# PEDAGOGICAL COMPETENCE OF PRESERVICE BIOLOGY TEACHER ON CONDUCTING INQUIRY APPROACH TO DEVELOP SCIENCE PROCESS SKILL

Study on 'Profession Practice Program' at High Schools in Bandung

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# BACKGROUND

- Inquiry approach is not a new approach in high school Biology learning (but seldom use in biology lerning

- Inquiry approach is essential to improve science process skill

- On "profession practice program" pre-service teacher should be trained to conduct any approaches or methods to teach biological concepts

# The problem is...

- HOW IS THE PEDAGOGICAL COMPETENCE OF PRESERVICE BIOLOGY TEACHER ON CONDUCTING INQUIRY APPROACH TO DEVELOP SCIENCE PROCESS SKILL IN HIGH SCHOOL?

Teacher Competencies consist of

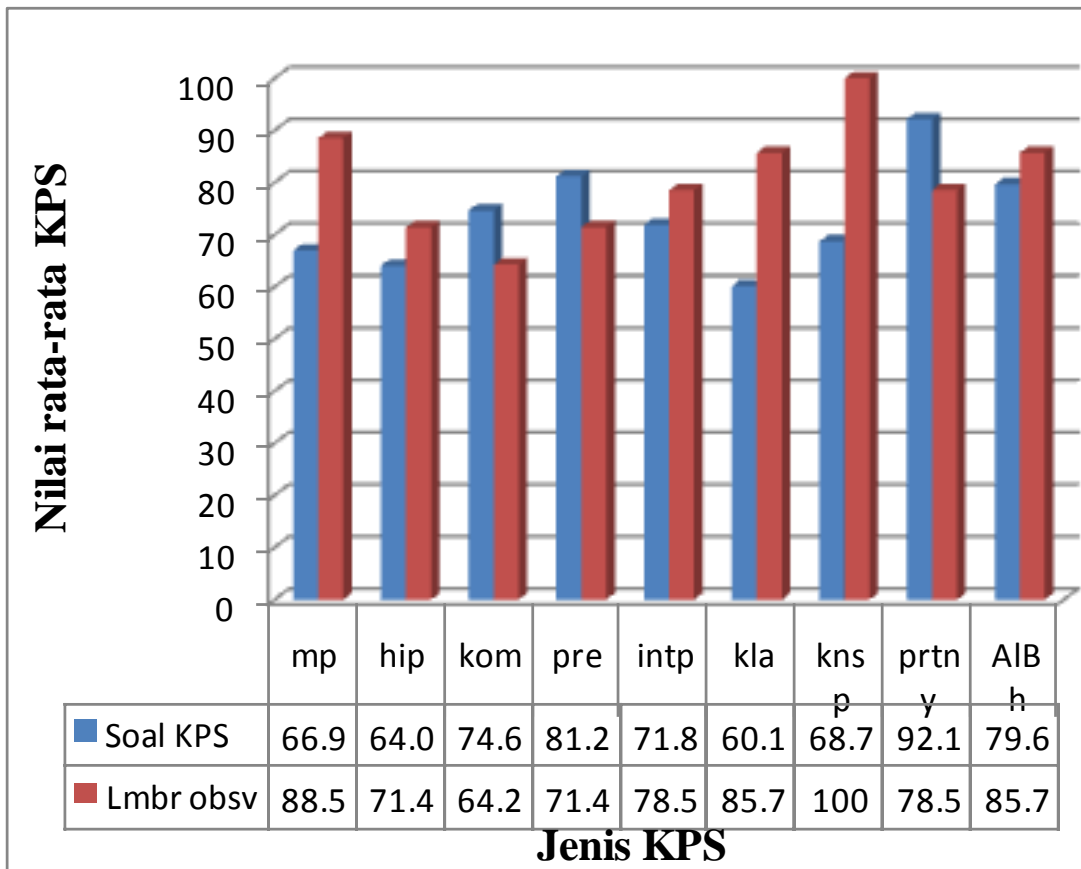| Paedagogical Competency | Personal competency | Social competency | Professional competency |
|---|---|---|---|

1. Mastering the teaching-learning theory and education based pedagogy
2. To develop the subject matter curriculum
3. Ability to conduct teaching learning process
4. Being facilitator on developing the students' potential ability
5. Having communication skill, effective and empathy to the students

# METHODOLOGY

- Descriptive methods
- Subjects: 3 pre-service biology teachers, who undergo their "Profession Practice Program"
- The Subject Matter are:

1. Water pollution ➡ Using free inquiry approach
2. Nervous system ➡ Using guided inquiry approach
3. Air pollution and Soil Pollution ➡ Using guided inquiry approach

# The results (1. water pollution)

The science process skill was taken through prctical observation sheet and essay tes



| Jenis KPS | mp | hip | kom | pre | intp | kla | knsp | prtny | AlBh |
|---|---|---|---|---|---|---|---|---|---|
| ■ Soal KPS | 66.9 | 64.0 | 74.6 | 81.2 | 71.8 | 60.1 | 68.7 | 92.1 | 79.6 |
| ■ Lmbr obsv | 88.5 | 71.4 | 64.2 | 71.4 | 78.5 | 85.7 | 100 | 78.5 | 85.7 |

The mean score of science process skill (observation sheet) is 81,43

The mean score of Science process Skill essay test is 73 % sample: 1 class

(purpossive sampling)

# The result (2. Nervous System)

Comparing Science Process Skill before and after the learning process  (pretest and posttest)
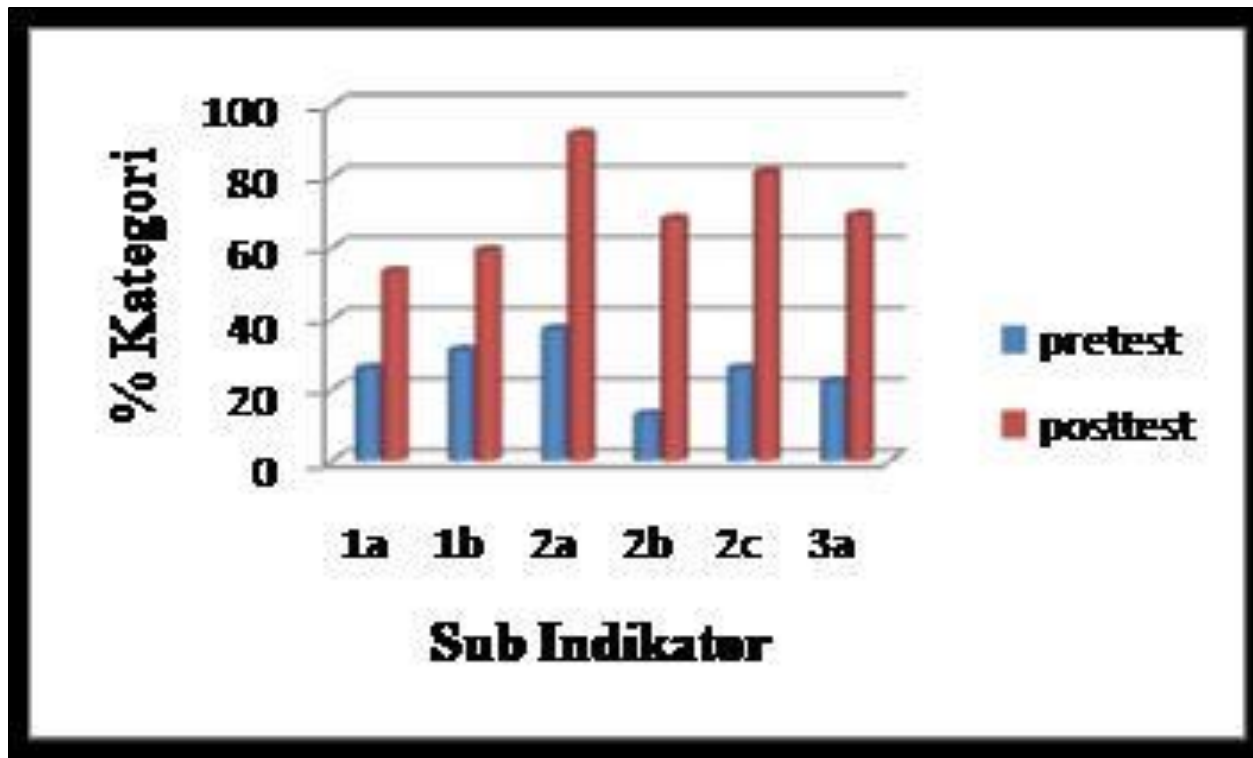


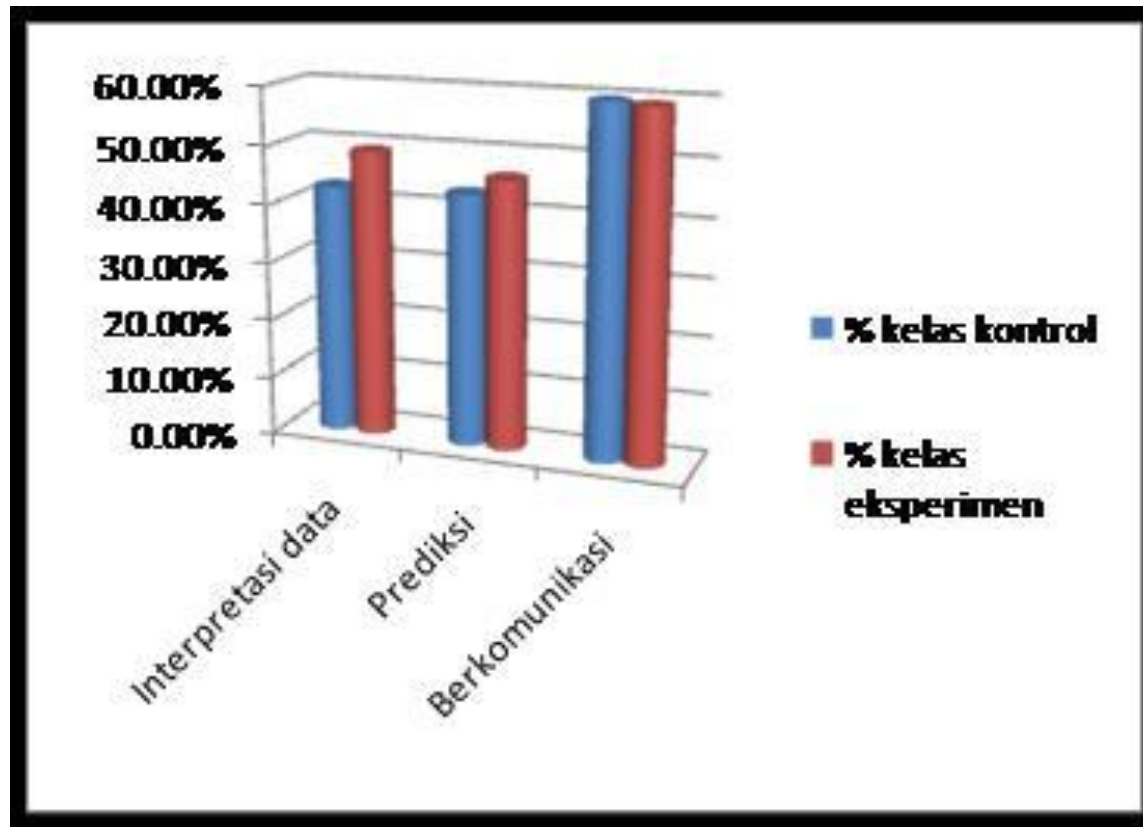Pretest mean score: 25,85% (low)

Posttest mean score: 70,44% (high)

# The result (3. Air and Soil Pollution)

Comparing the science process skills of two classes:  Control Class and experiment class



The science process skill's mean score of both classes seem not very good (less than 60%)

# Discussion (1)

- In general the pre service teacher have been able to conduct the free inquiry and guided inquiry approach as well in the classroom along the Profession Practice Program

- The performance of the pre service teacher on conducting inquiry approach depends on many factors i.e: the pre service teacher , the students, and the learning environment

- The first pre service teacher have been able to manage the class and mastering the subject content very well. She use inquiry approach more then twice before she did the real free inquiry approach. The students in this school are quite good.

- The 2nd pre service teacher also able to manage the class, but the situation is not good enough to carry out the inquiry  process. Most of the students didn't know what they should do.

# Discussion  (2)

- The 3rd  pre service teacher also able to manage the class, but the situation is not good enough to carry out the inquiry  process. She faced the same situation like the 2nd pre service teacher. The class was not good enough for  inquiry process.

- However the inquiry training is very helpful for the student to construct their knowledge through observation, organizing the data, facts,  concept, and doing  investigation .  Although the result is not always good, but inquiry training  is helpful for meaningful learning

# Conclussion

- The pre service teacher have been able to develop students, process skill through inquiry approach
- Through Profession Practice Program, the pre service teacher have reach some pedagogy competencies that are:

    1$^{st}$ Mastering the teaching-learning theory and education based pedagogy , 2$^{nd}$ To develop the subject matter curriculum, 3$^{rd}$ Ability to conduct teaching learning process, 4$^{th}$ Ability to be a facilitator on developing the students' potential ability and 5$^{th}$ Having an effective communication skill, and empathy to the students