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"Improving Professionalism and Reflective Thinking through Design Research"

UNIVERSITAS SANATA DHARMA
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DESIGN RESEARCH MEETS LESSON STUDY IN TRAINING PROGRAM FOR MATHEMATICS TEACHERS

RATU ILMA INDRA PUTRI

HEAD OF LEARNING INOVATION CENTER

UNSRI

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- Lesson Study
- Design Research
- PMRI

LESSON STUDY

Teachers in collaboration select a topic and plan and prepare a lesson (called a research lesson)

One teacher enacts the research lesson and the others observe the students in class, and finally teachers discusses their observations

Discussions and the reflection on classroom practices and student learning further stimulate teachers' professional development,

LS movement for improving teaching practice. Math-educators have been developing lesson study community with elementary school teachers (Isoda, 2006)

A group of teacher develops a lesson together and ultimately one of them teaches the lesson while the others observe the student learning (Romero, 2004)

Teachers collaboratively plan a research lesson, observe this lesson live, collect data and analyze them together to improve pupils' learning (Fernandez & Chokshi, 2002).

LS has contributed to teachers' professional development, improving teaching practice, improving students' learning and building and sustaining professional learning community (e.g. reviews of Xu & Pedder, 2014 and Huang & Shimizu, 2016).

Developing theories of mathematics education are still unusual.

Math-educators have been developing lesson study community

1

2

Gravemeijer,K. (2007) explained the process to develop the local theory of teaching through Design Research

Design research can be characterized as a research approach in which the design of educational materials is interwoven with the development of theory (Eerde, 2013).

Different Names

- Development Research (Frudenthal, 1998)
- Design Experiments (Brown, 1992; Cobb et al., 2003)
- Design Based Research (Educational Researcher, 2003)
- Educational Design Research (Van den Akker et al., 2006)
- Design Research

Aim of Design Research

The aim of a design research is to develop:

- Instructional Theory about learning process of the students

and

- The educational materials that are designed to support that learning

INSTRUCTIONAL THEORY

JAPAN

NETHERLAND

INDONESIA

OPEN ENDED

REALISTIC MATHEMATICS EDUCATION (RME)

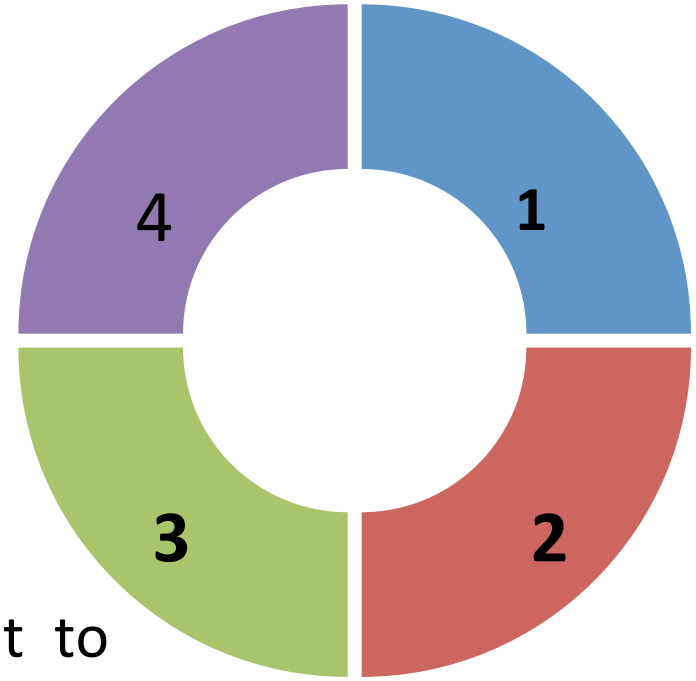
PENDIDIKAN MATEMATIKA REALISTIK INDONESIA (PMRI)

THE PURPOSE

To describe the implementation of the training program uses a combination of lesson study and design research for mathematics teachers at the PMRI pilot school in Palembang Indonesia.

4 Stages in Lesson Study

See
The goal in this phase is to find advantages and weaknesses in the learning process



Plan
In this phase, teacher design the learning media that suits the students

Re-design
This phase is meant to fix the learning process and as a documentation for teachers involved in the preceding phases

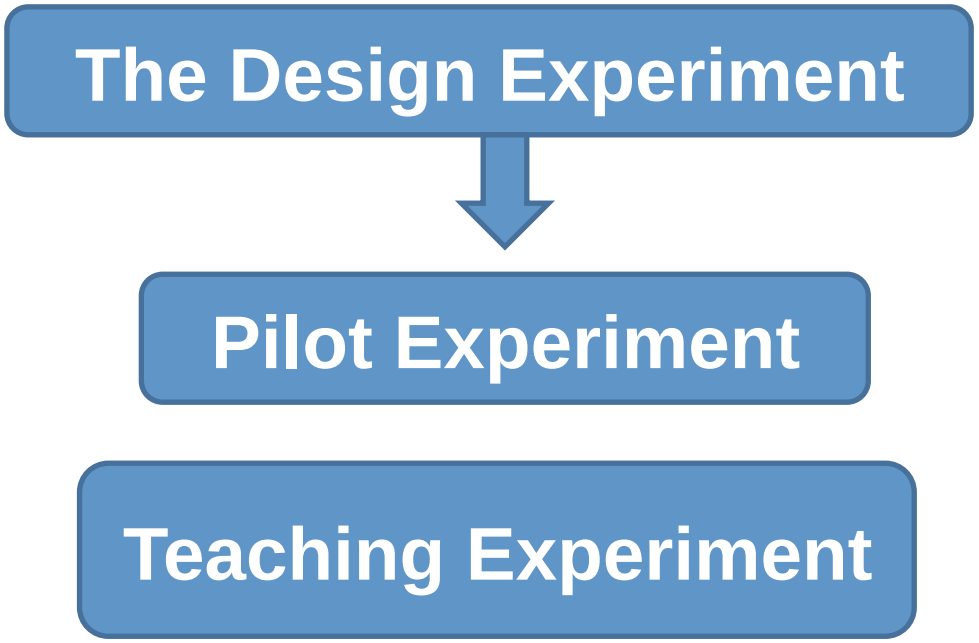
Do
The goal in this phase is to conduct the learning process that have been designed

Phases in Design Research

1. Preparation and design
2. Conducting the design experiment
3. Conducting the retrospective analysis

Subject of the Study	Mathematics teachers: PMRI Pilot School in Palembang
Research Method	Design Research (validation studies; development studies)

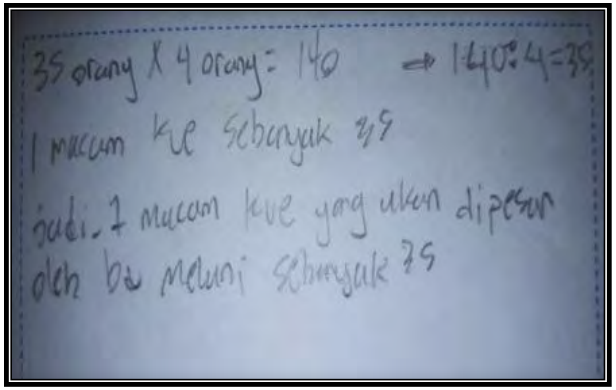
The Stages of Design Research



The Stages of Lesson Study

Pilot Experiment

Students confused with the problem and he ask for help to solve the problem



Small Group Video

Retrospective Analysis

Doing reflection, after pilot experiment

VideoRetrospective Analisis

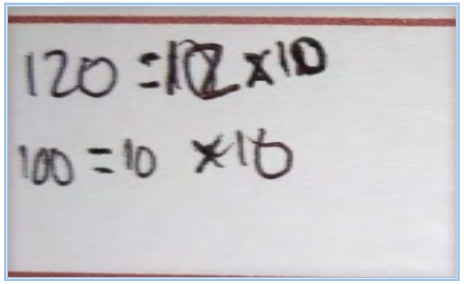
Initial HLT

Final HLT

Teaching Experiment

After revision the HLT, researcher and team implementing in the classroom

Learning Video



Learning Video

Retrospective Analysis

Doing reflection, after teaching experiment

Video

CONCLUSION

Through Lesson Study and Design Research can make students collaborate well, so that mathematics learning becomes meaningful and easy

Thank you

Terima Kasih

Dank u

ratu.ilma@yahoo.com
081386497768