

Open-ended Approach and Teacher Education

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Crucial issues in Teacher Education

- What are the essential characteristics of a professional program for teachers?
- Should a program for teachers differ from a liberal arts program, and if so, what should be the distinctive features of the treatment of subject matter in each type of program?
- What types of courses in professional education should be required of prospective teachers?

(Gibb et al., 2003).

Focus of Teacher Education

- High quality of educator preparation makes a difference in student learning

(National Council for Accreditation of Teacher Education, 2005).

- Connection between Prospective Teacher Education Program and Teacher Training Program

History of Teacher Education in Thailand

Past

- 36 teachers' colleges and 8 universities of education locating across the country had gained high respectability in providing teachers to elementary and secondary schools.
- The persons who entered teachers' college and university of education at that time were high-achievement students from various schools across the country

Changing in Teacher Education in Thailand

- Universities of education had been changed to be comprehensive universities thirty years ago and teachers' colleges had been changed to be Rajabhat Institute 10 year ago and now become Rajabhat universities
- Faculties of education at these universities have become 'second-class' faculties in terms of their profile.
- The graduates feel inferior to graduates from other programs and often have negative attitudes towards their career.
- This is a crucial problem for most teacher education programs currently.

Highlights in Reform movement in Thailand

- The 1999 Educational Acts was enacted, Thailand was put into an educational reform movement.
- New curriculum has been implemented
- Focus of new curriculum is how classroom can be changed to integrate: Content, Process/Skills, and desirable characters

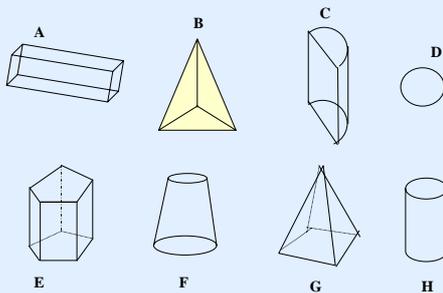
OPEN-ENDED APPROACH

- Open-ended approach originated in Japan during 1970s
- Aiming at evaluating higher-order-thinking skills in mathematics education using open-ended problems as a theme (Becker and Shigeru, 1997).
- Mathematical activities generated by open-ended problems are very rich and subtle

How to construct open-ended problems

- Suggestions for constructing a good open-ended problem appeared on *The Open-ended Approach: A New Proposal for Teaching Mathematics* may be a good start.
- Formulate a problem situation including desirable concepts and presenting it in terms of 3-5 short instructions.

How to construct open-ended problems



Short Instructions for the above figures

- Consider the solid figures as shown
- Choose one or more figures that share the same characteristics with figure B
- Write down those characteristics

Concept of Integrating Open-ended approach and Lesson Study

- It is difficult for new comer of lesson study to start the first lesson.
- Start making the first lesson using open-ended problem
- Presenting open-ended problem in terms of short instruction is easy to further investigation

Example of Good Practice in Thailand

The research project was conducted in the 2002 academic year in 7 schools in Khon Kaen province in the northeastern part of Thailand.

- **Aims**
 - Investigating changes in student teachers' pedagogy and their professional development when using the open-approach teaching method (Nohda, 2000.)
 - Clarifying how school students recognize their learning experiences.

Procedures based on Lesson Study Approach

- Cooperatively constructing lesson plans
- Implementing those plans in the classroom
- Discussion about lesson plans and individual teacher teaching progression

The Research Project Settings

1) Regular Activities Requiring all Student Teachers to do

- To teach at schools in the Khon Kaen urban area 6-8 periods (about 50 minutes for one period) a week.
- For one semester, they were supervised 4 times by school supervisors and another three times by supervisors from the faculty of Khon Kaen University.

The Research Project Settings

1) Regular Activities Requiring all Student Teachers to do

- To conduct an action research project under the stewardship of his/her research advisor.
- To attend three-hours of seminar and/or to meet with their research advisors once a week.

The Research Project Settings

2) Required Activities for Student Teachers in the Project

- They had attended a one-month workshop for constructing lesson plans to be used later in the first semester of 2002 academic year.
- They were grouped according to school levels they intended to teach.

The Research Project Settings

2) Required Activities for Student Teachers in the Project

- They spent about 6 hours a day constructing lesson plans using open-ended problems.
- They attended a special seminar organized by the researcher weekly.
- They kept a journal during the semester related to their teaching experiences.

Research Results

1) Change in student teachers' worldview on teaching practice

- The paradigm shift for student teachers is that teaching mathematics does not mean focusing on the coverage of content but emphasizing the students' learning processes, original ideas, attitudes towards learning mathematics and satisfying one's own competence.

Research Results

Change in student teachers' worldview on teaching practice (continue)

- Most of the student teachers saw the positive benefits of conducting action research while simultaneously completing their student teaching.
- They acknowledged that classroom research may help improve teachers' everyday practices.
- Most importantly, They changed their attitudes towards learning from academic learning to life-long learning.



Perceived Experiences of School Students

2) School students' recognition of learning experiences in the classrooms using Open-Approach method of teaching

The survey results of 1200 students in all schools in the project.

- Most of the school students have positive attitudes towards learning through the open-approach method.
- The school students indicated a marked improvement in their learning environment and capabilities in comparison to their traditional classroom.



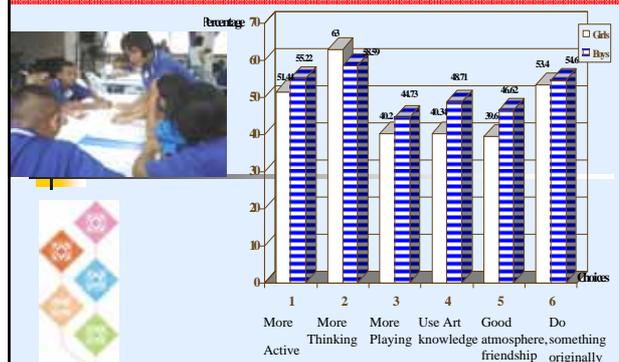
Perceived Experiences of School Students

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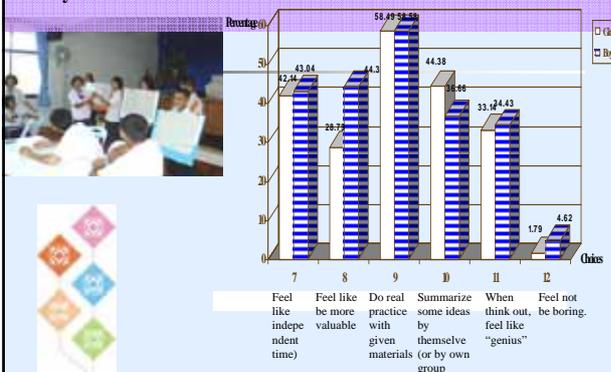
- They have more opportunities to act, think, play an active role, do something originally, and draw conclusion by themselves.
- They show some interesting responses as follows; more reasonable, more skillful in observation, more cool-headed, know how to work cooperatively and more confidence in asking "why?" and "how come?" type questions.



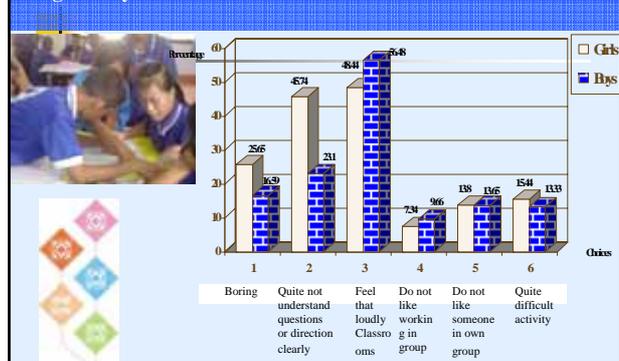
The responses to the item "Give the reasons why do you like doing activity in the classrooms?"

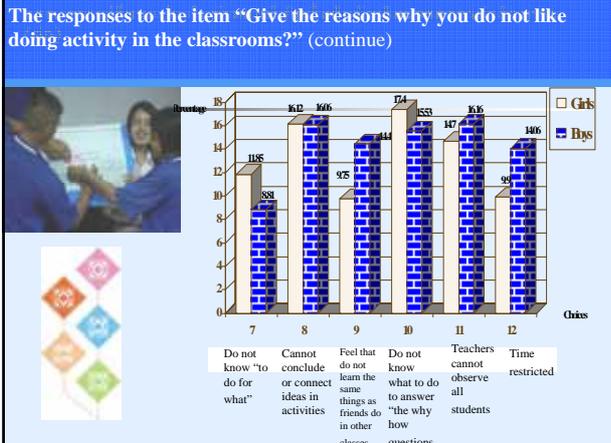


The responses to the item "Give the reasons why do you like doing activity in the classrooms?"



The responses to the item "Give the reasons why do you not like doing activity in the classrooms?"





Impacts of the Project

- 12 of 15 Student teachers participated in the project continue their study in Master degree program and have been deeply involved in professional development of teachers of maths
- Khon Kaen University in cooperation with East Asian Circle of Applied Technology of Japan (EACAT), Minsai Center in Laos and Educational Development Fund in Bangkok have organized training programs for mathematics and science teachers from Laos PDR since 2002.

Impacts of the Project

- In 2004, the Office of Basic Education Commission provided funding support to organize training for supervisors in order to supervise school teachers participating in the lesson study project of Khon Kaen University.
- The National Commission on Science and Mathematics Education incorporates the concept of lesson study into the frameworks on the development of science and mathematics education.

Impacts of the Project

- In 2004-2005, Khon Kaen University cooperated with Plan International Organization which also implemented the lesson study approach to improve mathematics teaching in the northeastern part of Thailand.
- Implement this model to create teacher networking among countries in the Great Mekhong Sub-region.