

# Quantitative and Qualitative Analysis of disparity of the Integrated Learning at a senior high school



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# I Disparity in the Integrated Learning






# Disparity in academic achievement in Japan

- In Japan, widening disparity in academic achievement has become a social problem
  - PISA 2000-2003

Compared to 2000, the percentage of students in the lowest level of Reading literacy increased.
  - Kariya & Shimizu (2004)

Compared to 1989, disparity in the mathematics ability of junior high school students has also increased.

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- It has been pointed out that behind the disparity lies the increased social stratification.
  - "The new education guidelines", "yu-to-ri education", and "Integrated learning (Sougou-Gakusyū)" are being criticized for this disparity, or decline in the academic ability of the students



# Disparity in the Integrated Learning

- Several studies have shown that there is also a disparity in the students' engagement or achievement in the integrated learning
  - Takashina (1999)  
There is a clear gap between highly- and poorly-satisfied students
  - Kondo (1993)  
Degree of students engagement varies.



# Factors behind the disparity

- School Life (Takashina, 1999)
  - school maladjustment
  - relationship with friends
    - had no correlations
- Learning Styles (Kondo, 1994)
- Socioeconomic Strata (Kariya, 2004)
  - their learning process not well examined



# Difficulties in Integrated Learning

- Integrated Learning was adopted in senior high schools in 2003.
- However, not very effective
  - Teachers : burden of developing a new curriculum
  - Students: burden of preparing for college entrance exams.
- Revealing the factors causing the disparity provides clues to effective support for students.



# Purpose of this study

- Examining the factors causing the disparity in student's engagement and satisfaction in Integrated learning.
- “Sotsugyo-Kenkyu”
  - a form of integrated learning (*Sougou Gakushu*).
  - practiced at a particular senior high school over the last 20 years
- Focusing on student's learning processes

## II Research method



Through the combination of  
quantitative and qualitative research



# "Sotsugyo-Kenkyu"

(graduation research / final projects)

- a form of integrated learning
- Each student selects his/her topic.
- Students conduct their research for 18 months in their second year and third year of high school
- required for graduation



# Data collection

- Respondents: 104 students who conducted their “Sotsugyo-Kenkyu” between 2000 and 2002
- Three questionnaires : pre-study, interim study, and post-study.
- Continued observation : Focusing on teacher’s personal / group mentoring for students



# Method of analysis

- Analysis 1: We examined the gap in students' perceptions of Integrated learning to confirm the presence of disparity,
- Analysis 2: We employed a multiple regression analysis to reveal the factors causing the disparity,
- Analysis 3: We conducted a qualitative case study on student's learning processes. to investigate the factors more thoroughly.

## III Analysis 1-3



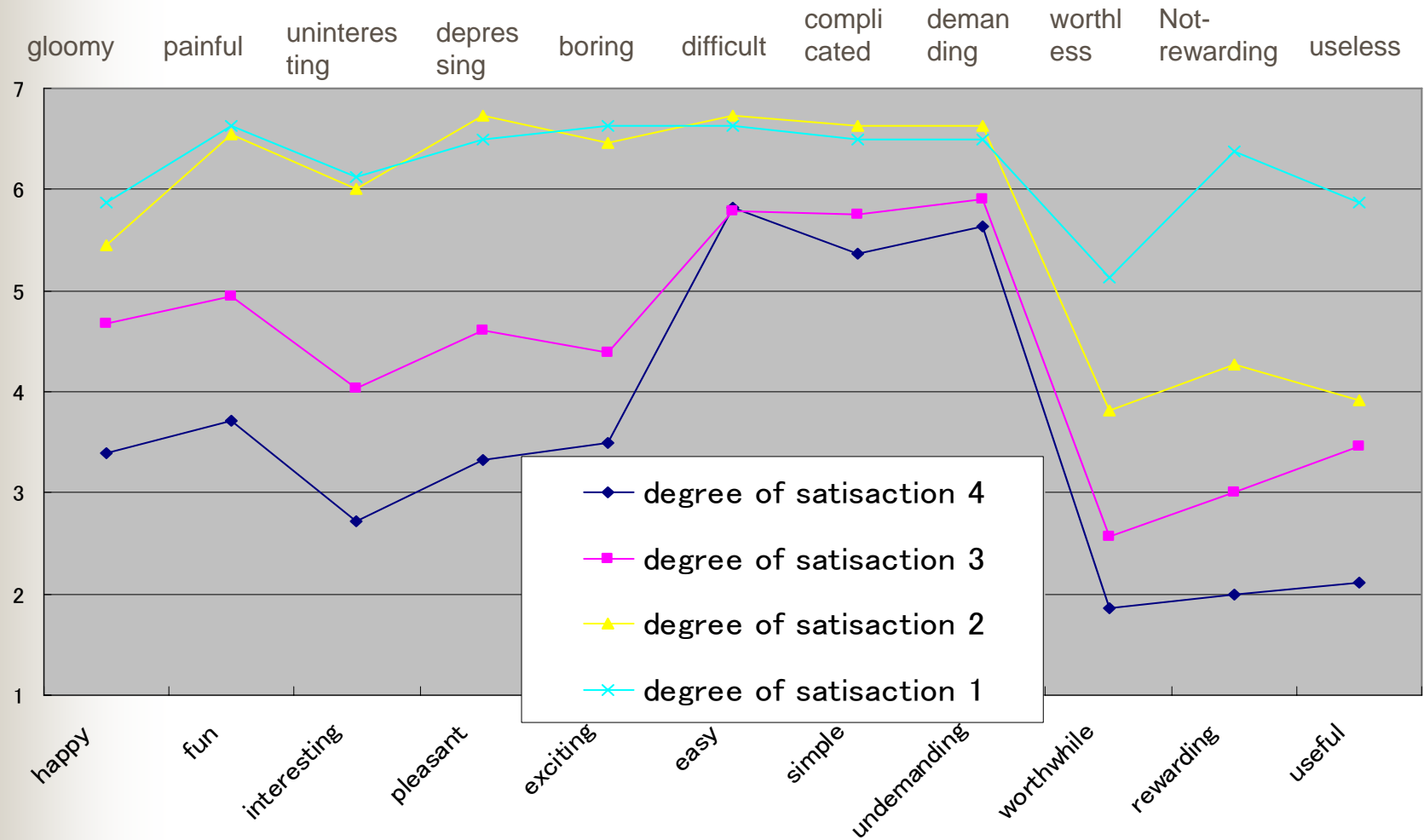
What are the factors causing the disparity?

# Analysis 1: Does disparity really exist?

- The measures of disparity  
: Degrees of student's satisfaction
- “Are you satisfied with your project paper?”

Answer	Very satisfied (Degree of satisfaction 4)	Satisfied (Degree of satisfaction 3)	Not much (Degree of satisfaction 2)	Not at all (Degree of satisfaction 1)	Sum
N	29	30	10	7	76
percent	35%	42%	13%	10%	100

# Result 1: The gap in perceptions





# Analysis 2: Multiple regression analysis

- dependent variable
  - degree of satisfaction in the integrated learning
- independent variable :
  - Students' Interest in their topics
  - experiences gained from their research
  - the burden of research work
  - the dilemma between undertaking the research and preparing for college entrance exams.
- Factor selection : stepwise method

## Relationship between degree of satisfaction and student's experiences

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Dependent variable : Degree of satisfaction

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Variable	Beta	
Having opportunities to learn about the topic deeply with details	0.514	***
Occasional loss of interest in the topic	-0.251	**
Deciding what to do after graduation	0.172	*
Adjusted R-Squire	0.48	

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\* $p < .05$  \*\*  $p < .01$  \*\*\* $p < .001$  Factor selection: stepwise method



## Result 2

- Showed a positive correlation with a profound interest in the topic and experiences gained from their research.
- However not with the burden of research , nor, dilemma between undertaking the research and preparing for college entrance exams.



## Analysis 3: case study

- We interviewed 6 students with high / low / gradually increased levels of motivation in their study.

# Case 1: Student with low motivation

	Readiness for research	Theme setting	Process	After study
Student's inner process	① Broadly interested in environmental problems.	③ He selected several topics, such as energy problems and global warming	⑧ He lost the direction of his research. ⑨ He did not enjoy his research, and gradually grew to feel painful to continue his research.	⑪ Felt only a sense of futility and failure
Actual research work	② Not good at physics or mathematics .	④ Teachers advised to narrow his focus . ⑤ He decided to focus on the solar heating system, expecting to conduct some interesting experiments“	⑥ His supervisor was a physics teacher, “First, you have to understand the principles of the solar heating system.” ⑦ He tried, however, it was so complicated that he did not understand well.	⑩ Received a mediocre mark in evaluation

# Case 2: Student with gradually increased motivation

	Readiness for research	Theme setting	Process 1
Student's inner process	① She wanted to be a medical service worker.	③ She looked for a topic, however, she did not succeed because she didn't know what she really wanted to do.	⑥ It was painful for her to carry on, because she didn't feel it was what she wanted to do.
Actual research work	② She didn't know very much about the issues of medical services.	④ She chose the issue of "reduction in the number of pediatricians", because she had happened to see articles on the topic.	⑤ Her supervisor suggested her to conduct a statistical survey. It was difficult and complicated.  ⑦ Upon her friend's advice , she attended an academic conference where she met a famous professor. He taught her many things on the topic.

	Process 2	After study
Student's inner process	<p>⑨ She noticed that she really wanted to know “what reliable medical care services are”.</p>	<p>⑫ gratitude for kindness of her friend</p> <p>⑬ She renewed her hope to be a doctor.</p>
Actual research work	<p>⑧ She visited a young mother who lost her baby through inappropriate emergency medical care, and got deeply moved</p> <p>⑩ She visited many other places, and completed her paper.</p>	<p>⑪ Her paper received a high mark in evaluation.</p>



## Result 3

- Core factor: “how much their actual research work reflects their inner relevance or interest”
- this factor was supplemented by
  - 1) the relevance of students’ topics to their intrinsic values.
  - 2) rediscovering the value or the meaning of the topics
  - 3) effective support from people around.

# IV Discussions






# Support for the students

- Students with low level of satisfaction  
: faced a lot of difficulties during the course of their studies and became more and more uninterested in their topics.
- Students with high level satisfaction  
: grew to find their researches more and more interesting.
- A continuous support throughout the course of their researches is needed, especially for those who have relatively poor motivation.



# Regarding “decline in academic ability”

- As reasons for the disparity, the depth of student’s interest and appropriateness of the study plan can be pointed out.
- Since we can see some items related to basic learning processes, it is possible to say the integrated learning can be applicable to any students as long as appropriate support is provided for them.

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- For some students, Integrated learning are effective, because they made new relationship, got a sense of achievement.
  - It is important to be cautious when searching for the reasons of decline in academic ability or disparity in the academic achievement
  - and to support students' daily learning.

Thank you for your attention

