VISUALIZATION AND FEEDBACK OF STUDENTS' CONCEPTS

Examples from Lectures at Nagasaki University, April to July, 1995

Presentation Material at Educational Workshop
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The aim of this presentation is to report how medical students can gain positive study interests not only for high-tech medical science but also for health related issues in everyday life. For this purpose, the author switched his educational strategy from lecturing on information to asking students about their unique life experience related to health and disease. This transformation of educational view was obtained during the author's stay in Illinois 1991-1992. After coming back to Japan, the author started various trials to externalize students’ hidden concepts and images. In order to reveal the students' unique perspective of health, which is embedded in their everyday life, students were asked to visualize and express their images related to a variety of daily situations.

This presentation material is based on the author's lectures at Nagasaki University (from April to July, 1995), and accompanying students’ written responses.

For the present trials, the author developed various visual frameworks to think, reflect and externalize. As the result, in addition to students’ individual unique responses, two different aspects of Japanese medical students were also revealed, such as ‘rather naive and/or immature’ aspect and ‘logical and creative’ aspect. These two different aspects are impressive not only for the author but also for students, because in the traditional way of Japanese medical education, students are not permitted to express their personal feelings, and students' unique perspectives are also suppressed. As the result, students do not have enough chances to reflect oneself and interact with other students. However, such lack of inner and/or mutual reflection is not good for sound professional growth. Further encouragement and realization of both of these aspects would help students to attain more balanced emotional growth toward matured medical professionals.

Key words: health related image, health related behavior, participatory leaning, medical student, process of cognition, health promotion, health education, environmental education
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Series 1

The food image of Illinois students and the Japanese students' understanding of it

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Phase 1  American students' mapping of food images.

Students of Illinois revealed and expressed their food images by two-dimensional mapping.

Oct 11, 1991

3. Rank along the vertical axis

Very Important to Your Health

Somewhat Important

Not Important to Your Health

2. Arrange on the horizontal axis.

Eat Infrequently  Eat Frequently

1. List of Foods
### Examples of Phase 1  Oct. 11, 1991

#### List of Foods

<table>
<thead>
<tr>
<th>Very Important to Your Health</th>
<th>List of Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>ORANGE JUICE</td>
</tr>
<tr>
<td></td>
<td>PIZZA</td>
</tr>
<tr>
<td></td>
<td>ENRICHED NOODLES</td>
</tr>
<tr>
<td></td>
<td>HAMBURGER</td>
</tr>
<tr>
<td></td>
<td>APPLES</td>
</tr>
<tr>
<td></td>
<td>ITALIAN SUB</td>
</tr>
<tr>
<td></td>
<td>CHEESE</td>
</tr>
</tbody>
</table>

#### Eat Frequently

<table>
<thead>
<tr>
<th>Not Important to Your Health</th>
<th>Eat Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIZZA</td>
<td></td>
</tr>
<tr>
<td>BAGELS</td>
<td></td>
</tr>
<tr>
<td>ICE CREAM</td>
<td></td>
</tr>
<tr>
<td>PASTA</td>
<td></td>
</tr>
<tr>
<td>BANANA</td>
<td></td>
</tr>
<tr>
<td>ICE CREAM</td>
<td></td>
</tr>
<tr>
<td>PASTA</td>
<td></td>
</tr>
</tbody>
</table>

#### Somewhat Important

<table>
<thead>
<tr>
<th>Not Important to Your Health</th>
<th>Eat Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pizza</td>
<td></td>
</tr>
<tr>
<td>Ice cream</td>
<td></td>
</tr>
<tr>
<td>Pasta</td>
<td></td>
</tr>
<tr>
<td>Bagels</td>
<td></td>
</tr>
</tbody>
</table>

#### Very Important to Your Health

<table>
<thead>
<tr>
<th>Not Important to Your Health</th>
<th>Eat Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salad</td>
<td></td>
</tr>
<tr>
<td>Chicken</td>
<td></td>
</tr>
<tr>
<td>Ham sandwich</td>
<td></td>
</tr>
<tr>
<td>Cereal</td>
<td></td>
</tr>
</tbody>
</table>

**Eat Infrequently**

<table>
<thead>
<tr>
<th>Very Important to Your Health</th>
<th>Eat Infrequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 2. 3. 4. 5. 6. 7.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Somewhat Important</th>
<th>Eat Less Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 2. 3. 4. 5. 6. 7.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Not Important to Your Health</th>
<th>Eat Less Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIZZA</td>
<td></td>
</tr>
<tr>
<td>BAGELS</td>
<td></td>
</tr>
<tr>
<td>ICE CREAM</td>
<td></td>
</tr>
<tr>
<td>PASTA</td>
<td></td>
</tr>
</tbody>
</table>

## Notes

1. Try to eat frequently the foods marked with an 'X' in the 'Very Important to Your Health' category.
2. Eat less frequently the foods marked with an 'X' in the 'Somewhat Important' and 'Not Important to Your Health' categories.
3. Avoid the foods in the 'Not Important to Your Health' category.
**Phase 2**  
Conversion of verbal images into their visual equivalents.

Some parts of verbal images are converted to visual equivalents to assist communication.

### Food Image Map, verbal version

<table>
<thead>
<tr>
<th>Very Important to Your Health</th>
<th>Somewhat Important</th>
<th>Not Important to Your Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>corn</td>
<td>pears</td>
<td>milk</td>
</tr>
<tr>
<td>potato chips</td>
<td></td>
<td>chocolate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pepsi</td>
</tr>
</tbody>
</table>

**List of Foods**
- pears
- corn
- milk
- chocolate
- potato chips
- pizza
- pepsi

Eat Infrequently
- corn
- pears
- pizza
- chocolate
- milk
- pepsi

Eat Frequently
- potato chips
- pepsi

### Food Image Map, visual version

<table>
<thead>
<tr>
<th>Very Important to Your Health</th>
<th>Somewhat Important</th>
<th>Not Important to Your Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>pie</td>
<td></td>
<td>chips</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**List of Foods**
- pears
- corn
- milk
- chocolate
- potato chips
- pizza
- pepsi

Eat Infrequently
- corn
- potato chips
- pears
- pizza
- chocolate
- milk
- pepsi

Eat Frequently
- chips
- pepsi
Examples of Phase 2
Intending to understand food images under different socio-cultural settings, students of Nagasaki scanned 20 food-image-maps (visual version) of Illinois students.

Then, students wrote down their findings.

July 05, 1995
It is impressive that many people eat fast food such as hamburgers and pizzas. I wonder whether chicken is a kind of fast food.

It is smart and looks like American that some people named coke and water as their 'food'. However, I am not sure that is healthy. As I have expected, rice does not appear.

I like meat too, but when I think of meat, I get images of baked meat and steak. However, many Americans name chicken and turkey. These differences reflect different concerns toward health.

The diet of Japanese is becoming similar as Americans. However, Americans consume much more milk and bread. But I am surprised that Americans eat much vegetable. Also they consume lots of fast foods and cereals. These are typical American food. But I cannot survive without rice and miso-soup.

The food patterns of A7, A12, and A13 are similar to mine. I feel sympathy to these people. I think they are athletes like me.

The pattern of A14 looks unhealthy. This person might be diabetic. In general, these Americans consume more sweets than Japanese. I think Japanese do not usually name juice, cereal & corn in this situation.

I felt American when cereals and pizzas appear in the map. In Japan, rice appears instead of these.

Until the experience of this map, I have thought that Americans eat much more sweets (This thought might be biased). However, actually, I felt that they are not different from Japanese.

What is 'granola' that appears in the map of A5?

I think that the food pattern of A4 is good. Among others, there are many incredible patterns.

Many people name pizza and other items that are considered 'snacks' instead of 'foods' in Japan.

However, after scanning these patterns, I am beginning to realize that pizza can be a dinner.
Americans often select cereals, corns, pizzas, and pizzas. Does this means that their diet is easy going? I felt new that A1 named water as food. For Japanese, rice and fish are often eaten (at least important for Japanese food). I am surprised that Americans eat rather small amount of meat. Both in Japan and US, milk and vegetables are considered to be important.

The food patterns of A2, A3 and A3 are relatively better balanced than others. Milk, pizza, pasta and junk-foods seem to be indispensable foods in US (Peanut butter is also). The amount of carbohydrate is, however, too much. Recently, Japanese diet are westernized to an extreme extent. However, I felt big gap between Japan and US.

I have not noticed such idea as A1 to distinguish water from milk. I am surprised by the pattern of A14. Coke is the first choice, and it follows 'milk', 'chocolate', 'pizza', 'fruits' and 'chips'? I cannot imagine this persons' diet. It is difficult to conceive the typical food pattern of American by these individual maps.

As I like westernized style of diet very much, I felt sympathy to these food patterns of Americans; such as the increase of potato, pizza, fruits and salad, and decrease of rice.

As these are Americans, all of foods are westernized.

As expected, only a few people consume rise, and most of others consume bread, cereal, pasta and pancake. The nutritional values of these are similar. Many people selected ice-cream and these are acceptable as the rare dessert. However, frequent consumption is not good for health. Some people named 'water' as food. I have difficulty in imaging like this. I never take mineral water directly.

Only a few people consume rice. I did not expect that Americans do not eat so much bread.

I think that American students diets are much more variable than Japanese. From these maps, it might be difficult to detect staple food items for Americans. Are they lacking an understanding of 'staple food'? (Is it too radical to ask this question?)
Series 2

The food image of Japanese students'.

Recognition of self and recognition of others.

<table>
<thead>
<tr>
<th>Phase 1; Japanese students' mapping of food images</th>
<th>s2/2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples of phase 1;</td>
<td>s2/3</td>
</tr>
<tr>
<td>Phase 2; Student's progressive focusing toward their self images of food</td>
<td>s2/4</td>
</tr>
<tr>
<td>Examples of phase 2;</td>
<td>s2/5</td>
</tr>
<tr>
<td>Phase 3; Further understanding of food related health image by recognizing others</td>
<td>s2/9</td>
</tr>
<tr>
<td>Examples of phase 3;</td>
<td>s2/10</td>
</tr>
</tbody>
</table>
Phase 1  *Japanese students' mapping of food images.*

Students of Nagasaki, Japan revealed and expressed their food images by two-dimensional mapping.

July 05, 1995

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1. **List of Foods**

<table>
<thead>
<tr>
<th>Very Important to Your Health</th>
<th>Somewhat Important</th>
<th>Not Important to Your Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eat Infrequently</td>
<td>Eat Frequently</td>
<td></td>
</tr>
</tbody>
</table>

2. **Arrange on the horizontal axis**

3. **Rank along the vertical axis**

   - 縦軸方向への展開
   - 横軸上でのキーワードの配列

---

s2/ 2
Phase 2 Student's progressive focusing toward their self image of food

Through step by step imaging, students focused toward their unique conception of foods and health. Students wrote down their findings and notices at each step.

1. List of foods.

2. Arrange on the horizontal axix.

3. Rank along the vertical axix

Finding 1

Finding 2

Finding 3
Examples of phase 2

Individual food image map of Japanese students

1

Three images of food: a burger, a fried egg, and fried vegetables.

id: 1, Description: Burger, fried egg, fried vegetables, vegetable curry, baked meat, oden.

2

Two images of food: pickles, meat fish, black tea, rice, egg, vegetable, milk.

id: 2, Description: Pickles, meat fish, black tea, rice, egg, vegetable, milk.

3

Two images of food: rice, meat, fish, vegetable, milk, seaweed, fruit.

id: 3, Description: Rice, meat, fish, vegetable, milk, seaweed, fruit.

4

Three images of food: fries, junk food, steak, Japanese cake, lamen, udon, soba, rice.

id: 4, Description: Fries, junk food, steak, Japanese cake, lamen, udon, soba, rice.

Each of Japanese student's comment to one's own map (English translation)

F(finding)1; I eat much protein. I put much muscle on my body. I am a typical fat eater.

F(finding)2; My most favorite is chocolate. I eat chocolate at least once a day. Looks like a kid's meal.

F(finding)3; Vegetable is important for my help. Oden is important to keep my psychological fitness. (A master of the Oden restaurant is my friend)

F1; I am taking enough nutrition necessary for a day. (I eat other foods in addition to the map)

F2; I used to prefer rice most of anything. However, I prefer low-fat milk more.

F3; The usual milk (3.5% of fat) is too heavy for me, and when I come home, I do not take milk. The lowest of my selection. The usual milk contains too much fat.

F1; I prefer to sit at the dining table on which these varieties of foods are there.

F2; As I used to cook by myself, I do not eat enough kinds of food.

F3; Considering the foods I usually eat in my daily life, there is no clear relationship between the frequency of consumption and its relationship to health.

F1; I can survive at least about a month by these foods.

F2; The essential food for Japanese is rise.

F3; Considering my favorite food items, I am not so conscious about my health. It is dangerous.
Individual food image map of Japanese students

Each of Japanese student's comment to one's own map (English translation)

F1; I would like to add ice-cream to these food items, but the mapping space was already occupied.

F2; If I have more money, I will drink beer instead of eating rice at dinner. At that situation, the label of fish and vegetable will take higher positions along Y axis.

F3; I take limited amounts of food items which is not important for health. My food selection might be healthy.

F1; I wish I could take as much as these food items with nice balance. I would like to do so without considering money.

F2; I am a lazy person, and I do not cook by myself. Usually, I eat daily fixed menu at some food shop. I would like to eat fish and something with vinegar taste.

F3; I am lazy, but I always prefer to be healthy. I refrain from eating items that are not good for my health.

F1; I am concentrated on the three major food items, such as meat, vegetable and rice, and other tasty foods. Especially, meat and cake!

F2; As I already have noticed, my eating pattern is distorted. Herein Nagasaki, it is near the sea and agriculture is popular. I should eat much more fish and vegetable.

F3; This trial of mapping foods on the two dimensional frame is an interesting trial. It is good to visualize eating pattern. Anyway, my eating pattern is not healthy.

F1; I cannot live without ice-cream and coffee.

F2; I should eat more food items which are necessary for my health.

F3; Coffee is indispensable for my meal. But it is not necessary for my survival.
Individual food image map of Japanese students

Each of Japanese student's comment to one's own map (English translation)

F1: In these days, I do not cook by myself! I am surprised that I have not eaten vegetables enough.

F2: As a result of this mapping, my typical weekly eating pattern has appeared.

F3: I usually take these food items not because they are good for my health. I only select these because they are tasty.

F1: I eat much more bread than rice. My favorite is fast-food. Would my life span be rather short?

F2: I am willing to eat all kinds of vegetables, and I love them. However, I do not have enough chance to eat enough vegetables.

F3: I do not like milk and fish. I can eat meat to a certain extent. This eating pattern is not good. I expect something bad for my health.

F1: I practice swimming every day. I will eat meat as much as I can, and I would like to increase my muscle. I also would like to eat enough vegetables and be careful for my health.

F2: Actually, my meat consumption is not enough. The amount of vegetable is less enough.

F3: I would like to take all food items in a good balance.

F1: I put food items which I consume most in my daily life.

F2: My limited financial status explains these food selection patterns. Because I bring rice from my parents' home.

F3: I think milk is the best, and I drink a lot of milk. My pattern of label distribution along the diagonal line probably indicates that the pattern is healthy.
Each of Japanese student's comment to one's own map (English translation)

F1: I put a variety of food items which includes fish and miso-soup. Usually, I cannot eat miso-soup which is good for health. I eat easy-made curry.

F2: I think I eat rice best of all. Except my parents' home, I usually do not eat miso-soup.

F3: This mapping pattern shows that the more I eat, the less I think the importance of it to health.

F1: I think the pattern reveals my actual situation. However, I have difficulty in ordering foods without hesitation.

F2: In considering the order of foods in N1, the balance of foods is not so distorted.

F3: I think it important. I am not eating enough fish and meat. The reason is that the fish is difficult to cook, and the meat is expensive.
Phase 3 Further understanding of food related health image by recognizing others.

Students scanned and recognized other students' maps and comments in addition to their own. This procedure guided students toward deeper understanding of food related health images, and motivated students to continue their further inquiry. Then, students wrote down their new findings.
Many people think the importance of fish and vegetables to their health. However, at the same time, these people do not want to eat them frequently. For example, the person of no.01, 03, and 08 named chocolate, fruit and coffee respectively as their most favorite food, although they understood the unhealthy effect of these foods. I felt sympathy to these people about the pattern.

I was surprised that many people preferred milk and put high value of health. Preference of rice will be described by its feeling of fullness and other factors.

Some people eat chocolate and ice cream frequently. I think these eating patterns are not so good. These foods are only acceptable as the infrequent desserts.

I agree for the person who prefers low fat milk. The calcium content of low fat milk is same as the usual milk, and its caloric content is low.

When it necessary to cook by myself, I prepare restricted number of dishes. The most serious problem is the lack of vegetable. I wonder why so few people named Miso-soup as their favorite food, including myself.

After I scanned all of notes, I was impressed by the messy eating pattern in general. In the traditional meal situation, the family always exists. In the meal without family, it is difficult to consume Miso-soup and Tukemono (Japanese pickles). I felt that many of these notes were taken by females. It is interesting to concentrate on differences between males and females. Some male's meal may be totally a mess. I am also interested in the difference of meal contents between 'with' and 'without' family.

Some people concern much about their health. Some other people eat only their favorite foods and do not concern health. There are varieties of people. However, even the people with problematic eating pattern seem to understand correctly the different health-related values of each food item. Many people put high value for foods such as fish, meat, vegetables, and put low value for sweets. These people do understand but their behavior is not necessarily controlled by their understanding.

Considering the characteristics of Japanese foods, it is reasonable for rice to be placed high priority. The higher priority of meats than the fish seem to reflect that our society's trend of westernization have already reached at the stable phase.

Many people named milk, and put high priority for it. From now on, I will also take much more milk.
Series 3

Environmental problems in the world

(case-based observations of Japanese medical students' images)

Recognition of self and recognition of others.

<table>
<thead>
<tr>
<th>Phase 1; Recognition of self; about environmental problems in the world</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples of phase 1; filled format</td>
<td>s3/2</td>
</tr>
<tr>
<td>Examples of phase 1; students' conceptual models</td>
<td>s3/3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phase 2; Recognition of others; about environmental problems in the world</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples of phase 2;</td>
<td>s3/8</td>
</tr>
</tbody>
</table>

s3/ 1
Phase 1 (of series 3) Recognition of self

Students already know much about today's environmental problems, but how do they know?

Students were asked to externalize and express their understanding of environmental problems in the world by the use of this visual framework.

How do you think about the varieties of environmental problems related to pollution of water, air and land, thinning of the ozone layer and so on? Write down your understanding as a diagram in this box.
Examples of phase 1; filled format
1. Models starting from air pollution

Air pollution

- Air pollution
  - 大気汚染 → 破壊 → 地球温暖化
  - 酸性雨 → 平地減少
  - 熱帯林減少 → 社会

Pollution by human

- 人間の環境汚染 → 地球温暖化
  - 酸性雨 → 熱帯林減少 → 生物種減少

Pollution by CFCs

- 汚染 (フロン) → オゾン層破壊
  - 破壊
  - 地球温暖化
  - 生物種減少, 熱帯林減少

Air pollution

- 大気汚染 → 冬寒さ
  - 森林減少 → 地球温暖化
  - CO₂增加
  - 地球温暖化

Pollution

- 汚染 → 酸性雨 → 熱帯林減少 → 地球温暖化
  - オゾン層破壊
  - 生物種減少

Examples of phase 1: Students' conceptual models are classified into groups.
2-1. Models starting from human factor

Human

Human desire
- Sunlight are available
- Astronaut can exist

Human
desire

Human

Human Activity
- Pollution leads to death
- Global warming

Human

Human/ Human/ Human
2-2. Models starting from human society

Population increase

Present-day consumption

Population decrease

Industrialization

Life of consumer

Civilization

Capitalism

Consumer's society
3. Other models

Air pollution
- Thinning of ozone layer
- Decrease of rainforest
- Increase of CO2
- Human body

Water pollution
- Thinning of ozone layer
- Decrease of rainforest
- Increase of CO2
- Human body

Increase of CO2
- CO2 increase -> Earth warming
- Air pollution
- Extinction of forests

Pesticides and other chemicals
- Soil erosion
- Human body

Industriarizaion of developing countries
- Increase of CO2
- Human body

Temperature increase of earth
- Decrease of species

Decrease of rain forest
- CO2 increase
- Human body
Phase 2  Recognition of others.

Students scanned and recognized other students' responses in addition to their own. This procedure guided students toward deeper understanding of the issue. Then, students wrote down their new findings.

Take your handout and scan other students' responses in addition to yours. Write down any of your comments and findings regarding the issue.
Examples of phase 2

Students' handwritings are translated and typed in English.

Each of student's findings after experiencing others' responses

03

Many people put 'air pollution' at the first stage of the relationship model describing the world wide environment. I also put air pollution first.

Living creatures, especially human being, need air and water as essential elements. The pollution of air and water will destroy human being as the creature to its roots.

06

Every one seem to anticipate that environmental pollution, especially air pollution bring various kinds of harmful effects. The pollution is resulted from public activity. Because of the pollution, tropical forests decline and results the decrease of number of species. The situation also results the thinning of ozone layer. That thinning of ozone layer is resulted from pollution and it finally results the vicious cycle.

08

As I examined the other peoples' models, I began to realize that the depth of my thinking is rather shallow. However, I felt something common regarding the root of understanding among my class mates.

10

Some models start from air pollution. Other models start from the human being and/or human society. Despite these differences, the causal chains result similar effects at the end. This might mean that within our living world, all factors are interrelated in some aspects, and they retain the overall environment of this planet.

The relationship also fluctuate and that fluctuation results the overall changes.

12

Last week, when I constituted my model, I put human and social factor at the root of environmental problems. However, I did not noticed the final feedback effect of the environmental problems which will relate to the deterioration of our planet. The final feedback will be fallen upon human and its civilization.
Series 4

Environment at the personal level

(case-based observations of Japanese medical students' images)

Recognition of self and recognition of others.

| Phase 1; Recognition of self; about environmental perception at the personal level | s4/2 |
| Examples of phase 1; filled format | s4/3 |
| Examples of phase 1; factors listed by each student | s4/4 |
Phase 1 (of series 4) Recognition of self

Students already conceive their environment by their own viewpoints, but how? Students were asked to externalize and express their unique understanding of environment on the personal basis by the use of this visual framework.

1. Express your visual image of total environment.
2. Write down your image of environment.
3. Express your image of your personal environment by using the following visual framework.
Examples of phase 1; filled format

1995.4.19. 提出 A2-1
環境について持っているイメージ、その1

1995.4.19. 提出 A2-1
環境について持っているイメージ、その1

1995.4.19. 提出 A2-1
環境について持っているイメージ、その1

1995.4.19. 提出 A2-1
環境について持っているイメージ、その1
### Examples of phase 1; Students' handwritings are translated and typed in English.

#### April 19, 1995

**Major factors which constitute the personal environment**

<table>
<thead>
<tr>
<th>Fact.1</th>
<th>Fact.2</th>
<th>Fact.3</th>
<th>Fact.4</th>
<th>Fact.5</th>
<th>Fact.6</th>
<th>Fact.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human relationship</td>
<td>Substance in the air</td>
<td>Characteristics of substance</td>
<td>Sound, wave</td>
<td>Temperature</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Student No. 01

- **Environmnental image as a whole**: All of the space and the world except myself. It includes human beings, animals, plants and substances.

#### Student No. 02

- **I am used to think environment from my personal aspect rather than the big (global) aspect.**

#### Student No. 03

- **Human beings, other creatures, and surrounding things that are harmful, non-harmful, beneficial, non-beneficial and every thing.**

#### Student No. 04

- **The world surrounding the person. Human relationship to many people. Relationship with the intimates. I want these aspects nice.**

#### Student No. 05

- **All materials and its characteristics surrounding myself. Economical and social position. Relationship with others, materialistic, social, economical and spiritual.**

<table>
<thead>
<tr>
<th>Non-experienced</th>
<th>Experienced</th>
<th>Friend</th>
<th>Lover</th>
<th>Family</th>
<th>Teacher</th>
<th>Community people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dwelling, area</td>
<td>Economical status</td>
<td>Nature (sky, land, sea)</td>
<td>Other people and family</td>
<td>Social status, obligation, job</td>
<td>Eating and drinking food</td>
<td>Politics</td>
</tr>
</tbody>
</table>
**Major factors which constitute the personal environment**

<table>
<thead>
<tr>
<th>Fact.1</th>
<th>Fact.2</th>
<th>Fact.3</th>
<th>Fact.4</th>
<th>Fact.5</th>
<th>Fact.6</th>
<th>Fact.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leisure</td>
<td>Job</td>
<td>Family</td>
<td>Climate</td>
<td>Living time, schedule</td>
<td>food and diet</td>
<td>schooling</td>
</tr>
<tr>
<td>Nature</td>
<td>Friends</td>
<td>Family</td>
<td>Club</td>
<td>Nation</td>
<td>School</td>
<td>Law</td>
</tr>
<tr>
<td>Other people</td>
<td>The thing and effect from others</td>
<td>Artificial thing</td>
<td>Something in the space (air, radiation)</td>
<td>Something that I emit</td>
<td>Something that I take and consume</td>
<td></td>
</tr>
<tr>
<td>Reliable government</td>
<td>Accessible culture</td>
<td>Fit to living calmly</td>
<td>Abundance of green. Blue sky.</td>
<td>Tasty water and air.</td>
<td>Available job.</td>
<td>Organized educational system</td>
</tr>
</tbody>
</table>

Air comes first. Following water, house, climate and human beings. I am locating at the center of circles with different diameter. I imagine from the center and ends at the periphery.
Series 5

Risk factors related to chronic disease

(case-based observations of Japanese medical students' image)

Recognition of self and recognition of others.
Phase 1 (of series 5) Recognition of self

Students have already formed their own view toward risk factors related to chronic disease, but how?

Students were asked to externalize and express their unique view of risk factors by the use of this visual framework.

1. Imagine an outbreak of a certain possible chronic disease in the future, and write it.

2. Imagine at least seven risk factors related to your everyday life.
Examples of phase 1; filled format
### Examples of phase 1:

Students' handwritings are translated and typed in English.

<table>
<thead>
<tr>
<th>Student No.</th>
<th>Risk factors related to the outcome of the chronic disease</th>
<th>Expected Chronic Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Excessive working since young adulthood</td>
<td>Stomach Ulcer</td>
</tr>
<tr>
<td>02</td>
<td>Lack of exercise</td>
<td>Hypertension</td>
</tr>
<tr>
<td>03</td>
<td>Excessive intake of salt</td>
<td>Circulatory disease</td>
</tr>
<tr>
<td>04</td>
<td>Biased diet</td>
<td>Heart disease</td>
</tr>
<tr>
<td>05</td>
<td>Stress</td>
<td>Lung cancer</td>
</tr>
<tr>
<td>09</td>
<td>Excessive intake of cholesterol</td>
<td>Hypertension</td>
</tr>
</tbody>
</table>
### Risk factors related to the outcome of the chronic disease

<table>
<thead>
<tr>
<th>Student No.</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
<th>Factor 5</th>
<th>Factor 6</th>
<th>Expected Chronic Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Too much work</td>
<td>Too much activity during night time</td>
<td>Irregular daily life</td>
<td>Irregular diet</td>
<td>Over reliance to commercialized food</td>
<td>Lack of exercise</td>
<td>Hypertension</td>
</tr>
<tr>
<td>11</td>
<td>Salty food</td>
<td>Excessive intake of meat</td>
<td>Drinking too much juice</td>
<td>Drinking too much alcohol</td>
<td>Dislike of carrot</td>
<td>Preference of burned food</td>
<td>Atherosclerosis</td>
</tr>
<tr>
<td>12</td>
<td>Too much sweets</td>
<td>Too much intake of fat</td>
<td>Too much intake of Alcohol</td>
<td>Too much amount of food</td>
<td>Do not exercise</td>
<td>Easy to accumulate stress</td>
<td>Chronic disease general</td>
</tr>
<tr>
<td>14</td>
<td>Everlasting stress</td>
<td>Diet consumption of high fat</td>
<td>Chronic luck of sleep</td>
<td>Fatness caused by lack of exercise</td>
<td>Loss of strength accompanying aging</td>
<td>Familial trend of high blood pressure</td>
<td>Hypertension</td>
</tr>
<tr>
<td>19</td>
<td>Eat as much food as young students</td>
<td>Decreased opportunity of exercise</td>
<td>Too much consumption of fat</td>
<td>Too much alcohol</td>
<td>Stress from work</td>
<td></td>
<td>Chronic disease general</td>
</tr>
<tr>
<td>21</td>
<td>Air pollution</td>
<td>Smoking</td>
<td>Absorbing expelled gas of automobile</td>
<td>Work experience in the factory</td>
<td>Experience of coal mining</td>
<td></td>
<td>Lung cancer</td>
</tr>
</tbody>
</table>
Phase 2  Recognition of others.

Students scanned and recognized other students' responses in addition to their own.
This procedure guided students toward deeper understanding of the issue.
Then, students wrote down their new findings.

Take your handout and scan other students' responses in addition to yours.
Write down any of your comments and findings regarding the issue.
Examples of phase 2

Student's

No

Each of student's findings after experiencing others' responses

10

We are students and we are young, and we have not yet attained a possible situation to have various chronic disease for the aged people. Therefore, our information regarding the issue is limited. This is the reason why the view-points of my note and other people's notes only reflects ideal status. I hope this ideal status continues through the next thirty years.

47

The cause of the adult chronic disease is an outcome of lifestyle during longtime. As the effect of factors are cumulative, it will not respond easily to the therapeutic activity. As I have scanned other peoples' notes, I was surprised that many other peoples notices will also be applied to myself, such as biased food, stress and irregular lifestyle.

75

Basic lifestyle and likes and/or dislikes are reflected toward the notes of myself and other people. Our common views are summarized as the following; if we live under the somewhat distorted life style, and if we repeat somewhat risky life which will result the acute illnesses, we will be resulted to have some chronic disease in the future.

94

Most of our classmates indicate 'stress' as a cause of chronic disease. Today's world is full of stress.

Most of our notes reflect our present life style as college students; such as 'excessive drinking', 'excessive amusements', and 'distorted food consumption' (which is the result of single life).

78

From these outcomes, I can conclude that no single factor will directly results the chronic disease. The critical condition seems to be the repetition of a factor (or factors), and as the result of this repetition, the disease will finally appear. Therefore, if the person becomes to notice about this factor, most of chronic disease are preventable.
Series 6

Behaviors toward common cold & fever

(case-based observations of Japanese medical students' image)

Recognition of self and recognition of others.

<table>
<thead>
<tr>
<th>Phase 1</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognition of self; behaviors toward common cold and fever</td>
<td>Recognition of others; behaviors toward common cold and fever</td>
</tr>
<tr>
<td>Examples of phase 1; filled format</td>
<td>Examples of phase 2;</td>
</tr>
<tr>
<td>Examples of phase 1; students' conceptual models of behavior sequence</td>
<td></td>
</tr>
</tbody>
</table>

Page

s6/2
s6/3
s6/4
s6/9
s6/10

s6/ 1
Phase 1 (of series 6) Recognition of self

Students have already formed their unique coping behaviors toward minor illnesses such as common cold, but how? Students were asked to externalize and express their unique coping behaviors toward common cold by the use of this visual framework.

1. Name at least seven individual behaviors you probably take when you catch cold and have fever.
2. Make a diagram of your behavior by interconnecting individual behaviors.
3. Explain the major characteristics of your diagram.
Examples of phase 1; filled format

出題 1985.6.14. 番号 5 氏名 五日市

1. 自分が取る行動の順序は？

1. 休息と食事
2. 薬を飲む
3. 飲み物を飲む（5分間運動）

2. 行動の選択肢を選ぶ

3. 自分の選択肢を選ぶ

出題 1985.6.14. 番号 4 氏名 小田井

1. 自分が取る行動の順序は？

1. 薬を飲み、安静
2. 仮診断で疑問

2. 行動の選択肢を選ぶ

3. 自分の選択肢を選ぶ

出題 1985.6.14. 番号 3 氏名 田中

1. 自分が取る行動の順序は？

1. 病院に行き、診療を受ける
2. 薬を飲む

2. 行動の選択肢を選ぶ

3. 自分の選択肢を選ぶ

出題 1985.6.14. 番号 2 氏名 高橋

1. 自分が取る行動の順序は？

1. 薬を飲む
2. 休息と食事

2. 行動の選択肢を選ぶ

3. 自分の選択肢を選ぶ
Examples of phase 1; Students' handwritings are translated and typed in English.

1. I do not catch cold.

Caught cold. Cause headache.

Regret the situation. Have a meal. Go to bed.

As I have not caught cold for such a long time, I have difficulty to imagine the situation.

2. I fight with cold by standing firm, holding out and keep going.

Measure body temperature.

Take medicine at home.

High temp. Normal temp.

Go to bed. Do nothing.

Make strain. Absent from school. Loss of appetite.

Consider to visit hospital.


Take enough water. Take medicine. OK. Get up in the morning. Go to bed again.

Hard. Go to bed again.

Keep going.
3. I carefully reflect and recognize my situation.

Measure temp. Take medicine. Go to bed. Reflect. Reflect temp. medicine. bed. the cause. myself.

Call my friend and ask to take notes.

Keep rest. Ask someone, something

Consider what I can do.


4. Patterned reaction to the fever.

Take Buffaline. Sleep. Have a fever.

Do not take a bath. Do not take cake. Get worse.

Stay long with thin closes. Get tired.

Self examine the sore throat. Keep warm and rest, and take medicine.

Painful. Do nothing except to take medicine.

Not painful.

Get chilled while asleep.

Feel well in the morning.

Take two tablets of Buffaline. Temp. => 39' Temp. decreased.

Eat something tasty. Get well.

Rise fever. Have difficulty in holding out. Go to home.

Stay long with thin closes.
5. I like to take my temperature very much.

- Have Sleep.
- Take nutrition.
- Cool head.
- Get well.
- Take temp.

Take medicine.
- Sleep.
- Cool head.

- Get well.

6. Change behavior according to the body temperature.

Caught cold and increase temp.

- Take temperature.
- Purchase med.
- Go to hosp.

Eat ice-cream
- Cool head.

Keep warm,
- Take medicine.

Nutrition, hot milk.

Take temp.
- High
- Low

- Sweat.
- Do exercise.

7. Sleep well.

Absent from school.

- Use water pillow.
- Keep warm.

Take temperature.
- Feverish

Take temp.
- Sleep well.
- Take Vit.C.
8. Sweat much.

- Absent from school.
- Take medicine.
- Put on warm clothes and sweat.

- When hungry, eat pudding.
- Drink water.

9. The first choice is going to hospital.

- Catch cold. Hospital medicine.
- Take
- Get well.

- Not well. Get well.
- Injection. Not well.
- Admit to hospital.

10. The first choice is to take medicine.

- Take temp.
- Take medicine.
- Keep silent.
- Wear warm.
- Go to bed early.

- Do not take bath.
- If does not improve, visit hospital.

11. Consider and keep the nice environment.

- Buy nutritious food.
- Stay home.
- Warm the room.

- Possible to skip the lecture.
- Check the lecture schedule.

- Become feverish.
- Use ice pillow.
12. Keep nice communication.

Eat nutritious food. Keep calm.

Take temperature.

Go to hospital. Sleep. Take shower.

Go to pharmacy.

Get call and visit.

Receive advice from father.

Temperature Sleep does not fall. Absent from school.

Receive advice from mother.

13. Do my most favorite thing.

Deny the fever. Keep going. Still feverish.

Eat ice-cream. Nutritious food Take temp.

Have drinks. Refrain from sports. Oh, 39°C!!

Stay home. Take medicine Get worse.

Cook rice. Sleep. Tea, rice Sleep Tea, rice Sleep Tea, rice Call girl friend.

Getting better. Watch TV for children. Tea, rice Sleep Suddenly, get well.

s6/8
Phase 2  Recognition of others.

Students scanned and recognized other students' responses in addition to their own.
This procedure guided students toward deeper understanding of the issue.
Then, students wrote down their new findings.

*Take your handout and scan other students' responses in addition to yours.*
*Write down any of your comments and findings regarding the issue.*

他者の多様なコンセプトを目の前にして
いろいろなコンセプトがあるわけだが、何をXインにしているかということから、その人が目ざす何を大切に生きていかが分かると思う。気合いや認識、コミュニケーションなど、風邪といういわゆる危機を想定することによって各人の思考パターンが見えてくるのだと思う。

他者の多様なコンセプトを目の前にして
自分は頭の病、その病巣がある時は、薬を薬（下記）と
食事とにた。彼の人は、できる限り、薬、など取るに一
栄養計画を考え、 Officials of the City of Tokyo and
自然治療をじっとしてそうであった。あお様の間で
手を、行動を変えているのか少ないにかと思われた。

いい静察です。
Examples of phase 2

Each of student's findings after experiencing others' responses

24

When I have headache and fever, I immediately take some medicine to decrease my fever. However, many other people do not take such medicine, eat something nutritious, sleep well and also perform other naturalistic therapeutic activities. I was impressed by this difference. It is also interesting that some people change their coping behavior depending on the degree of fever.

10

The characteristic of my behavior sequence is 'eating some food' which comes first and various types of behavior follows. Considering my daily life, eating occupies a big weight.

As there are many sequence patterns, the core behavior of a given pattern reflects the person's favorite way of life. The behavior caused by the common cold reflects various dimensions of the person's cognition.

44

My behavior sequence is characterized by the promotion of my physical defensive system including sufficient nutrition and rest. I also rely on taking medicine.

The most popular sequence is initiated by 'take temperature', follows 'intake nutrition' and ends with 'sufficient sleep'. Some other people preferred to take medicine. Interesting is 'to call girl friend' when the situation is not eased. In common, we are all easy going.

73

I am very sensitive to my body temperature. After the initiation of cold, I take temperature and select possible behaviors. After this, I will take my temperature again.

As a diagram, my behavior sequence looks like a straight line with minor feedbacks. Interesting is that there are many types of diagrams including three or four branches, and circles. The number of factors interacting at the same time determines the complexity of the diagram.

93

The unique feature of my diagram is the bifurcation of behavior sequence according to the cognition of my physical status. I also noticed this same strategy in other people's diagrams.

I felt sympathy to people who put higher priority to 'combatting cold physically'. I cannot understanding the people who take temperature at the first stage. For myself, I can sense my temperature, and when I feel some fever, I usually loose my vitality and go to bed.
Series 7

Appreciable questions in general

(case-based observations of Japanese medical students' image)

Recognition of self and recognition of others.
Phase 1 (of series 7) Recognition of self

Students already have their own questions toward life & health related problems in the world, but how?
Students were asked to externalize and express their unique questions that they want to know in everyday situations.

Consider if you are expected to organize the following census and/or surveys.

1. national census
2. nation based opinion survey
3. national nutrition survey
4. a survey of possible future direction of a given population
5. a survey related to general life and health around your world
6. a survey relating to popular culture and everyday situations around your world

What kind of issue will you select for the census/survey? What kind of questions will you ask?
Examples of phase 1, filled format
### Examples of phase 1; Students' handwritings are translated and typed in English.

<table>
<thead>
<tr>
<th>NO</th>
<th>Selected issue</th>
<th>Question asked</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Opinion of the environmental preservation.</td>
<td>Do you think about the quality of garbage? Are you used to differentiate garbage before you dispose them?</td>
</tr>
<tr>
<td>22</td>
<td>Medical students' attitude toward the euthanasia. Difference between Japan and United States.</td>
<td>Do you admit euthanasia to your patients?</td>
</tr>
<tr>
<td>23</td>
<td>Interests to the environment.</td>
<td>What degree are you involved in the issue of environment? What are you going to do for the environment?</td>
</tr>
<tr>
<td>24</td>
<td>The percentage of medical students who give high priority on religious issues.</td>
<td>Do you believe god?</td>
</tr>
<tr>
<td>25</td>
<td>Sexual life of men and women at their age of twenties.</td>
<td>How frequently do you have sexual experience in a week?</td>
</tr>
<tr>
<td>26</td>
<td>Social acceptance of higher technology related to genetic engineering</td>
<td>Is it permitted for human beings to know their genetic structure completely? Should it be something beyond human knowledge?</td>
</tr>
<tr>
<td>27</td>
<td>Difference of attitude toward death between physicians and medical students.</td>
<td>I would like to ask questions regarding the viewpoint toward death.</td>
</tr>
</tbody>
</table>
| 29 | The social independence of people with physical handicaps. | (This question will be asked to a person with disability) Do you control all of your financial status including the acceptance of your...
<table>
<thead>
<tr>
<th>NO</th>
<th>Selected issue</th>
<th>Question asked</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>College students amount of alcohol consumption.</td>
<td>What occasions do you drink alcohols? How many times in a week, and how much in a chance?</td>
</tr>
<tr>
<td>31</td>
<td>Politicians interest toward their service and self-sacrifice to the public benefit.</td>
<td>What is your true reason to be a politician?</td>
</tr>
<tr>
<td>32</td>
<td>The level of security of our society.</td>
<td>I would like to evaluate the security of our society by the use of some scale. Social places such as stations and parks will be selected.</td>
</tr>
<tr>
<td>33</td>
<td>Everyday activity of students, in addition to study.</td>
<td>I will prepare questionnaires regarding sports club activities and side work.</td>
</tr>
<tr>
<td>34</td>
<td>The communication with plant.</td>
<td>Do you speak to your cactus?</td>
</tr>
<tr>
<td>35</td>
<td>People's interest toward oriental medicine.</td>
<td>The westernized medical science is not all mighty in treating disease. How do you think about this issue?</td>
</tr>
<tr>
<td>36</td>
<td>Equality of gender.</td>
<td>Ask one's opinions about sharing jobs related to house keeping. Also about finding jobs.</td>
</tr>
<tr>
<td>38</td>
<td>Medical students' interest toward the basic research of medical science.</td>
<td>Are you interested in earning money? Are you more interested in the basic research?</td>
</tr>
</tbody>
</table>
Phase 2  Recognition of others.

Students scanned and recognized other students' responses in addition to their own.
This procedure guided students toward deeper understanding of the issue.
Then, students wrote down their new findings.

Take your handout and scan other students’ responses in addition to yours.
Write down any of your comments and findings regarding the issue.
The will to ask a question does not necessarily result in an actual good question. I was impressed by the question ‘do you differentiate garbage?’ which reflects the cognition of environmental problems. These question-asking reflects the person’s strength of will toward the better environment.

The actual situation to be surveyed is different from person to person. Therefore, we need to be flexible in our question asking.

After I have read all of these notes, I am beginning to realize that there is a better question-asking which corresponds to the issue. If we neglect this relationship, we will not be able to ask good questions.

I am most interested in the question-asking of no. 19. Today, many young girls are said to have experiences of diet. I am interested in the degree of success of the diet.

Today's issue concerning this feedback is very interesting. I am impressed by other people's question-asking, and I get my own finding about the issue.

I am very much interested in the question-asking regarding the sexual activity of young adults.

After I have examined all of these notes, I think that most of these notes are too formal for the young people. Most of medical students probably consider life as the stable carrier ladder, and do not enjoy uncertain hope for that.

I understand that many people start their question-asking from a will to understand some uncertain issue, and/or from an interest to compare self with others.

In spite of the wide variety of issues, the variety of question-asking is not so wide.