Economics Classes which Change the Naive Theories of Students into the Economic Way of Thinking

Hisashi Kurihara*

= Abstract =

Junior and senior high-school students construct their naive theories on economic phenomena in daily life. They attend economics classes with naive theories in their mind. Teachers teach the economic way of thinking to their students. But, generally, because the naive theories adhere closely to students, it is not easy to change their naive economics into the rational economic way of thinking smoothly by teachers’ explanation. So, Kurihara developed an economics class with a main question that “why are canned juices sold in mountain lodges are expensive.” In this class, teachers made students verbalize their naive theories on economic phenomena and have epistemic conflicts.

In Japan, there are not so many researches about students’ naive understanding on economy. Therefore, we need to conduct further researches to teach the economic way of thinking effectively in classes.

Key words: junior and senior high school, economic way of thinking, rational way of thinking, naive theories, epistemic conflicts

* Professor, Major in Economic Education, Shinshu University(hkuri@shinshu-u.ac.jp)
논문 투고일 : 2009년 10월 6일
계제 확정일 : 2009년 12월 14일


I. Introduction

Most Japanese children are given fixed allowances by parents every month. They spend the money on buying canned juices, watching movies, etc. In Japan, there’s a custom that children are given special allowances (Otoshidama) by their grand parents and relatives on New Year’s Day. Most children have their own savings accounts and deposit a part of the money.

It’s a daily economic behavior for Japanese children to go to a convenience store, go to a movie, and go to a bank. Then, I wonder how they are thinking of the economic society.

When junior high-school students go to a movie, the admission fee is 1,000 yen in Japan. And it’s 1,800 yen for adults. “Why do the business managers of movie theaters take off the admission fee for junior high-school students?” I wonder how they answer to this question, for instance.

Economics classes in schools are aiming to enable the students to explain economic phenomena correctly. This is, in other words, to teach the students the economic way of thinking. To achieve this goal, it’s necessary for teachers to accurately assess how far the students understand the economics.

In this report, I show the result of research about students’ understandings of daily economic phenomena. Next, I explain the feature of student’s understandings of economics with the concept of “naive theories”. Finally, I show the economics teaching strategies to change the students’ naive theories of economic phenomena into the rational economic way of thinking.
II. The Current Situation of Junior and Senior High School Students’ Understandings of Economics

1. The Research by Yamaoka Group and National Institute for Educational Policy Research

I wonder how far the junior and senior high school students understand economics. To begin with, I show the results of the research by the study group Professor Michio Yamaoka in Waseda University was leading (2002) and the researches by the National Institute for Educational Policy Research (2003, 2005).

1) High-school Students’ Understandings of “Financial Policies”

The Yamaoka group conducted an economic literacy test for high-school students. This is the test which applied question items of Test of Economic Literacy developed by Walstad and Rebeck (2001).

The test by Yamaoka group consists of 45 questions. This test included the following question, for instance.

<table>
<thead>
<tr>
<th>Question</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which is the monetary policy by the Bank of Japan to increase the aggregate demand?</td>
<td></td>
</tr>
<tr>
<td>① Raising the income tax rate</td>
<td>(12.1%)</td>
</tr>
<tr>
<td>② Raising the official discount rate</td>
<td>(41.2%)</td>
</tr>
<tr>
<td>③ Buying government bond in open market</td>
<td>(32.2%)</td>
</tr>
<tr>
<td>④ Raising the cash reserve ratio</td>
<td>(13.9%)</td>
</tr>
</tbody>
</table>

In this question, 40% of high-school students answered ②. It’s a wrong answer. The correct one is ③. 10 points more students chose ② than the ones who chose ③.

Why did about 40% of students choose ②? The official discount rate operation used to be a main monetary policy in Japan. So, only official
discount rate operation was explained in most junior high-school textbooks. Therefore, the term official discount rate sounded most familiar to the high-school students who took this test. That’s why they chose ②. But, “Raising the official discount rate” is the operation to reduce the money stock. Consequently, aggregate demand is reduced. The answer ② is obviously wrong.

2) High-school Students’ Understandings of “Public Finance”

The National Institute for Educational Policy Research is conducting surveys on academic performance of elementary school, junior high-school, and senior high-school students. The survey of students who took a course in “Modern Society” in high school included the following question.

<table>
<thead>
<tr>
<th>Which of the following sentences about the government’s economic roles is wrong?</th>
</tr>
</thead>
<tbody>
<tr>
<td>① The government provides social overhead capitals such as roads and public services such as the police and the fire department. (41.4%)</td>
</tr>
<tr>
<td>② The government reduces the income gap between people by the progressive taxation. (23.5%)</td>
</tr>
<tr>
<td>③ Operating the official discount rate aiming to stabilize the economic conditions and prices. (19.6%)</td>
</tr>
<tr>
<td>④ Increasing or decreasing the public investments aiming to stable the economy. (12.7%)</td>
</tr>
</tbody>
</table>

High-school students in Japan study the government’s economic roles in “Modern Society”. According to the economics, the government’s economics roles are categorized into “resource allocation function”, “income redistribution function”, and “stabilization function”. High-school textbooks explain these three functions.

But, most high-school students don’t understand the government’s economic roles correctly. Only about 20 % students understand that “Operating the official discount rate aiming to stabilize the economic conditions and prices” isn’t the government’s role. The operation of official
discount rate is the monetary policy by the Bank of Japan.

About 40% students chose ①. But, the provision of public goods is the government’s most fundamental economic role. Perhaps the students misread the question.

3) Junior High-school Students’ Understandings of “Supply and Demand”

The test for junior high-school students conducted by National Institute for Educational Policy Research included the following question. This is the question to test the basic understanding of supply and demand.

Choose the sentence describing that demand changes had an impact on prices.

① When there was a good crop of cabbages, the price decreased. (20.2%)
② In the special year-end sale, the price of TV set decreased. (10.9%)
③ On Mother’s Day, the price of carnation increased. (34.6%)
④ When the sea was stormy and there was a poor catch of fish, the price increased. (32.9%)

In Japan, children give carnations to their mothers on Mother’s Day. During the term, the demand for carnations increases. So the price of carnation increases. Consequently, the correct answer is ③. 35% students gave a correct answer.

But, almost the same rate of students chose “④. When the sea was stormy and there was a poor catch of fish, the price increased”. In ④, the increase of price is explained from the side of supply. Most junior high-school students don’t know the correct meaning of supply and demand.
2. The Research by Kurihara

The researches by Yamaoka group and National Institute for Educational Policy Research adopted multiple-choice questions. The students choose an answer from 4 choices.

On the contrary, Kurihara adopted a description question to test how far the junior and senior high-school students understand economy. Students answered to questions freely thinking for themselves. In the description answers, their economic thinking appeared directly.

1) The Explanation about the Prices of Canned Juices Sold in Mountain Lodges

Most junior and senior high-school students have climbed up mountains in excursions. So they know that canned juices sold in mountain lodges are more expensive than the ones in convenience stores. Why are canned juices sold in mountain lodges expensive? This is the question requiring for the students to explain about the economic phenomenon most of them have experienced.

A week ago Sunday, I went to hiking on Hakuba-mountain with my family. In the mountain lodge located 1300 meters above sea level, one canned juice was sold at 350 yen. Why is the canned juice sold at 350 yen despite it is 120 yen in convenience stores?

1) 109 junior high-school students in Nagano prefecture and 77 senior high-school students in Tokyo were surveyed in this question. The research for junior high-school students was conducted in 2005, and the research for senior high-school students was in 2001.
<Table 1> The Sorted Answers in “Canned Juices Sold in Mountain Lodges”

<table>
<thead>
<tr>
<th>Sorted Answers</th>
<th>Junior high-school students</th>
<th>Senior high-school students</th>
</tr>
</thead>
<tbody>
<tr>
<td>① Costs: “Some expenses such as labor costs are required to carry canned juices to the mountain lodges. The prices of canned juices are expensive because it includes the expenses”.</td>
<td>40.0%</td>
<td>49.4%</td>
</tr>
<tr>
<td>② The preciousness of water: “They are expensive because water such as canned juices is precious on a mountain”.</td>
<td>21.4%</td>
<td>0%</td>
</tr>
<tr>
<td>③ The demand: “They are expensive because some people buy canned juices on a mountain even if they are expensive”.</td>
<td>6.1%</td>
<td>27.4%</td>
</tr>
<tr>
<td>④ Other answers and no answer:</td>
<td>32.5%</td>
<td>23.2%</td>
</tr>
</tbody>
</table>

As indicated in Table 1, Kurihara divided students’ answers to this question into 3 major categories. 40% junior high-school students and about half of high-school students explained as “They are expensive because it requires costs to carry canned juices to the mountain lodges”.

But the explanation isn’t correct from a viewpoint of economics. Certainly, the owners of mountain lodges want to include the carrying expenses in the prices of canned juices. Actually, they will charge high prices on canned juices. But they can’t achieve a high price if the consumers don’t buy them for the price. On the contrary, even in a place requiring no special expenses a high price can be achieved if consumers buy them. In Japan, in some special locations such as amusement parks and zoological parks canned juices are sold for a higher price than in convenience stores. That’s because some people buy them despite the high prices in the locations. Therefore, that “they are expensive because some
people buy canned juices on a mountian even if they are expensive” is the economic way of thinking.

2) The Explanation about the Source of Bank Employees’ Salary

Most junior and senior high-school students have their own accounts in banks. They sometimes operate ATM and withdraw their deposits. A bank is familiar to them. Then, I wonder how far they understand banks.

> Many people (bank employees) are working in banks. The bank employees are working to receive salaries. Then, where does the money paid as salaries to bank employees come from? Explain the reason you think.

**<Table 2> The Sorted Answers in “The Salaries of Bank Employees”**

<table>
<thead>
<tr>
<th>Sorted Answers</th>
<th>Junior high-school students</th>
<th>Senior high-school students</th>
</tr>
</thead>
<tbody>
<tr>
<td>① Taxes: The government pays bank employees’ salaries from taxes.</td>
<td>47.5%</td>
<td>16.5%</td>
</tr>
<tr>
<td>② Proceeds from funds: Banks pay employees’ salaries from the proceeds derived from the difference between deposit interest rates and lending interest rates.</td>
<td>20.0%</td>
<td>54.9%</td>
</tr>
<tr>
<td>③ Deposits: Banks pay employees’ salaries from the money deposited in banks.</td>
<td>5.8%</td>
<td>7.9%</td>
</tr>
<tr>
<td>④ Commission charges: Banks pay employees’ salaries from the funds derived from commission charges like ATM.</td>
<td>5.0%</td>
<td>2.6%</td>
</tr>
<tr>
<td>⑤ Other answers and no answer:</td>
<td>21.6%</td>
<td>17.9%</td>
</tr>
</tbody>
</table>

2) 120 junior high-school students in Nagano prefecture and 151 senior high-school students in Saitama prefecture were surveyed in this question. The research was conducted in 2008.
As indicated in Table 2, Kurihara divided students’ answers to this question into 4 major categories. Japanese banks generate incomes from the difference (margin of profit) between deposit interest rates and lending interest rates. Internet banks generate much from commission charges of ATM. So, ② and ④ are economic ways of thinking. But, about half of the junior high-school students think that “the government pays bank employees’ salaries from taxes”. 16% high-school students think the same way. They think bank employees are public officers. Perhaps they understand that commercial banks are not private businesses but government institutions. A bank is a black box for most junior high-school students.

3) The Explanation about Discounts to Students in Movie Theaters

Many junior and senior high-school students like watching movies. Admission fees of movie theaters for junior and senior high-school students are cheaper than the ones for general guests (adults). It’s a student discount. I asked the junior and senior high-school students why their admission fees of movie theaters are cheaper than the ones for adults.

*The admission fees of movie theaters are, “general guests: 1,800yen, university and high-school students: 1,500yen, junior high-school students: 1,000yen”. Explain the reason why movie theaters take off the admission fees for junior and senior high-school students.*
<Table 3> The Sorted Answers in “Discounts to Students in Movie Theaters”

<table>
<thead>
<tr>
<th>Sorted Answers</th>
<th>Junior high-school students</th>
<th>Senior high-school students</th>
</tr>
</thead>
<tbody>
<tr>
<td>① The difference in incomes: Junior and senior high-school students don’t have much money because they are not working. So, the admission fees of movie theaters for them are set low.</td>
<td>61.7%</td>
<td>74.2%</td>
</tr>
<tr>
<td>② Regular customers: Junior and senior high-school students frequently come to watch movies. So, their admission fees are set low.</td>
<td>16.7%</td>
<td>6.0%</td>
</tr>
<tr>
<td>③ Education: The owners of movie theaters want junior and senior high-school students to broaden their education. So, they took off the admission fees for them.</td>
<td>10.0%</td>
<td>4.6%</td>
</tr>
<tr>
<td>④ Profit: If the owners take off the admission fees for junior and senior high-school students, they’ll go to movie theaters more frequently. So, the owners expected the increase of profit.</td>
<td>0.8%</td>
<td>8.6%</td>
</tr>
<tr>
<td>⑤ Other answers and no answer:</td>
<td>10.8%</td>
<td>6.6%</td>
</tr>
</tbody>
</table>

Companies sometimes set different prices for different groups in their ages and sexes. Companies aim to increase the profits by price discrimination. The owners of movie theaters take off the admission fees for junior and senior high-school students. This is because of the good price elasticity of their demands. They tend to go to movie theaters more frequently if the admission fee is set low. On the other hand, working

---

3) 120 junior high-school students in Nagano prefecture and 151 senior high-school students in Saitama prefecture were surveyed in this question. The research was conducted in 2008.
people don’t have so much price elasticity of movie demand. So, the owners of movie theaters don’t take off their admission fees. This is a rational behavior of the movie theater as a company for the increase of profit.

Then, what about the junior and senior high-school students’ answers to this question? As indicated in Table 3, Kurihara divided students’ answers into 4 major categories. “Junior and senior high-school students don’t have much money. So, the admission fees of movie theaters for them are set low”. 62% junior high-school students and 74% high-school students supported this idea. Japanese public high schools sometimes exempt school fees of students from a low-income home. This is a kind of social welfare services conducted by local public authorities. Perhaps many of junior and senior high-school students think that the discount of their admission fees of movie theaters is a social welfare service. 10% junior high-school students understand the relation between the educational function of movie theaters and student discounts. Public high schools are public sectors. Movie theaters are private businesses. Most junior and senior high-school students don’t understand the difference between the two characters correctly.

Most junior high-school students can’t understand the relation between student discounts and the profit of movie theaters. Only 9 % high-school students could explain that the owners of movie theaters take off the admission fees of movie theaters for junior and senior high-school students for the increase of profit. Generally, price discrimination isn’t taught in Japanese junior and senior high-school classes.

III. “Naive Theories” Constructed in Daily Life

In the research by Kurihara, students were required to explain about daily economic phenomena. Most of them explained that “canned juices in mountain lodges are expensive because it needs expenses to carry canned juices there”. There also were many students who think that “the
government pays bank employees’ salaries from taxes”. As for the reason why student discounts are applied to the admission fee of movie theaters, many students explained that it’s a kind of social welfare service.

Most students didn’t answer to the research questions by Kurihara from their knowledge acquired in school teaching. Maybe they answered from the ways of thinking they constructed in daily life. Educational psychologists call the informal knowledge constructed in daily life as “naive theory”.

Science education researchers used to focus on the naive theories of children. They knew that children have common wrong ways of thinking to explain about natural phenomena. One example is the explanation about the following question. “Ices and juice are in a glass. There are water droplets on the surface of the glass. Where are the droplets from?” To this question, many elementary school students answer that “they seeped from inside of the glass”. We get sweaty on hot summer days. The glass also got sweaty. Children explained considering the droplets on the surface of the glass as sweats.

Like that, naive theories are generally different from a scientific way of thinking. Also, naive theories are common ways of thinking for many children.

Children who attend classes have naive theories constructed through daily experience in their mind. In the classes, teacher teaches the scientific way of thinking. Then, I wonder if they can change the naive theories of children into the scientific way of thinking soon after they teach them.

I threw a ball straight up into the air. In what direction does a force act on the rise, on the highest top, and on the decline? Choose a correct answer from the options.

<table>
<thead>
<tr>
<th>on the rise</th>
<th>highest top</th>
<th>on the decline</th>
</tr>
</thead>
<tbody>
<tr>
<td>upward</td>
<td>upward</td>
<td>upward</td>
</tr>
<tr>
<td>①</td>
<td>②</td>
<td>③</td>
</tr>
<tr>
<td>upward</td>
<td>no force</td>
<td>downward</td>
</tr>
<tr>
<td>④</td>
<td>⑤</td>
<td>⑥</td>
</tr>
<tr>
<td>downward</td>
<td>no force</td>
<td>downward</td>
</tr>
</tbody>
</table>

Highest top

Students who have taken physics course in high schools had this test. In physics classes, teachers teach that only the gravity acts on the object which is no more on the hand. In other words, only downward force acts on the ball regardless of the point. Therefore, the correct answer for this question is ④.

However, people tend to think that forces act to the direction of move. In that way of thinking, forces act upward on the rise and downward on the decline on the ball. And no force acts on the ball on the highest point. 54% students answered ②. The number of students who answered ② is more than the one of students who answered ④. That is the answer based on a naive theory.

As such, it’s sometimes difficult to change the naive theories of students into the scientific way of thinking by teachers’ explanation in physics classes. This is also the feature of naive theories. Naive theories adhere closely to children. It’s not easy to change them into scientific ways of thinking.

Also about social phenomena, children construct naive theories. The theory “canned juices sold in mountain lodges are expensive because it needs expenses to carry canned juices there” revealed in the researches by Kurihara is one of naive theories. This can also be called “naive economics”.

The naive theories about social phenomena are also difficult to change into rational ways of thinking smoothly by teachers’ explanation in classes.

The researches conducted by National Institute for Educational Policy
Research (2005) revealed the difficulty. The example is the following question.

<table>
<thead>
<tr>
<th></th>
<th>Which is the basic human right stipulated in all of Declaration of the Rights of Man and the Citizens, Weimar Constitution, and the Constitution of Japan?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>property right (9.9%)</td>
</tr>
<tr>
<td>2</td>
<td>right to existence (76.8%)</td>
</tr>
<tr>
<td>3</td>
<td>environmental right (2.7%)</td>
</tr>
<tr>
<td>4</td>
<td>basic labor right (9.8%)</td>
</tr>
</tbody>
</table>

This is the question to the students who took “politics and economics” in high-schools. In Japan, students continuously study about basic human rights in elementary school, junior high-school, and senior high-school. In the classes of social studies, teachers teach that the property right is included in civil liberties. They also teach that the civil liberties were established as basic human rights as the result of bourgeois revolution in 18th century. But, no more than 10% students could choose ①.

77% students chose right to existence. It was 20th century when right to existence came to be included in the list of basic human rights. Therefore, it’s a wrong answer. But, many students thought that right to existence is the right included also in the Declaration of the Rights of Man and the Citizens. They thought that assurance of food supply was established as the first human right. This is a naive understanding of society. Many social studies teachers fail to change the naive understandings of society into the rational ways of thinking in classes.

**IV. The Teaching Strategy to Teach the Economic Way of Thinking to Students**

In the chapter III, I revealed the feature of naive theories constructed through daily life of children. The naive theories adhere closely to children. It’s not easy to change them into the scientific ways of thinking by teachers’ explanation in classes.

Then, what kind of teaching strategies teachers should adopt to change
naive theories into the scientific ways of thinking. Kurihara (2007) developed an economics class with a main question that “Why are canned juices sold in mountain lodges are expensive”.

As revealed in the chapter II, many students explain to this question that “Some expenses such as labor costs are required to carry canned juices to the mountain lodges. The prices of canned juices are expensive because it includes the expenses”. The class developed by Kurihara aims to change the naive theory into the economic way of thinking that “They are expensive because people buy the canned juices on a mountain despite the high prices”.

The title of the class: “The reason why canned juices sold in mountain lodges are expensive”
Concepts: demand, supply, and price
Objective: Students can explain in the economic way of thinking that “the prices are expensive if some people buy despite the high prices” to the questions like “why are canned juices sold in mountain lodges expensive?”
Time required: One class period (50 minutes)
The procedure of the class:

Step (1):

1. The Teacher asks the Following Question to Students.

(Question 1) “A week ago Sunday, I went to hiking on Hakuba-mountain with my family. In the mountain lodge located 1,300 meters above sea level, one canned juice was sold at 350 yen. Why is the canned juice sold at 350 yen despite it is 120 yen in convenience stores?”
Students will explain as below.
“It requires expenses to carry them to mountain lodges. The owners of mountain lodges included the expenses in the prices of canned juices, so the canned juices sold in mountain lodges are expensive”. “Climbers buy
canned juices on a mountain despite the high prices, so the canned juices sold in mountain lodges are expensive”. “On the mountain 1,300 meters above sea level, there are no store but mountain lodges, so the owners of mountain lodges can set high prices on canned juices”.

2. The Teacher Confirms that Many Students Think the Idea that “Canned juices sold in Mountain Lodges are Expensive Because the Prices Include Carrying Expenses” is Correct.

Step (2);

3. The Teacher asks Following Two Questions to Students.

(Question2)“I rented a parking lot in central Tokyo. The parking fee was 52,500 yen for a month. I can rent a parking lot in the suburbs of Tokyo for 10,000yen. Why are the parking fees of parking lots in central Tokyo expensive?”

(Question 3) “I drank a cup of coffee in the hotel in central Tokyo yesterday. That was 950 yen. Why is the coffee in a hotel in central Tokyo expensive?”

Students will explain as below.

“The land prices in central Tokyo are high. Accordingly, the parking fees become expensive”. “The spaces for cars are limited in central Tokyo, but there are a large number of cars. And the car owners don’t want to park illegally. That’s why they rent parking lots despite the high prices of parking fees. Consequently, the parking fees in central Tokyo are expensive”.

“The coffee shops in hotels use premium coffee beans and cups, so the coffee in a hotel is expensive”. “Many people use the coffee shops in hotels for the meetings. Therefore many people drink coffee despite the high prices, so the price of coffee in a hotel is expensive”.
4. The Teacher asks the Following Question to Students.

“What kind of ideas did you have in common to answer to the questions 1, 2, and 3?”
Students will answer as below.
“The prices of products are expensive if it required much expense to produce and sell them”.

Step (3);

5. The Teacher asks Following Two Questions to Students.

(Question4) “The speaking fee of the top-selling author A is 700,000 yen at one time. Why is her speaking fee so expensive?”
(Question 5) “I took a trip to Hawaii in the summer vacation season. The tour travel expenses were twice as much as the ones in October. Why are the travel expenses expensive in summer vacation season?”
Students will explain as below.
“Ms. A is popular as an author. Many people are eager to listen to her speech. So, her speaking fee is expensive”. “Ms. A is popular as an author. So, she doesn’t accept the offer unless the fee is expensive”.
“In Japan, many people can’t take a long vacation except the summer vacation season. So, many people go on trips in the summer vacation season despite the high prices of travel expenses”. “The prices of hotels and airfares get expensive in the summer vacation season. So, the price of Hawaii travel fee is also expensive”.

6. The Teacher asks the Following Question to Students.

“What kind of ideas did you have in common to answer to the questions 4 and 5?”
Students will answer as below.
“The prices of products are expensive if some people buy them despite the high prices”.

Step (4);

7. The Teacher gives the Following Instruction to Students.
“As for question 1, 2, and 3, many students explained that ‘The prices of products are expensive if it required much expense to produce and sell them’. On the other hand, as for question 4 and 5, many students explained that ‘The prices of products are expensive if some people buy them despite the high prices’. Engage freely in discussion about which theory’s explanation is more economic way of thinking”. Students will provide ideas as below.
“Companies can’t make a profit unless they sell the products at higher prices than expenses required to produce and sell them. So, the products which require expenses in producing and selling them are expensive”. “Sellers want to sell the products at high prices. But, the prices can’t be decided unless buyers buy them”. “The way to decide the price depends on products”.

Step (5);

8. The Teacher asks the Following Question to Students.

“As for question 4 and 5, can you explain them with the way of thinking that ‘The prices of products are expensive if it required much expense to produce and sell them’?”
Students will answer as below.
“It’s difficult to explain”. “Ms. A is a popular author, so she needs expenses like clothing ones”. “In the summer vacation season, the expenses like hotel prices and airfares get expensive”.
Step (6);

9. The Teacher asks the Following Question to Students.

“As for question 1, 2, and 3, can you explain them with the way of thinking that ‘The prices of products are expensive if some people buy them despite the high prices’?”

Students will answer as below.
“The reason why canned juices sold in mountain lodges are expensive is that some people buy them despite the high prices. The owners of mountain lodges would stop selling canned juices if there were not people who buy them. That theory can be applied to parking lots in central Tokyo and coffee in hotels”. “In an auction, high prices are sometimes set at antiquities. The prices have almost no relation with manufacturing costs incurred. The antiquities are expensive because some people buy them at high prices”.

10. The Teacher asks the Following Question to Students.

“By which theory can you answer well to all the questions, ‘the prices of products are expensive if it required much expense to produce and sell them’, or ‘The prices of products are expensive if some people buy them despite the high prices’?”

Students will answer as below.
“I can answer to all the questions by the theory that ‘The prices of products are expensive if some people buy them despite the high prices’”. “I can’t answer to questions 4 and 5 by the theory that ‘the prices of products are expensive if it required much expense to produce and sell them’”.”
Step (7);

11. The Teacher gives the Following Instruction to Students.

“Answer to the question 1 again. Did you see any changes in your way of thinking compared with the first time you answered at the beginning of this class? ”

Students will answer as below.

“When I answered at the beginning of the class, I explained that ‘the canned juices sold in mountain lodges are expensive because it needs expenses to carry canned juices there’. And now, I think that ‘Some thirsty climbers buy canned juices despite the high prices. So, the canned juices in mountain lodges are expensive’ ”. “Surely, the canned juices are sold at high prices in mountain lodges because some people buy them despite the high prices. But the owners of the mountain lodges must include the carrying expenses in the prices. After all it’s an owner who decides the prices”.

In the teaching plan developed by Kurihara, the teacher presented a question that “Why are canned juices in mountain lodges expensive?” This is aiming to make the students verbalize their naive theories by answering to the question. In the step (2), the teacher made students answer the questions (“parking fees in central Tokyo” and “the price of coffee in hotels”) which can be explained with the naive theories of students. This is aiming to make students be vividly aware of their naive theories.

In the step (3), the teacher presented questions of “the speaking fee of a popular author” and “travel expenses in the summer vacation season”. This question is difficult to answer by the theory that “the prices of products are expensive if it required much expense to produce and sell them”.

Most students answered to the questions 1, 2, and 3 by the theory that “the prices of products are expensive if it required much expense to produce and sell them”. On the other hand, as for questions 4 and 5, they
answered with the theory that “The prices of products are expensive if some people buy them despite the high prices”. In the step (4), teacher made the students notice that the same economic phenomena of high prices are explained by different ways of thinking. The teacher expected that students had epistemic conflicts in this stage.

In the step (5), the teacher made the students notice that questions 4 and 5 are difficult to explain by the theory that “the prices of products are expensive if it required much expense to produce and sell them”. The teacher intended to make the students to be unsatisfied with this theory. In the following step (6), on the contrary, the teacher made the students notice that the theory that “The prices of products are expensive if some people buy them despite the high prices” can be applied to all the questions. The teacher wanted to make the students notice that this theory has more generality.

In the last step (7), students answered again to the question that “Why are canned juices sold in mountain are lodges expensive?” With this question, the teacher intended to make the students assess the changes in their own ways of thinking.4)

V. Conclusion

In this report, I revealed the actual condition of junior and senior high-school students’ naive understandings of economic phenomena by the researches for them. Also, I indicated the teaching strategy to change students’ naive theories into economic ways of thinking. I think the effectiveness of the strategy should be tested more strictly in the future.

As noted previously, a broad range of researches to reveal children’s naive theories about natural phenomena are conducted in the field of

4) Kurihara practiced the class with the teaching plan for university students in 2005. According to the questionnaire after the class, many students said they understood the theory that “The reason why canned juices sold in mountain lodges are expensive is that some people buy them despite the high prices”.
science education. A large number of teaching plans focusing on children’s naive theories are developed.

On the contrary, there are not so many researches about the actual condition of children’s naive understandings of social phenomena in Japan. Therefore, the teaching plans focusing on naive theories about social phenomena are seldom developed.

We need to conduct further researches about children’s understandings of economy - naive economics- following the researches in the field of science education. The research will be a cooperative one by economists, educational psychologists, and the curriculum researchers.

Also, we need to research how the children’s understandings of economy will vary among cultural backgrounds. The research needs international cooperation.
학생들의 경제사고방식을 바꾸는 순수이론에 관한 경제수업

Hisashi Kurihara

= 국문초록 =

고교생들은 일상적 삶 속에서 경제현상에 대한 단순한 이론을 인식한다. 그들은 순진한 이론을 가지고 경제학 강좌를 듣는다. 교사는 학생들에게 경제적 사고를 가르치지만 순수이론이 학생들에게 믿착되어 있기 때문에 교사의 설명 만으로 순진한 경제학을 합리적인 경제적 사고로 유연하게 바꾸는 것이 쉽지 않다. 그래서 저자는 “산속의 숙소에서 판매되는 캔 쥬스가 왜 비싸나”라는 주요 질문으로 경제학 강좌를 개발시켰다. 이 강의에서 교사는 학생들이 경제적 현상에 대한 순수이론을 띄워서 표현하도록 하고 또 인식론적 갈등을 가지도록 하였다. 일본에서는 경제에 관한 학생의 순진한 이해에 관한 연구가 많지 않다. 그래서 교실에서 효과적으로 경제적 사고를 가르치기 위해 더 많은 연구가 필요하다.

주제어 : 중·고등학교, 경제적 사고방식, 합리적 사고방식, 순수이론, 인식론적 갈등
References


