Development of Basic Physics - Learning Program to Improve Pre-Service Physics Teacher Competencies

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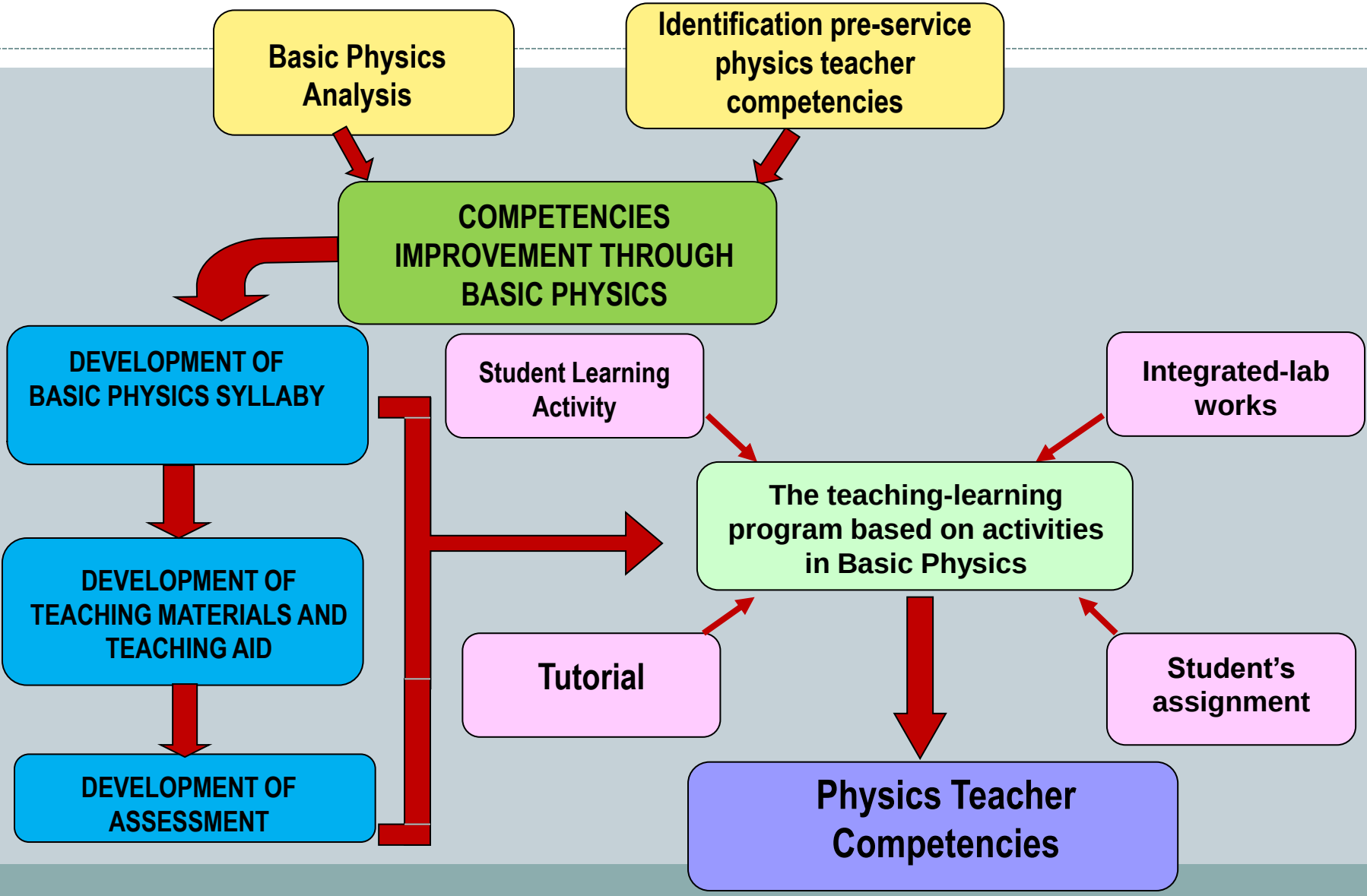
Research Purpose

- The research is aimed to investigate the effects of the teaching-learning program based on activities (TPBA) in Basic Physics in improving pre-service physics teacher competencies.
- The teaching-learning program consists of integrated-lab works and student's assignment.

RESEARCH PARADIGM

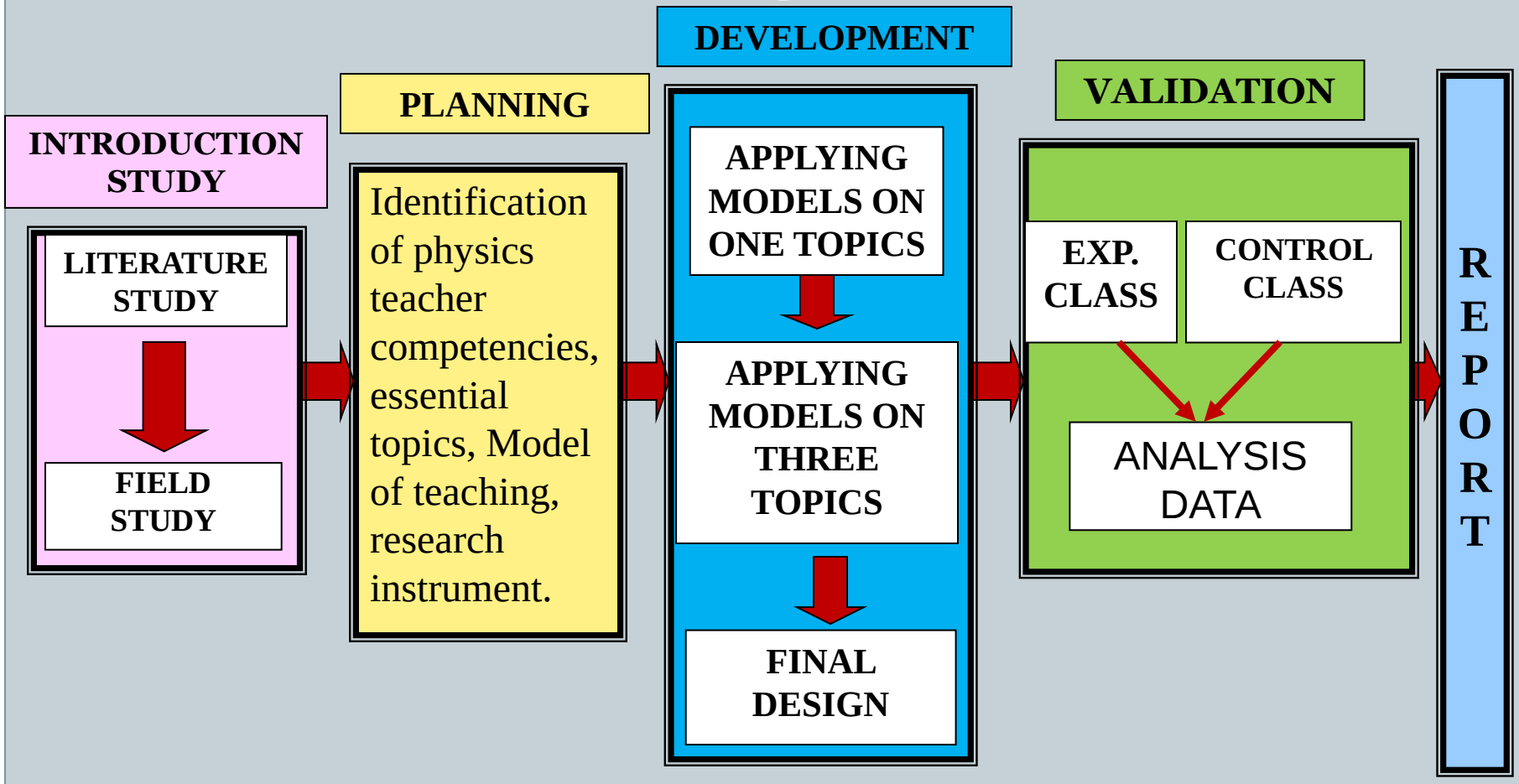


Pre-service Physics Teacher Competencies

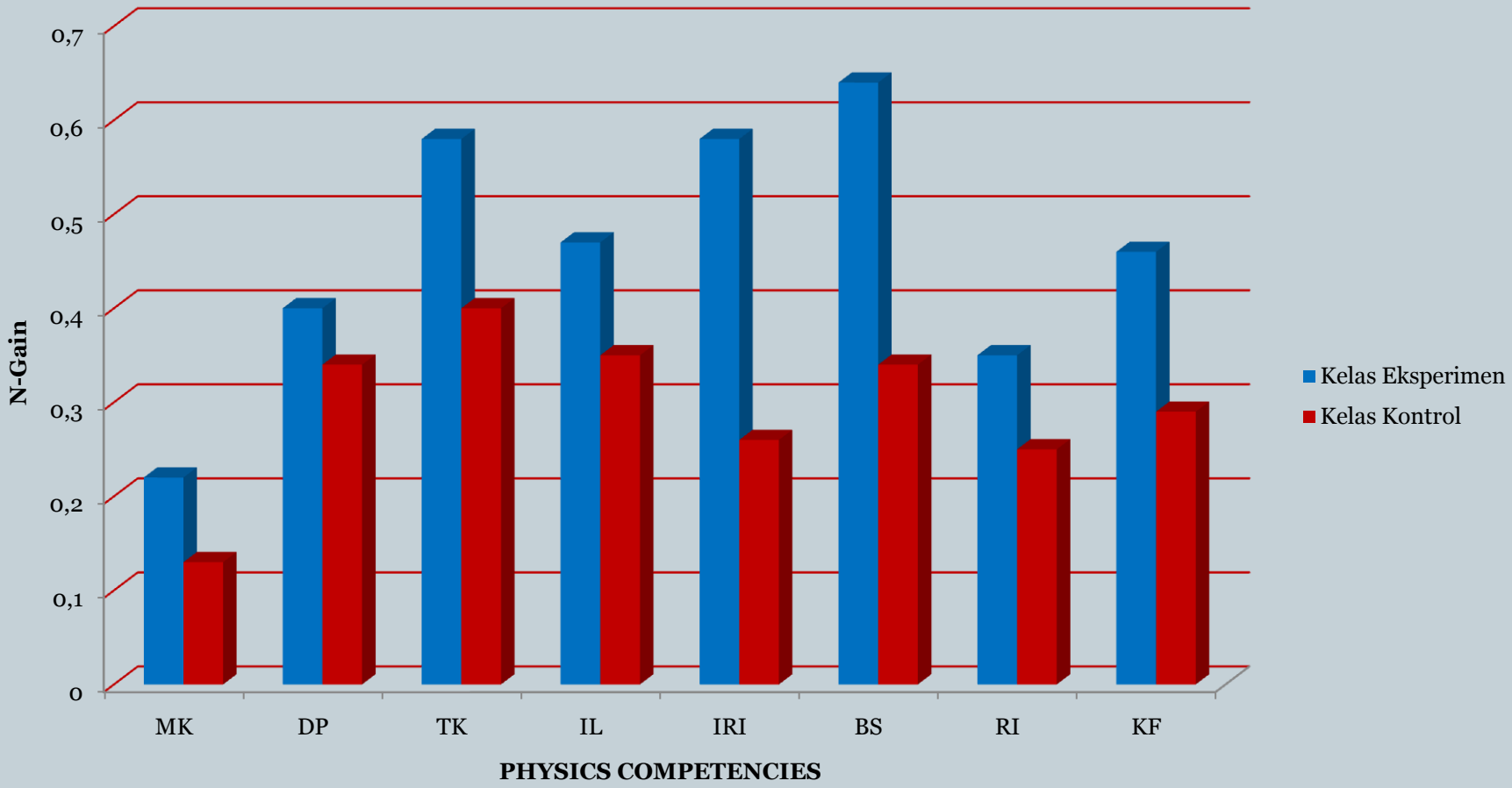
1) Concepts construction;
2) Knowledge description,
3) Concepts application;
4) Logic inference;

5) Scientific-representation interpretation;
6) Scientific-representation construction;
7) Symbolize-utilization.

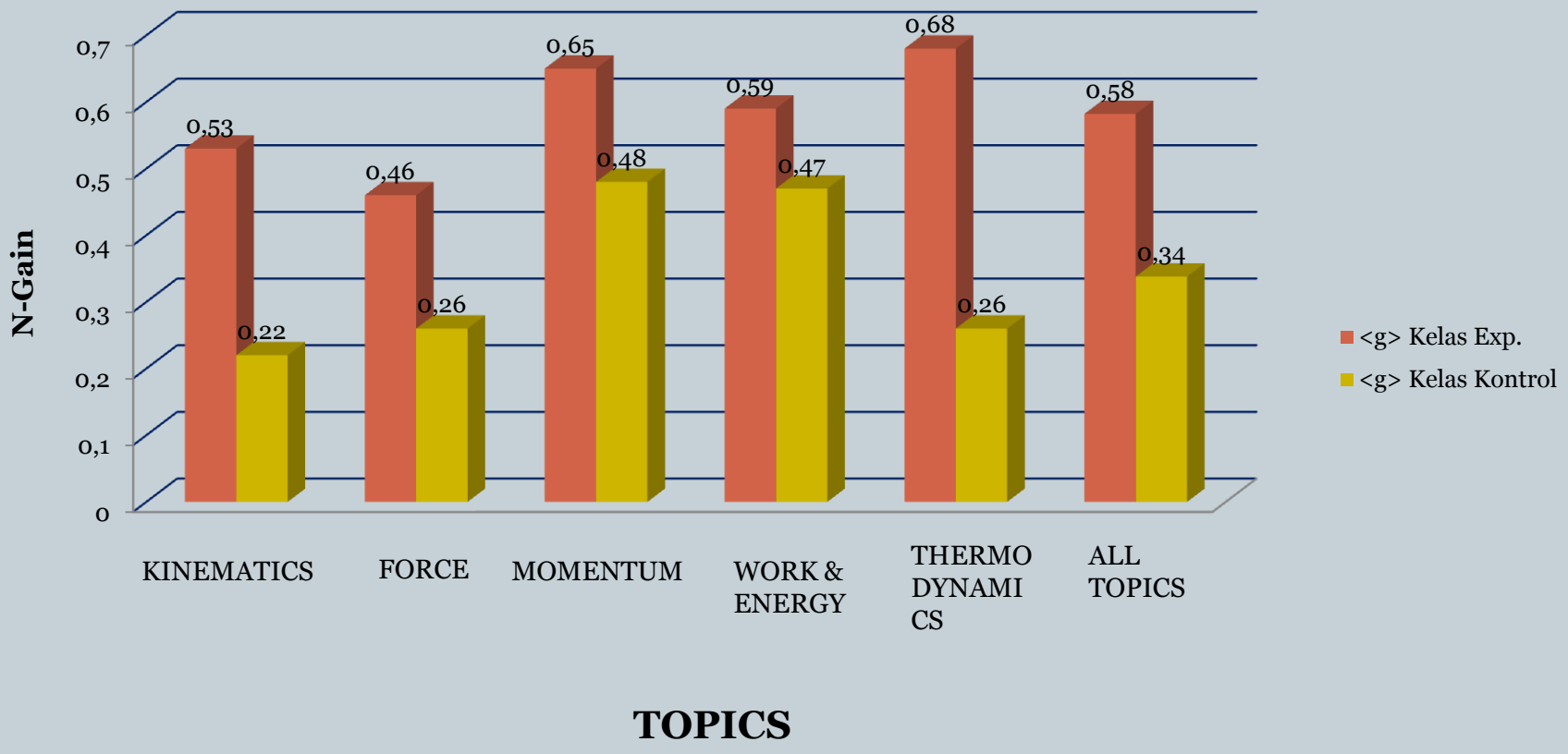
RESEARCH & DEVELOPMENT



N-Gain of Pre-service Physics Teacher Competencies



N-GAIN ON PHYSICS TOPICS



DISCUSSION

The teaching-learning Program Based on Activities in Basic Physics Characteristics:

1) Inquiry Based learning with Student work sheet;
2) Presenting physics phenomenon generating cognitive conflict, so that arise motivation;
3) Object or event description, telling question, concept construction.
4) Study addressed at occurrence, problem, and essential topic.
5) Cooperative and collaborative learning.

Result

The results show that the normalized-gain (N-Gain) of students in the treatment is significantly higher than students in regular class ($\alpha < 0.05$). The N-gain of the students in the treatment class and students in regular class can be categorized as medium and low, respectively. The Competencies of students in the treatment class that were significantly improved are concepts construction; concepts application; logic inference; scientific-representation interpretation; and symbolize-utilization.