

How Can Our Students Learn Science Happier than Before

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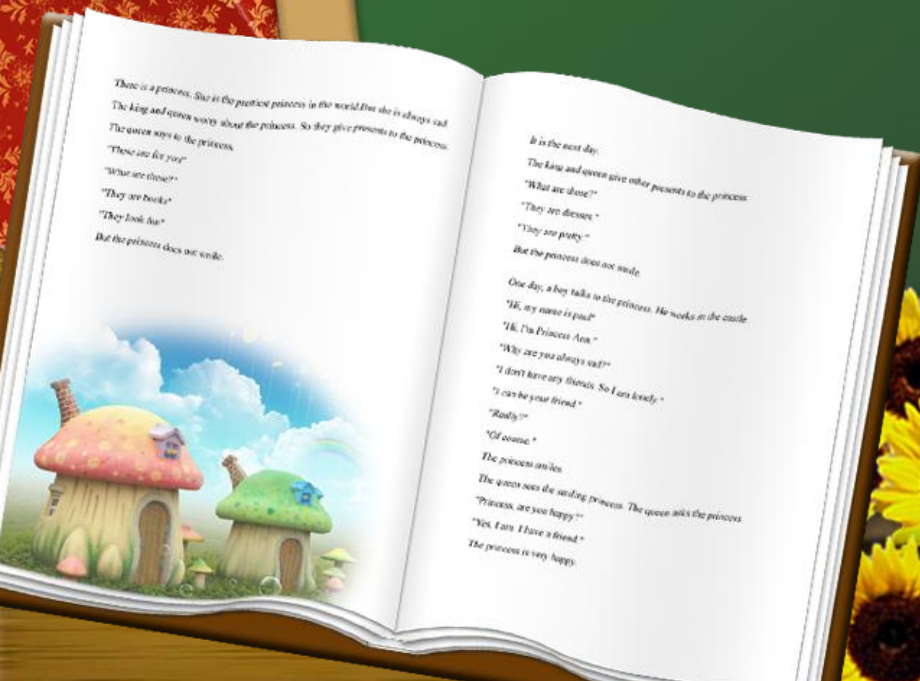
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How can our students learn science happier than before???



EASE Summer School
GROUP D
Coach: Tsung-Hau Jen
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Background and Motivation

Why should we make comparison among the three regions (Hong Kong, Korea, and Taiwan)?



Background and Motivation



Similarities

- (1) Low PATS for the middle school students in these regions.
- (2) National examination
- (3) Less enrolment in science or science-related subjects in senior high or university
- (4) Enhanced subject choice

Background and Motivation



Differences

- (1) Social and culture context
- (2) Educational and life philosophy
- (3) The intra-school correlation: HK (0.6) >> TW (0.2)
> Korea (0.05)
- (4) Teaching Practices

Rationale



Less enrolment in science or science-related subjects in senior high or university



High school in Korea



Engineering in Hong Kong



Electric engineer in Taiwan, used to be the top popular choice but not anymore

Rationale



Enhanced subject choice





Korea/Taiwan students rather want to be medical practitioner than natural scientist, basically due to wages concern.



Hong Kong students choose bank/finance rather than any kind of science or science-related subjects.

Rationale

TIMSS

-  Attitudinal figures
-  Taiwan/ Korea/Hong Kong, unhappy to learn science

Theoretical Framework

Attitudes towards learning science (Osborne, 2003)

Structure variable!

SES
Available resources
Parental
National curriculum
National examination

Classroom/teacher factor!

Teaching practice
Teacher support
Students' enjoyment

Enhanced subject choice (e.g. future study/career)

Difficulty of learning science
Usefulness
Importance

Emotion factor

Likeness
(Cheung, 2008 & 2009)
Interest
(Menis, 1983; Salta
& Tzougraki, 2004)


Study Purpose

Through comparing three Asia regions, we are going to explore the factors for middle school students' formation of their attitude toward science and science learning.




In order to reach this purpose, we categorized the factors into three different levels including the social, class and individual ones.

Research Questions (I)

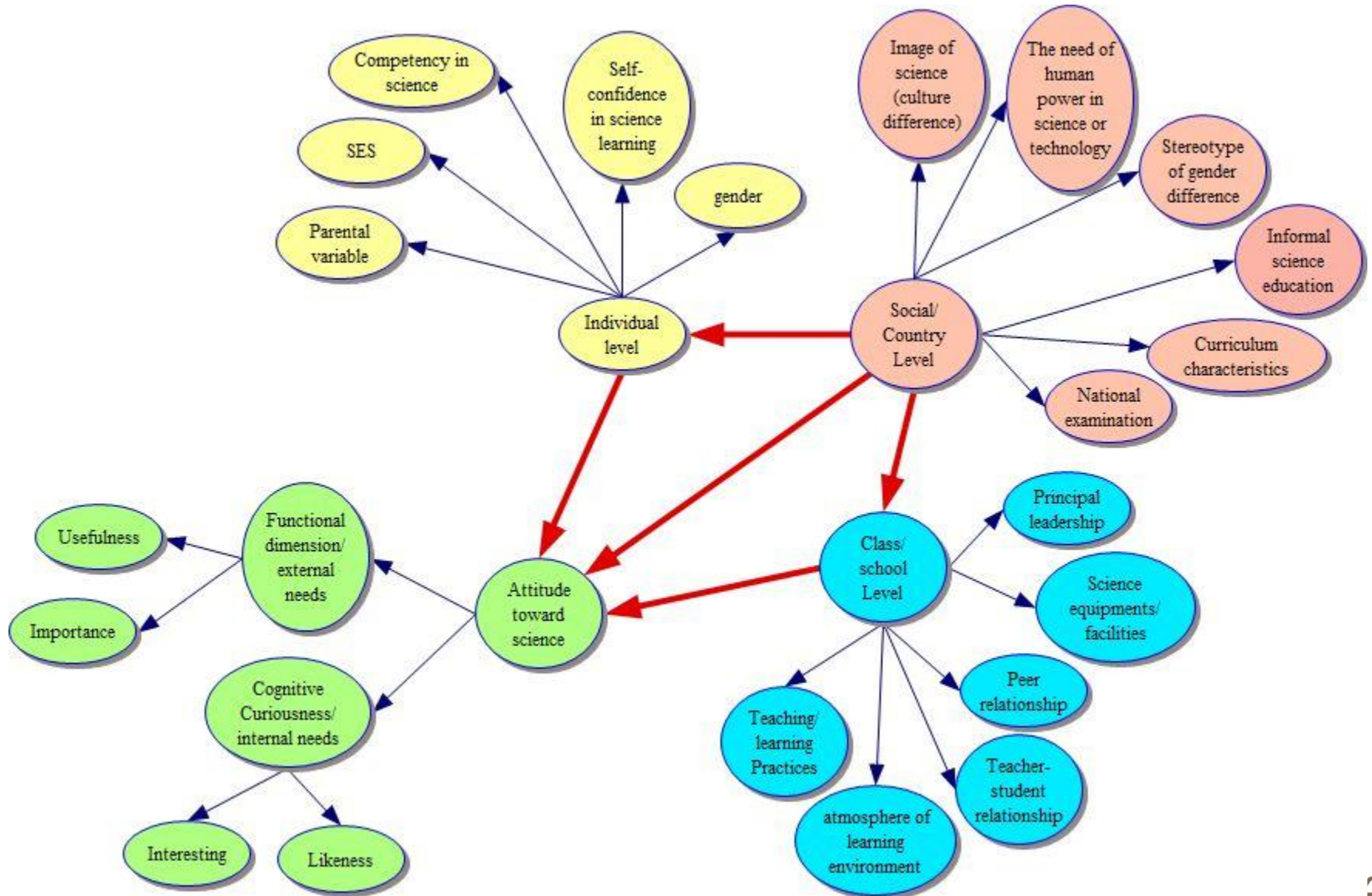
Dependent Variable

-  Student's attitude towards learning science
 - Usefulness
 - Importance
 - Likeness
 - Interest

Independent Variable

-  Social level
-  Classroom level
-  Individual level

Research Questions (II)



Research Questions (III)

1. How different social factor affects students' attitude learning science in different region ?
2. How different classroom factor affects students' attitude learning science in different region?
3. How different individual factor affects students' attitude learning science in different region?

Methods



Qualitative



Case study



One class from each of three schools in each region, grade 9 (HK, Korea)



One class from each of six schools in each region, grade 9 (Taiwan)

Hong Kong

- Band one
- Band two
- Band three

(Largest intra-school correlation amongst all in TIMSS = 0.6)

Korea

- Random selection according to school size

(ISC= less than 0.05)

Taiwan

- Academic and SES

(High/Med/Low).
Three in city and three in rural,
totally six
(ISC= 0.2)

Data Collection (student)

 One-A4-page self-reflection on attitudes towards learning science

 Choose six students from each class for interview

 Hong Kong, Korea : 18 sets of interview

 Taiwan : 36 sets of interview

 Semi-structured interview

 Likeness





 Importance

 Usefulness







 Interest

Data Collection (classroom/School)

School principal (*Semi-structured interview*)




-  Leadership
-  Facilities in science learning
-  Local resources for science teaching and learning
-  Other policies about science curriculum


Science teacher (*Semi-structured interview, observation/video*)



-  Teaching practice
-  Classroom management
-  Teacher-student and peer relationships
-  Facilities in science learning
-  Local resources for science teaching and learning
-  Others about students' attitude toward science learning

Data Collection and Analysis (others)

 Document analysis for social factor, such as

-  Policy
-  Cultural
-  national assessment, etc.

 Demographic data of students' background will be collected by means of simple questionnaire, such as ...

-  Gender
-  Age
-  parents' basic SES information, etc.

Contribution



Previous findings show Asian students' learn science with good cognitive outcome but bad attitudinal outcome.



This study will unpack the reasons.



Feedback to policymakers, educators, teachers, parents, and students.



Improve all-round qualities of our Asian science students, and science education.

Possible Difficulties



**Recruitment,
ethical issues**

**Time
management**

**Resources
(Budget)**

Thanks



EASE Society



Andrew



Senior professors



All supporting staffs



All listeners

