

Using CD-ROM to Explore Second-Grade Students' Conceptions about Nanotechnology in Taiwan

Developed at 2010 EASE Summer School
National Taiwan Normal University
Taipei, Taiwan
July 18~23, 2010

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Outline

- ◆ Aim:
explore conceptions about nanotechnology
- ◆ Methods:
participants: second-grade students
materials: CD-ROM , lesson plans
a two-tier diagnostic test, interviews
tool:
- ◆ Data collection:
in-class discussion, drawings, interviews

Materials

- ◆ Courses: the meaning of nanometer, natural nano-phenomena (the lotus effect, magnetic effect, the butterfly colorful wings)
- ◆ Implementation: embedded in curriculum



Research Tool

- ◆ Two-tier diagnostic test
 - Propositions – statements– situated questions
 - example
- ◆ Validity
 - Triangulation of three experts

Data analysis

- ◆ Three categories:
the meaning of nanometer, the observation of nano-phenomenon in natural world, the application of nanotechnology
- ◆ Display of concept cognition
oral and written representations

Findings

- ◆ Students' responses on the open-ended questionnaire
 - Micro nano-world invisible by eyes, can either smell or touch them
 - Children think the meaning of “nanometer” as “rice”

continued

- ◆ Students' understanding of nanotechnology conception
 - naïve idea viewing animals as the same as human beings
 - the wings' nano-structures of butterflies
 - the lotus effect

References

- ◆ Novak, J. D. & Gowin, D. B. (1984), *Learning how to learn*. Cambridge, London: Cambridge University Press.
- ◆ Trowbridge, J. E. & Wandersee, J. H. (2005), Theory-Driven Graphic Organizers. In J. J. Mintzes, J. H. Wandersee, & J. D. Novak(eds.), *Teaching Science for Understanding: A human constructivist view*. Burlington, MA: Academic Press.

Thank you for your attention!

