nuvriasari	The Influence Of Competitive Advantage Strategy To Smes Performance	Economics and Business
2	Gumirlang Wicaksono	Assessing The Implementation Of Transnational Strategy A Case Of Accor Indonesia	Economics and Business
3	Herminawaty Abubakar, Dr	Answering The Needs Of The Company With Transformation Organizations	Economics and Business
4	Ignatius Oki Dewa Brata	Leverage, Profitability, And Size Influence Of Corporate Dividend Policy	Economics and Business
5	Bambang Nugroho	Empowering Vegetable Farmers Through Broadening Marketing Access: A Case In Kaliangkrik, Magelang	Agriculture

# **IMPLEMENTATION OF CREATIVE PROBLEM SOLVING (CPS) WITH FIGURE TOOLS FOR IMPROVING STUDENT ACHIEVEMENT IN MATHEMATICS LEARNING SMP N 2 GODEAN CLASS VIII**

**Nuryadi**

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**Mathematics Education Mercur Buana University Yogyakarta**

## ***Abstract***

*This research aimed to improve the learning achievement in mathematics to the students of class VIIIB in State Junior High School 2 Godean, Sleman. This was a classroom action research with the research subject of VIIIB graders in State Junior High School 2 Godean, Sleman with the total number 36 students. This classroom action research was done in 2 cycles. The first cycle consisted of three meetings, and the second cycle consisted of three meetings too. The research data were gained from the teachers and students observation results as well as the students activities with the comparing data; those are the teachers and students questionnaire result, the teachers and students interview result, worksheet result, evaluation result, and recording (electronically). The data were analyzed in descriptive qualitative through some steps; they were data reduction, triangulation, and data display. The result of research showed that learning process using CPS model actually could improve mathematics learning achievement with the amount of 3.36% in class VIIIB of State Junior High School 2 Godean, Sleman. This was indicated by learning implementation process with CPS model which kept improving from cycle I to cycle II with the amount of 10.75% on observation sheet and 7.33% on students questionnaire. The students*

*learning result also came into an improvement that the average of the class final score reached 71.59%.*

***Keyword : Creative Problem Solving Learning, Learning Achievement, and Visual Aid***

## **A. Introduction**

According to the Law of the Republic of Indonesia, Number 20 Year 2003 on National Education System in article 1, it is stated that education is a conscious and deliberate effort to create an atmosphere of learning and the learning process so that learners are actively developing the potential to have the spiritual power of religion, self-control, personality, intelligence, noble character, and skills needed for the education participant himself, society, nation and state.

Education, on Secondary School as part of the national education system, has a very important role in improving human resources. Education is basically a human resource development effort. Education in high school is the first step of the potentials that exists within the learner, which are expected to produce a qualified Indonesian people.

In KTSP of the High Schools, it is explained that the aim of learning mathematics is purposed so that the learners have the ability to (1) understand math concepts, explain the relationship between concepts, and apply the concepts or algorithms in a flexible, accurate, efficient, and precise in problem-solving activity; (2) use logic on the pattern and nature, perform mathematical manipulation in making generalizations, compile evidence or explain mathematical ideas and statements; (3) solve the problem that includes the ability to understand the problem, design mathematical models, solve the model and interpret the obtained solution; (4) communicate ideas with symbols, tables diagrams, or other medias to clarify the situation or problem; (5) have an attitude appreciate the usefulness of mathematics in life, which has the curiosity, attention and interest in studying mathematics,

as well as a tenacious attitude and confidence in problem solving (MONE, 2006).

According to Sadiman (1996: 14), learning media is a source of learning which can deliver the message which can help overcoming problem. Meanwhile, according to Sudjana & Rifai (2002: 3), the use of instructional media can enhance the process and result of the teaching with the regard to the student's level of thinking.

One of the learning media is the instructional media. According to Sudjana (1987: 99), the role of media used in the learning process is to help teachers performing student learning process so that it can be more effective and efficient. According to Subagya (2006: 13), the thinking level of students in junior high allow them to overcome problems that are very diverse more effectively but still can not function efficiently in the field of abstract. In this case the role of tools or medias are very important because the presence of this material props can be understood by students easily.

Based on the discussions and results of class observations between researchers and teachers of mathematics in SMP N 2 Godean Yogyakarta, there are some problems in mathematics subject including: (1) The teacher still dominates the learning process because the teacher still uses lectures, so that students are less able to express ideas either in the form of questions or solution and less active during the learning process, such as asking and answering questions; (2) Less use of props that already exists, an impact on the low student to think critically and creatively also makes its own problems that must be resolved, especially in particular to problems of Flat sides on geometry. In addition to the unavailability of adequate teaching aids, teachers are still lacking skills in using props that are already available; and from the second semester, the final exam results show low learning achievement of the students.

Based on the results of TIMSS 2011 (Mullis *et al*, 2012: 42), the level of mastery of Indonesian students in mathematics or mathematics achievement for grade 8 is low because the students only obtain a score of

386, with the average score of 500. The international score Indonesia ranks third placing at the bottom. When compared to the year of 2007 that received a score of 397, then in 2011 there has been a decline of 11 points. Thus, mathematics achievement for grade 8 in Indonesia in the period from 2007 to 2011 did not change significantly and are likely to decline.

TIMSS survey shows that learning achievement is still low. The results of direct observation of school at math learning takes place, the results of final exams is allegedly perceived with low learning achievement. These issues require solutions and proper handling so that learning can take place properly. One of the steps to be taken is to use CPS learning model with props as a learning medium. According Muslich (2006: 22), model-based learning with *CPS* is a learning model that focuses on the teaching and problem solving skills, followed by strengthening the required skills. On this model, the students are not only solving problems in mathematics but also required to skillfully use the props as a medium of learning in solving these problems.

According to Anonymous (2005; 67), Model CPS is a pattern of learning that develops the child's ability to think and act logically, to be creative and to have critical problem solving habit. According to Polya (Orton, 2006: 87), the four stages of learning CPS: (1) understand the problem; (2) develop a plan; (3) implement the plan; and (4) review the plan.

Lewis (2011: 34) provides an overview of the practice of learning structure CPS with the following stages: (1) Bring up and understand the task (briefly), (2) solve the problem alone, (3) presentation solutions student and class discussions and (4 ) a summary or the construction of knowledge.

It is expected that *CPS* learning model by using props can improve mathematics learning achievement in the subject of geometry in class VIII SMP N 2 Godean.



## B. Research Methods

### 1. Type and Approach of the Research

The type of the research is a kind of a Class Action Research also called *Classroom Action Research (CAR)*. This classroom action research is a collaborative action research, in which researchers join directly with subject teachers of mathematics in the learning process in the classroom.

The approach used in this study is a qualitative research approach, which naturally captured data retrieval in the form of words or pictures. While the preparation of the design is done continuously until it was concluded equivalent results in accordance with reality.

### 2. Research design

The action research design is described as follows:

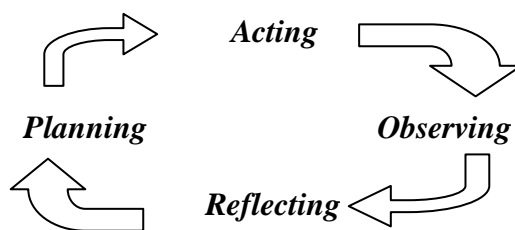


Figure 1. Study cycle 4 stages PTK Class Action Research was conducted in two cycles because of the expected goal has been reached.

### 3. Subject and Object Research

The subjects were students of class VIII B of SMP N 2 Godean Sleman as many as 36 students. The object of this research is the implementation of learning mathematics with one model of learning. The *CPS* uses props as a medium of learning on the subject of the flat side geometry.

### 4. Research Instruments

In this study, researchers used several instruments including:

#### 1. Student Worksheet (LKS)

A sheet of exercises that made researchers and teachers perceive as all reflection on the student and the student's skills of understanding.

2. Observation Sheet

This observation sheet is a sheet containing a picture of feasibility study of mathematics by *CPS-aided* model of props contained also in the lesson plan.

3. Questionnaire

This questionnaire is used to determine the increase in the implementation process of learning. A statement on the activities in which the students learn mathematics with *CPS* models using props.

4. Unstructured interview

This interview was conducted outside school hours and given by the researcher against some particular students. The contents of the activities are, response, and the response of students to the study of mathematics using learning model of *CPS*. The interview also conducted by researchers to the subject teachers of mathematics to get feedback on the implementation of *CPS models*.

5. Problem Evaluation

Evaluation problem is a matter of description as a tool to measure students' math competence. Evaluation is given as to obtain data of student achievement.

6. Documentation

Documentation of the photos used to illustrate visually the condition of the learning process.

**5. Research procedure**

Procedures or measures are conducted by researchers during the study is as follows:

1. Personnel involved

In this study, researchers are working with teachers Mathematics to make team collaboration. Researchers and teachers always hold discussions to observe and monitor the extent to which the research took place. There are two observers, namely Joko Priyono, S.Pd.Si and Nana Khuzaini, M.Pd.

2. Preparation of learning instruments

Instruments used during the study they are the syllabus and assessment system, RPP (Lesson Plan), worksheets students, handout materials, the name of class VIII B group, and a list the value of class VIII B. These instruments have been consulted with experts before.

3. Scenario Actions

Classroom action research is conducted in cycle (cyclic). This study is divided into two cycles and one cycle is divided into several stages, namely: (a) Action Plan; (b) Implementation of the action; (c) Observations; and (d) Reflection.

## **6. Data Validation**

According Wiraatmadja (2006: 169), data validation is one step to get a degree of trustworthiness in a study. Data that has been obtained is validated by doing extra time in the field, *member checking*, *triangulation*, and *expert opinion*.

## **7. Data analysis technique**

Analysis of the data used is descriptive qualitative data analysis. The data have been obtained subsequently analyzed in several stages, namely: (Suharsimi, 2006: 37)

- a. Data collection

This stage is carried out starting from the beginning of the study. The researcher collects all information and the information obtained in the field.

b. Data Reduction

The activities carried out at this stage is to summarize the data, sort the data then choose the data related to research and delete data that is not patterned.

c. Display Data

Data that has been triangulated is presented in tabular form so it is easy to read and understand, in whole or in parts. For data in the form of a questionnaire percentage, they are calculated using the formula:

$$\frac{\text{number of answers}}{\text{number of students}} \times 100\%$$

While the percentage of mathematics learning feasibility observation sheet that is used as a measure of success or failure of a study, then they are qualified by the percentage of successful interval as follows:

<b>Table 1. Percentage of success</b>			
No	Amount	Percent (%)	Score
1	0	- 33%	Less
2	34%	- 67%	Moderate
3	68%	- 100%	Good

The data of the test or evaluation is analyzed / calculated by the percentage used to determine student achievement, using the formula as follows:

$$\frac{\bar{X}}{100} \times 100\%$$

$\bar{X}$  = the average value of the class.

d. Conclusion

Once analyzed, the data obtained conclusions whether the learning objectives have been achieved or not.

## **8. Indicator of Success**

The components considered as the indicator of success in this study are as follows:

- a. Implementation of learning by using props *CPS* is said to be good (68% - 100%) if the steps in the learning process with this model can be applied by teachers and students to solve problems.
- b. Students are considered to increase their academic achievement after learning when the achievement reached an average passing grade of 65% and continued to rise in the next cycle.

## **C. Results and Discussion**

### **1. Results of Action Research**

Classroom action research is conducted as an effort to improve achievement of students in the class VIII B of SMP N 2 Godean. The research was implemented in 2 cycles. The first cycle was divided into 3 meetings and the second cycle was divided into 3 meetings. Two of the cycles were completed within a month. Each cycle consists of four stages: planning, executing action, observation / observation and reflection. Classes which were used in this study consisted of 36 students, consisting of 17 boys and 19 girls. Researchers involved two observers during the study because the researchers involved in the implementation of learning as a director in addition to the teacher. This is because the methods used, including a new method that has never been implemented in the school and in the implementation of the action is feared that there are things that do not fit in the planning.

*CPS* model study emphasizes more on the problem-solving activities undertaken by the students themselves. These activities provide greater opportunities for students to construct and implement the concept, the knowledge in accordance with the development of thinking ability.

CPS Model in mathematics learning in class VIII B of SMP N 2 Godean focused on Geometry materials and Measurement Section of cubes, blocks in the first cycle, and prism, pyramid on the second cycle. The question made by the teacher was the same, but the answer to that question adjusted to the props that were made. At the first meeting of the first cycle, the student was still confused to use the props, concepts, and still not be able to do the task. The problem-solving methods were still the same as the teacher's explanations. The students had not come up with creative ideas. In the second cycle of learning with CPS, the students were already showing indications of increase as seen when students were able to complete work on the problems in a different way between one student to another student. In the first cycle, students were still having trouble understanding the material and they solved problems independently. The solution taken was to provide stimulus to the beginning of the second cycle that the teachers assisted the students in learning handouts, many exercises, and further streamlined props as a learning medium. Learning activities were in the form of asking questions, working in groups, answering questions, expressing opinions, paying attention to the teacher's explanation, the ability of students to be creative in solving problems, the ability of the students took the initiative to seek references other than those used in the classroom, the students' ability to use props in learning and the student's ability correcting his answer.

The results of the implementation of the observation sheet mathematics learning with CPS models can be seen from Table 2 below:

**Table 5. Observation Sheet  
Learning Cycle I**

	<b>Pertemuan</b>		
	<b>I</b>	<b>II</b>	<b>III</b>
The average percentage of learning process	62,17 %	80 %	82,23%

**Table 6. Observation Sheet  
Learning Cycle II**

	<b>Pertemuan</b>		
	<b>I</b>	<b>II</b>	<b>III</b>
The average percentage of learning process	87,78 %	84,44 %	82,22%

While the learning achievement of data is supported by the results of Student Worksheet (LKS) during the learning process and test data description, the average yield LKS and achievement tests are presented in the following table:

**Table 7. Results Mean Score Student Worksheet**

SCORES	CYCLE I			CYCLE II		
	LKS I	LKS II	LKS III	LKS I	LKS II	LKS III
The average score LKS	57,6	61,0	65,0	69,3	74,3	73,5
Maximum Score	70	70	90	100	100	100
Minimal Score	40	50	40	50	50	55

**Table 8. Results Mean of Student Test Scores**

SCORE	CYCLE I	CYCLE II
Average test scores	68,23	71,59
The maximum score	96	95
A minimum scores	40	50

**Table 9. Student Questionnaire for Mathematics Learning Implementation  
Cycle I and Cycle II**

SCORE	CYCLE I	CYCLE II
The avarage percentage	60,76%	68,09%

## 2. Discussion

The results of the implementation of the observation sheet in mathematics learning with CPS models show success which reached 74.07% and the results of the questionnaire calculation reaches 60.76% in cycle I. The implementation process of learning in the second cycle shows the percentage of 84.82% in the observation sheet and 68.09% on the results of the questionnaire. These results indicate an increase in the implementation process of learning from the first cycle to the second cycle that is equal to 10.75% in the observation sheet and 7.33% on the results of the student questionnaire. The results show the percentage of 84.82% in the observation sheet which is supported by the data from questionnaires by 68.09%. The researcher concludes that the implementation of the CPS model study using props is performing *well*.

Based on the research that has been done, the implementation of learning mathematics through learning model of CPS by media props can improve student's achievement in each cycle. Student achievement were initially low, may increase after learning mathematics using CPS learning model. The results of student work in LKS are used as a benchmark and an increase in problem-solving ability and understanding of mathematical concepts. LKS is sometimes done as individuals or groups.

From Table 4, it can be seen that the average LKS score increased. As seen from the table, the average yield of LKS, LKS II on the second cycle decreased from LKS I, it is because the teacher is not providing motivation to learn and practice, the teacher failed to give an understanding to the students about the material presented, the teacher is less reviewing content of the material that has been submitted, the teacher also gives less discussion of the problems or tasks assigned to the students. Learning mathematics by using CPS model can improve student achievement in each cycle. It can be seen from the average test score in each cycle. The average yield cycle test scores I, II are used as a tool to



measure students' math competence. Problem evaluation or testing is always done individually.

From Table 6 it can be seen that an increase in the average score of the test / evaluation of the students from the first cycle to the second cycle is 3.36%. Based on the data that has been presented above, the researchers can say that of all the results that have been obtained, the method can answer the problems posed in this study.

## **D. Conclusions and Recommendations**

### **1. Conclusions**

Based on the results of research and discussion can take the following conclusion:

- a. The learning process of mathematics learning model CPS in general can be said to be going well, causing students to think creatively, for example, students using props or aids in solving problems, students try other ways to solve the given problem by the teachers, students discover how to solve different problems with friends, students solve problems in a certain time, students dare to express a different opinion when discussing, students explained a different way of solving the problem to a friend if they do not understand. This quantity can be shown from the calculation of observation sheets feasibility study, namely in the first cycle indicates the percentage of 62, 17% in the first meeting, 80% at the meeting II and 82.23 % In the third meeting, while in the second cycle there was an increase in the percentage calculations observation sheet amounted to 87.78 feasibility study % In the first meeting, 84.44 % At a meeting II and 82.23 % In the third meeting.

- b. Student achievement using CPS learning model increases from the first cycle to the second cycle. It can be seen from the average value of the evaluation of the first cycle of 68, 23% with the good category and the second cycle value of 71.59% on the good category.

## 2. Suggestions

Suggestions given by the researcher are:

- a. For the school, emphasize to the school teachers to use media props as a medium of learning should be maximized.
- b. For teachers to first explain the learning model *CPS* to students so that students will not be confused with the method used during the learning process and also the need for a reflection of learning so that the students know the location of faults to create questions and solve them.
- c. For students to be able to control the classroom atmosphere more conducive and not to disturb the other classes.

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# CERTIFICATE

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