

AN EDUCATIONAL PROGRAM USING A DEBATE SUPPORT SYSTEM FOR CULTIVATING CRITICAL THINKING DISPOSITION

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Introduction

▶ Critical thinking

- ▶ One of the most important educational goals in high school education.
- ▶ “Reasonable, reflective thinking that is focused on deciding what to believe or do” (Eniss 1987)

▶ Disposition of critical thinking

- ▶ Necessary for spontaneous critical thinking

▶ Debate learning

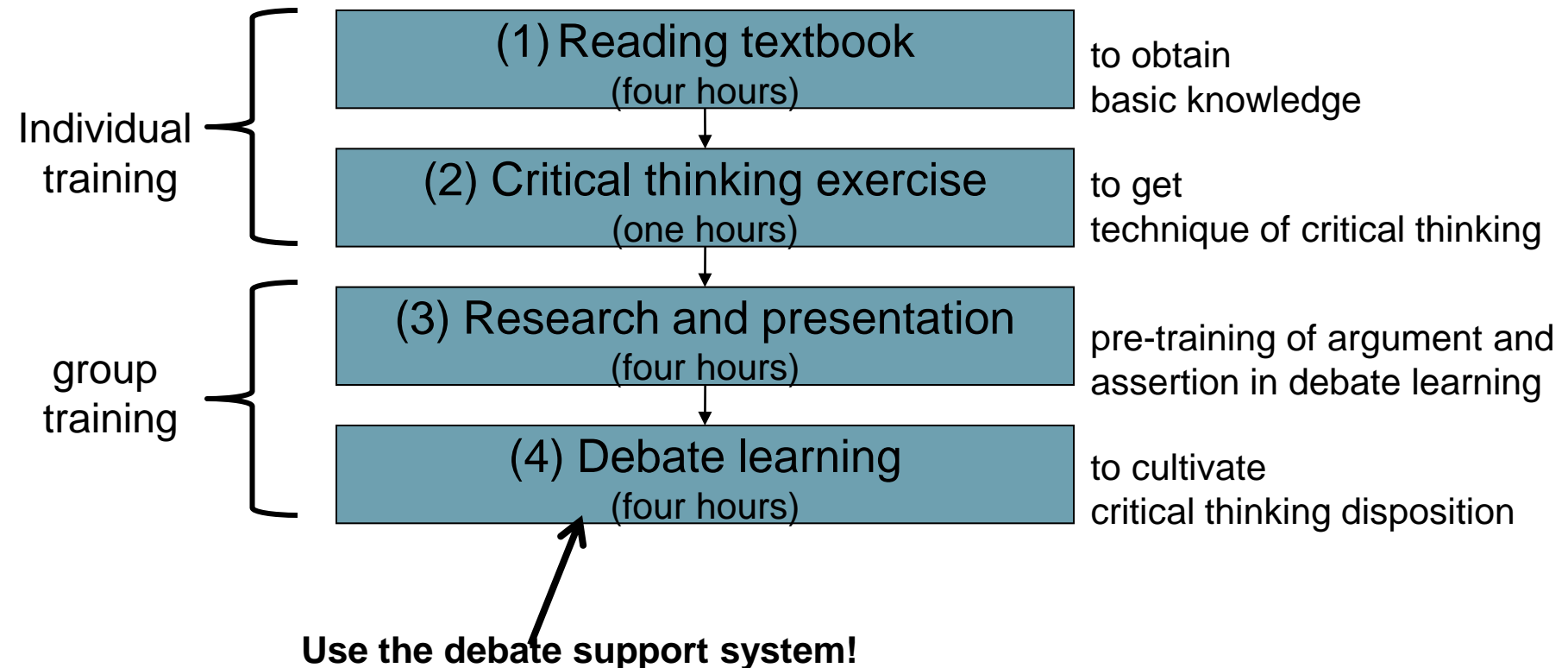
- ▶ Effective program for cultivating critical thinking ability
- ▶ Problem
 - 1) Debate learning needs much time for all the students to participate
 - 2) Some Japanese students have difficulty in criticizing other side's position in the front of other side students

Purpose

- ▶ Proposal of an educational program using an **internet-based debate support system** for cultivating critical thinking disposition
 - ▶ In order to solve existing problems of debate learning
 - 1) Debate learning needs much time for all the students to participate
 - 2) Some Japanese students have difficulty in criticizing other side's position in the front of other side students
- ▶ **Application of the proposed program** to the actual high school education
 - ▶ Evaluate cultivation of critical thinking disposition

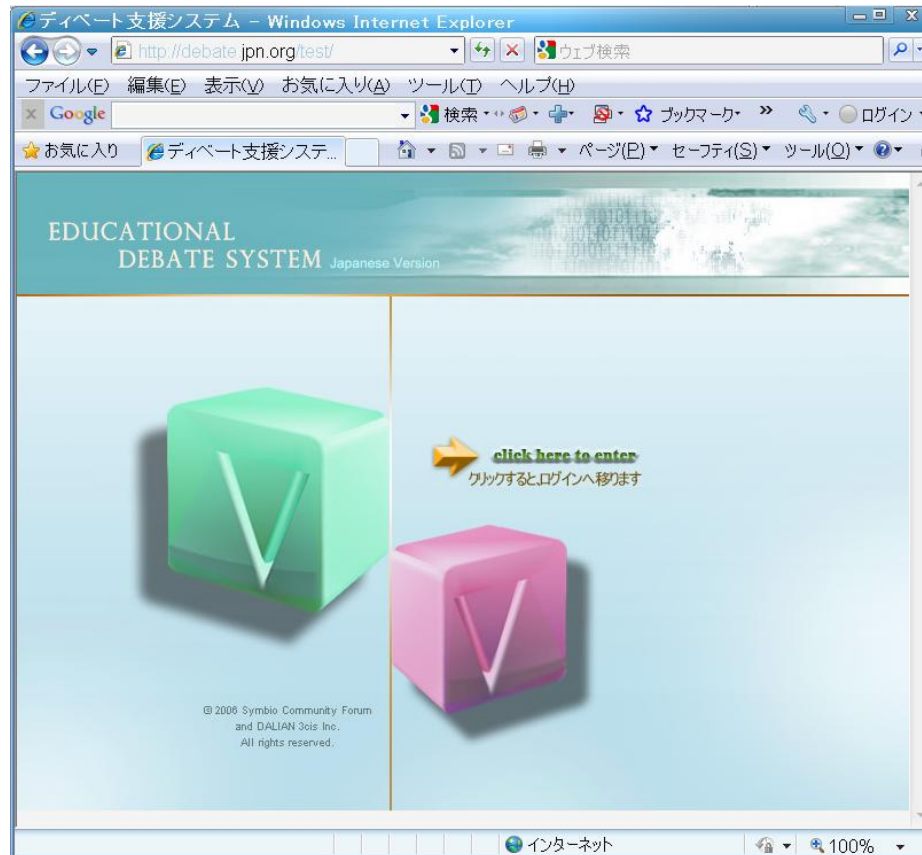
Proposal of a program

- ▶ Direct experience of critical thinking will cultivate strong critical thinking disposition (RUGGIERO 1988, FAZIO and ZANNA 1987)
- ▶ First, knowledge and skill have to be learned.



Debate support system

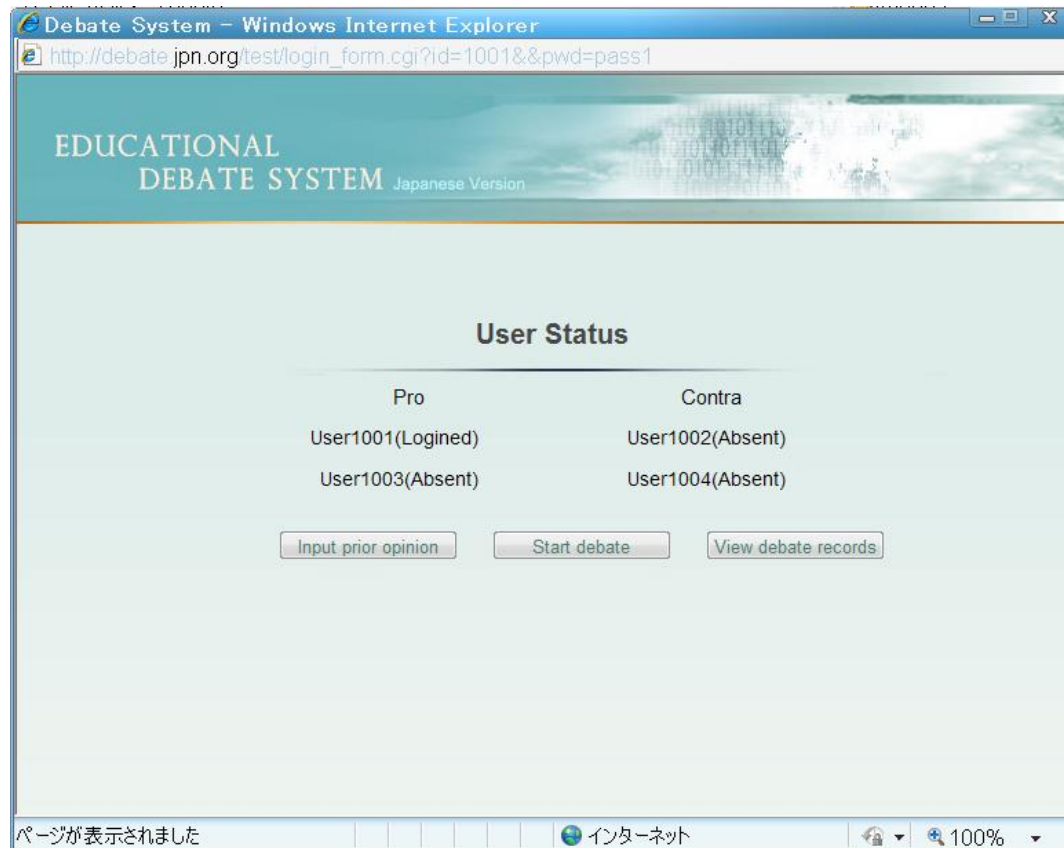
- ▶ Japanese, English, and Chinese language are supported



Debate support system

Function and characteristic

- ▶ Many groups of students can participate at the same time
- ▶ 2 pros and 2 cons (or 3 pros and 3 cons) in one group



Debate support system

Function and characteristic

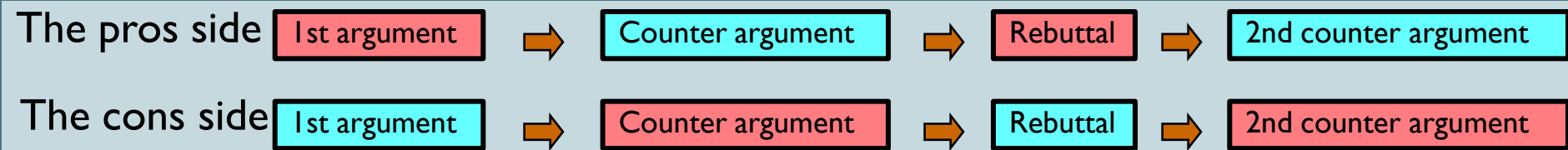
- ▶ Discussion based on Toulmin model
- ▶ **Non-face-to-face, anonymous and text-based** debate learning
 - ▶ to remove difficulty in criticizing other side's position in the front of other side students



Debate support system

Function and characteristic

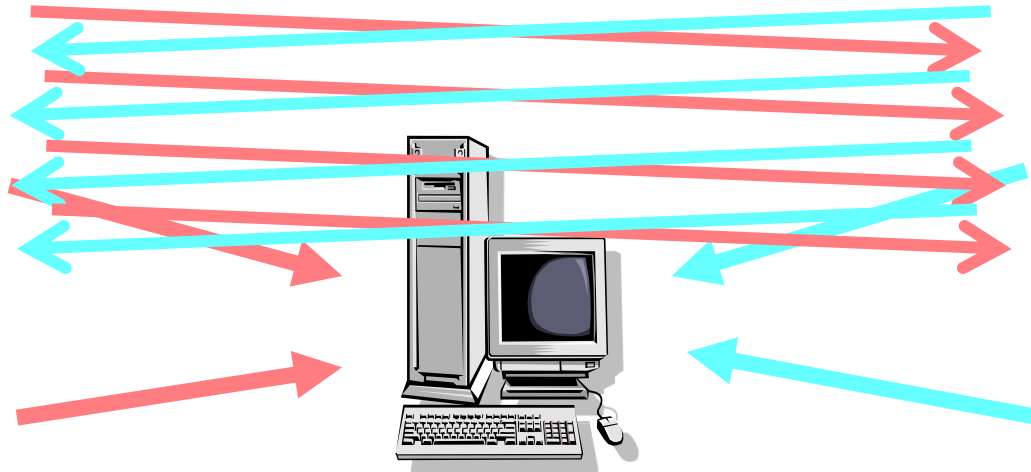
- ▶ Four steps formal description of discussion
- ▶ One-to-one discussion
 - ▶ Every participants are required to think by themselves



The pros side



The cons side



Application in high school education

- ▶ The first semester of 2008
- ▶ Participant
 - ▶ 438 Japanese high school students of 11 classes (3rd grade, 17-18 years old)
- ▶ Evaluation of the proposed program
 - ▶ Critical thinking disposition questionnaire (D'ANGELO 1971, MIYAMOTO et al. 1996, HIROOKA et al. 2000)
 - ▶ Three factors of critical thinking disposition

Objectivity

objective and logical thinking

“Following a line of reasoning consistently to a particular conclusion”

Good-faith

faithful attitude and respect for others thought

“The acceptance of statements as being true, when there is sufficient evidence, even though it negates some of our cherished beliefs.”

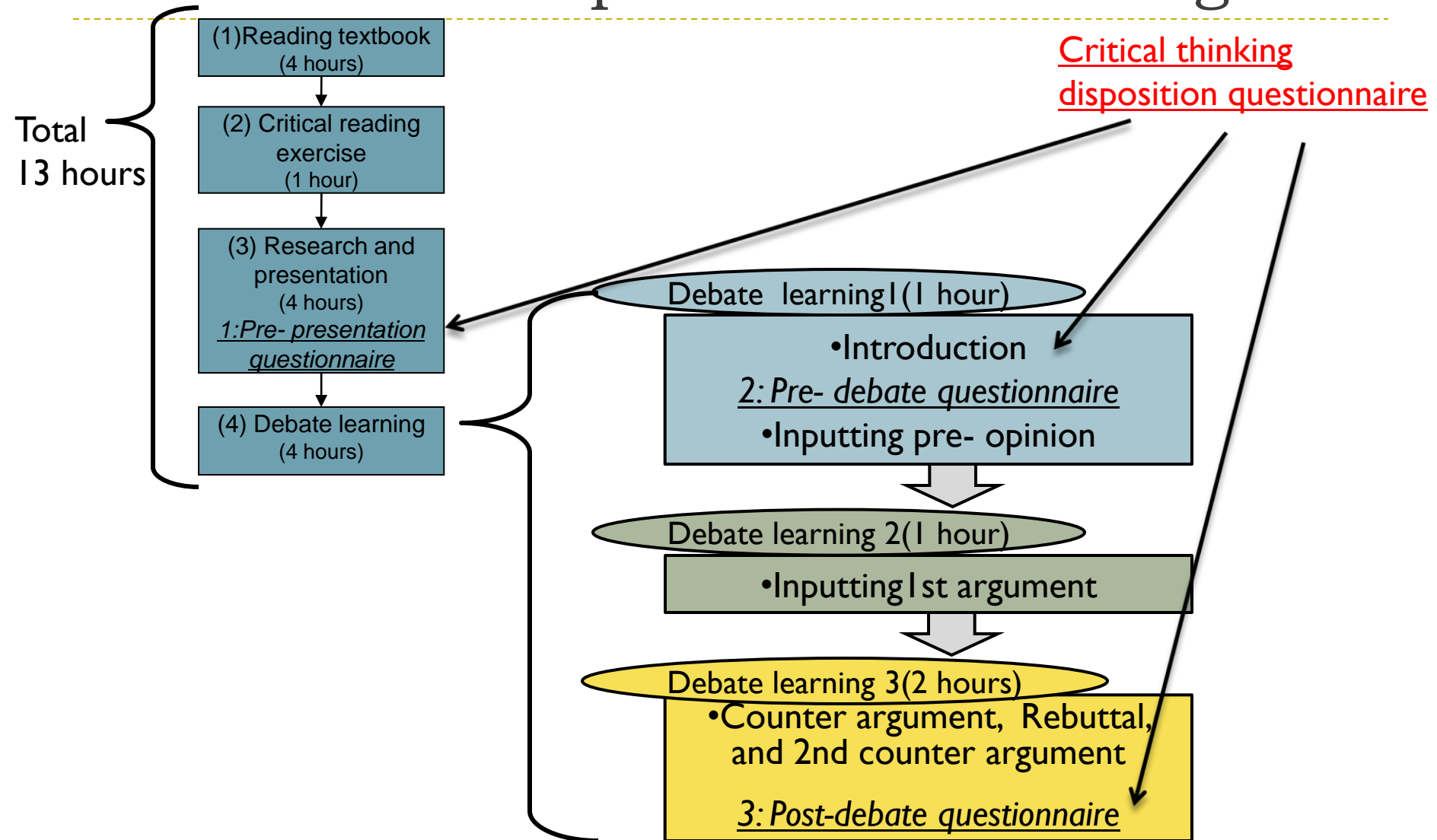
Inquiring mind

inquiring and pursuing thinking

“To persist in seeking ways of resolving disputes”

March 3, 2010

Procedure and questionnaire timing



Themes of debate learning

1. Japan has to introduce a deposit system of beverage containers.
2. Japanese government has to introduce an environment tax.
3. Japan has to introduce daylight saving time.
4. Japanese government has to prohibit installation of automatic vending machine, and remove existing automatic vending machine.
5. Use of plastic bottles has to be prohibited in Japan.
6. Japan has to promote introduce of cars which use gasoline blended with bioethanol.
7. Japan has to prohibit convenience stores from staying open until late at night.
8. Collection and recycling of plastic bottles have to be stopped in Japan.

A picture of class room



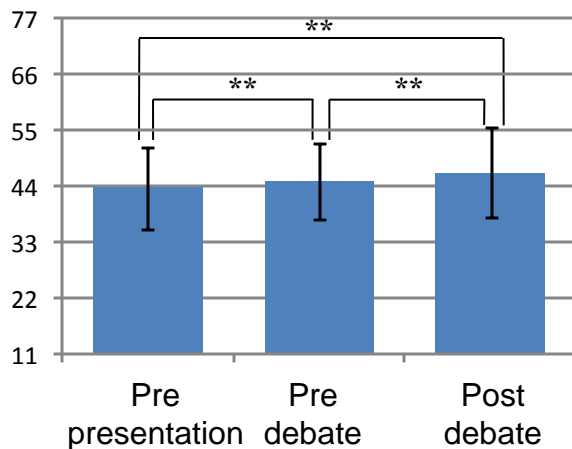
Result

▶ 287 valid responses

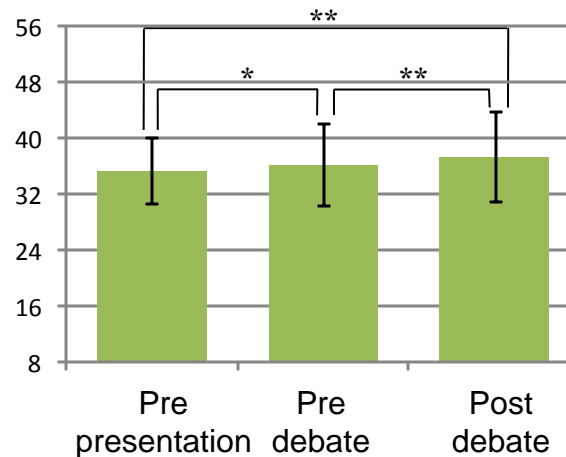
- ▶ Some student were absent from some hours

*:p<0.05,**:p<0.01

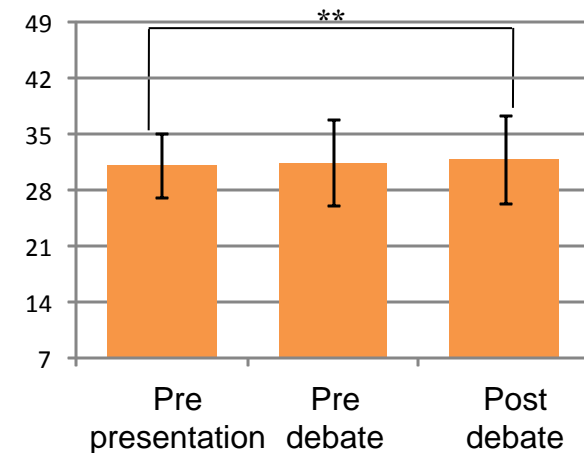
Objectivity



Good-faith



Inquiring mind



▶ ANOVA and scheffe's pair comparison

- ▶ Objectivity and good-faith



Significantly improved

- ▶ Inquiring mind



Relatively not improved

Discussion

Objectivity

Significantly improved

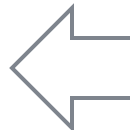
Good-faith



Debating needs logical persuasion and faithfully listening to others proposition and these characteristics may cultivate objectivity and good-faith.

Relatively not improved

Inquiring
mind



Debating with a given theme and a given position **doesn't essentially stimulate students' creativity and curiosity** which are related to inquiring mind

Conclusion

▶ Summary

- ▶ An educational program using the debate support system for cultivating critical thinking disposition has been proposed
 - ▶ Solve problems of debate learning
 - 1) Debate learning needs much time for all the students to participate
 - 2) Some Japanese students have difficulty in criticizing other side's position in the front of other side students
- ▶ The proposed program was applied into Japanese high school and evaluated

▶ Conclusion

- ▶ The effectiveness of the proposed program to cultivate critical thinking disposition was confirmed especially for the factors of objectivity and good-faith.

▶ In the future

- ▶ A new educational program which can improve the critical thinking disposition, not only objectivity and good-faith but also inquiring mind.

Thank you



Problems in application

- ▶ Talking outside of the debate support system
 - ▶ Lack of concentration?
 - ▶ Talking about the theme of debate can activate debate?
- ▶ Breaking of anonymousness
 - ▶ Students want to know who is other side students
- ▶ Typing skills
 - ▶ Few students has this problem
 - ▶ Almost all students has no problem
 - ▶ Japanese high school has some classes using PCs



Other application of the debate support system

- ▶ Application in Graduate school
 - ▶ Education for energy problems
 - ▶ Since 2006
- ▶ Application in high school
 - ▶ 1st, 2nd 3rd grade students in 2009
 - ▶ It was suggested that it is too difficult for 1st grade students
- ▶ It may be too difficult for Junior high school or elementary school students

Face to Face Debate Versus Debate support system

Face to Face

- ▶ Resembles real situation
 - ▶ Business, conference...
- ▶ Team discussion

Debate support system

- ▶ Artificial environment
- ▶ One to one discussion
- ▶ Easy to check statement of others and themselves

If you want to use debate support system

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