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Framework for a cooperative program curriculum among elementary, junior, and senior high schools to develop students' qualities and competence in home economics

- Proposal for implementing a cooperative program curriculum for encouraging students to develop an understanding of food cultures and deepen their learning -

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Abstract: The purpose of this study is to use surveys to clarify students' awareness at the elementary, junior, and senior high school levels of food cultures and their related issues, and to formulate and implement a class program for junior and senior high schools based on the clarified results. The program will develop students' understanding of food cultures and seeks to combine and systematize home economics education among the three levels of schooling. The study found transformations among elementary and junior high school students, in terms of their understanding of the ideas of food cultures and related issues. In addition, class programs were formulated for Grade 9 students, to broaden their views on a range of topics, and for Grade 10 students, to broaden their view of changes over time, both of which ended with successful results.

1. Introduction

The new Courses of Study (announced in 2017) requires teachers in Japanese schools to formulate educational programs, including curricula and class programs, after reconfirming and clarifying the essential significance of the subjects they teach. Among the unique roles assigned by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) education standards, home economics is expected to provide students with experience related to "the process of finding issues in their daily lives and pursuing the most suitable solutions for themselves and their families." Developing a plan to achieve the final goal in a home economics course requires elementary, junior, and senior high schools to formulate not only their own frameworks, but

also an overall cooperative home economics curriculum. Prior studies have explored curricula intended to build learning content systematically with a focus on cooperation among elementary, junior, and senior high schools and the learning features of home economics that respond to students' developmental characteristics at each academic level. Among them, however, no previous studies have included verifying a curriculum's efficacy by putting it into practice. We have been working on a series of studies since our previous presentation¹⁾, and have consequently formulated a cooperative curriculum among the three levels of schools rooted in the main concept of "inheriting, preserving, and creating a culture of everyday life." We also examined the results of a class curriculum with the theme of

dietary life being developed at the junior high school affiliated with Hiroshima University and presented a proposal for developing a framework for students' qualities and competence to be achieved during the final stage of the curriculum, along with its educational objective as a sub-concept of the framework based on backward design (Nishioka: 2012). Our verification revealed that the framework should be formulated based on students' at the three schools actual levels of understanding of the idea of food cultures²⁾³⁾⁴⁾.

2. Purpose and method of the study

The purpose of this study is to clarify the elementary, junior, and senior high school students' actual levels of understanding of food cultures and their related issues by conducting surveys and formulating and implementing class sessions for junior and senior high schools based on the clarified results. By developing their understanding of food cultures, we sought to combine and systematize home economics education among the three levels of schooling.

Regarding the actual levels of students' understanding of food cultures, their depths were evaluated according to the cognitive process dimension in the revised Bloom's taxonomy (Anderson, L. W., et. al). Essentials and problems for developing a cooperative curriculum among the three levels of schooling were clarified based on the results of implemented class sessions⁵⁾.

3. Outcomes and issues

(1) The current curriculum (elementary, junior, and senior high schools)

Figure 1 shows the current situation of food culture studies being developed in home economics classes at the elementary and junior high school levels and in basic home economics classes at the high school level.

(2) Results of a survey aimed at understanding food cultures and an overview

related observations

To develop students' understanding of food cultures and understand the features of their developmental stages, we conducted a questionnaire survey in September 2017 targeting students in Grade 5 and 6 at the affiliated elementary school and students in Grades 7 through 9 at the affiliated junior high school. Tenth grade students at the affiliated high school were also surveyed. This article only presents the results of the surveys of students in Grades 5 through 9. The survey included the following questions: (i) Questions that examined the depth of their understanding of "local production for local consumption," "local delicacies," and "Japanese cuisine;" (ii) Questions asking students about their interest in developing the cooking skills used in Japanese cuisine; (iii) Questions asking them about their interest in "local production for local consumption," "local delicacies," "traditional Japanese food culture," and "how to cook Japanese cuisine;" and (iv) A free response question about inheriting and preserving the food culture. The questionnaire was distributed by teachers in their home economics classes and collected at each school sites. In all, 300 questionnaires were distributed, with recovery and effective response rates of 100% each. The free response answers were analyzed using IBM SPSS Text Analytics for Surveys version 4.0. Table 1 shows the attributes of the survey.

Table 1: Attributes of targeted respondents (elementary and junior high school students)

School Year	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9	Total
Boys	32	32	17	34	35	150
Girls	30	29	22	33	36	150
Total	62	61	39	67	71	300

1) Interest in Japanese food culture

At the elementary school level, the sixth grade students tended to have more interest

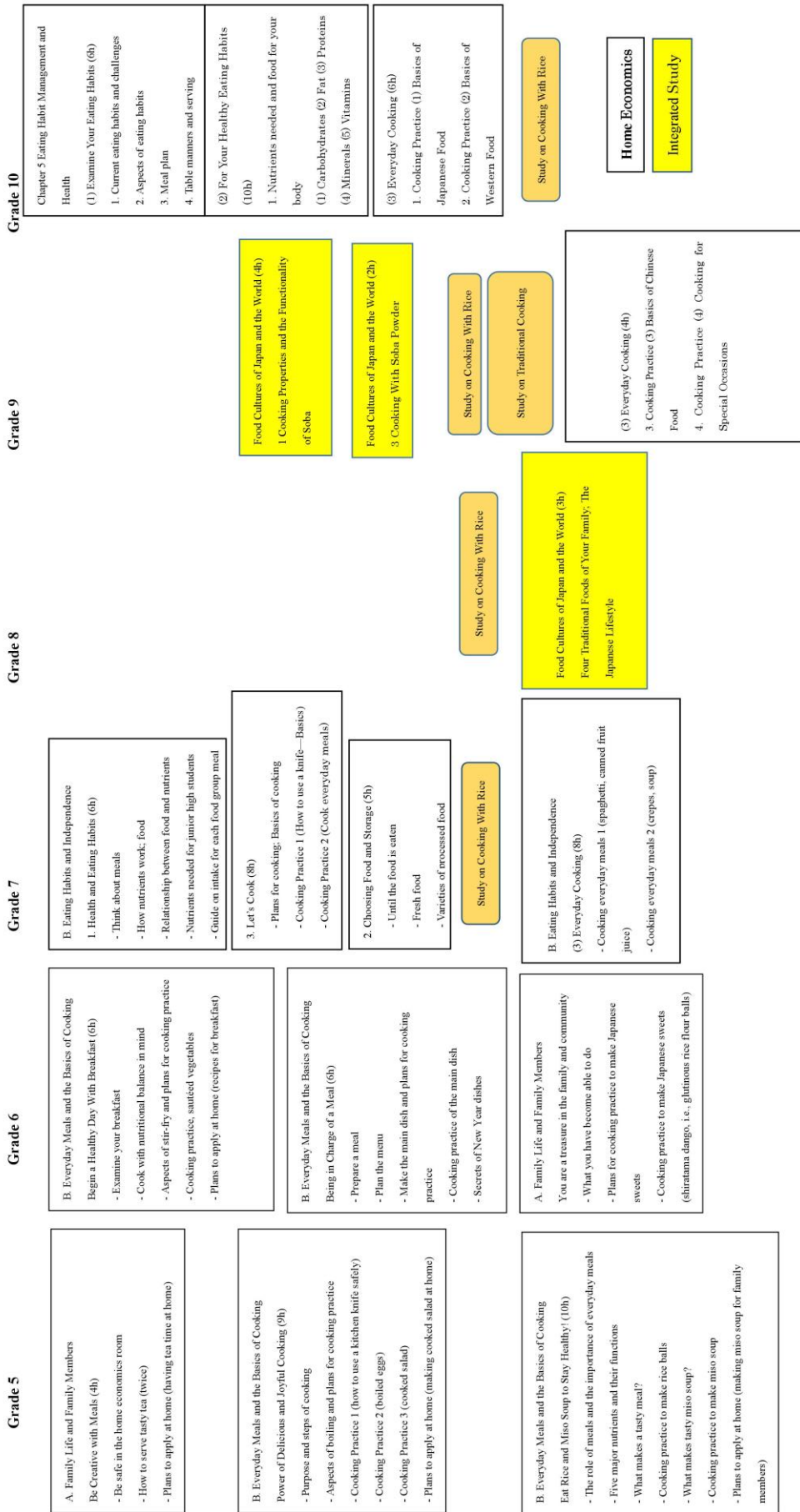


Figure 1: Dietary life study currently being developed in Home Economics at the Affiliated Elementary School, Industrial Arts and Home Economics/Home Economics at the Affiliated Junior High School, and Basic Home Economics at the Affiliated High School

in Japanese food culture than their fifth grade counterparts did, while at the junior high school level, students in higher grades tended to have less interest. This is presumably related to the characteristic of junior high school students who have other concerns and generally broader worldviews (Figure 2).

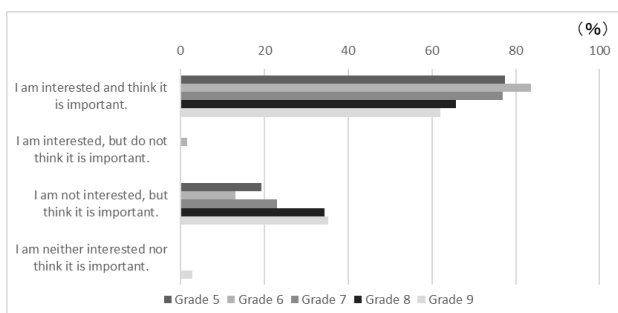


Figure 2: Interest in Japanese food culture

The ninth grade students showed more interest in how to cook Japanese cuisine than the eighth grade students did. This result is possibly influenced by the study of “Food culture of Japan and the world,” which is a part of the Grade 9 curriculum (Figure 3).

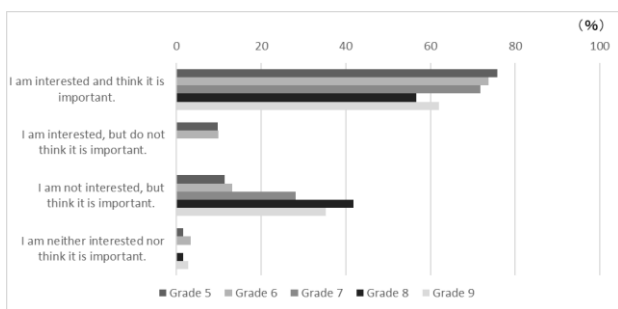


Figure 3: Interest in how to cook Japanese cuisine

2) Deepening the understanding of Japanese cuisine

At the elementary school level, students in Grade 6 showed a deeper understanding of each of the questions about local production for local consumption, local delicacies, and Japanese food culture than their fifth grade counterparts did. At the junior high school level, among students in the upper grades, slightly more replied “I understand that

there are many ways to think about it, and I can spread the information using my own words and ideas” than the younger students did. In terms of the features of respondents’ developmental stages by grade, junior high school students presumably perceive preconceived ideas about Japanese food culture more independently and critically than elementary school students do (Figure 4).

3) Recognition of inheriting and preserving Japanese food culture

Regarding the question asking students whether or not they want to pass down Japanese food culture to the next generation, more than 85% of students in each grade replied with “Agree.” At the junior high school level, students in higher grades tended to show less interest, with more responses of “Neutral” (Figure 5). In the free response question, junior high school students explained their reasons using significantly increased vocabulary and through more complex combinations or words (a figure omitted). Presumably, they have come to understand Japanese food culture from many aspects and express their understanding of the same with their own ideas.

The above characteristics, in terms of an understanding of food cultures and related matters among elementary and junior high school students indicate that the reduced interest in Japanese food culture and other matters among students in Grades 6 and 7 hampers the continuous deepening of their understanding of, inheriting, preserving, and creating Japanese food culture. The essential concern for helping students to maintain a growing their interest in food culture is to develop education materials and themes that will cultivate their interest which started during their elementary school days, so that it will lead to this understanding when they reach junior high school.

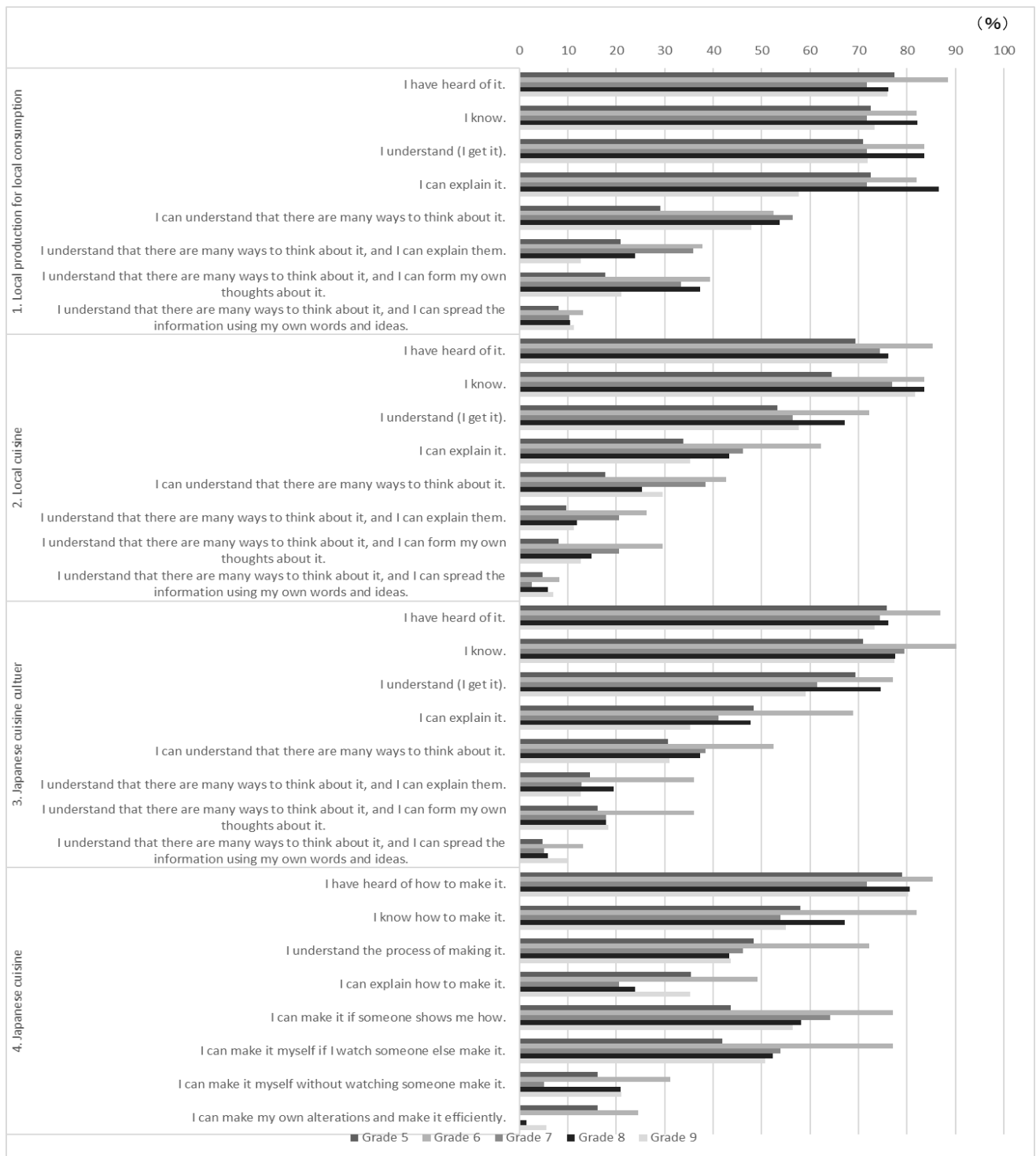


Figure 4: Deepening students' understanding of Japanese food culture

(3) Developing an awareness and understanding of food cultures among students in elementary, junior, and senior high schools

The term “food culture” was first used to mean “meal culture” by Ishige, in the 1960s, and it came into use widely in the 1980s. Ishige said, “Food cultures comprise cultural aspects of everything related to diet, such as

the production and logistics of foodstuffs, nutrition and the intake of food, and the idea of human physiology⁶⁾.” Yoshida (1998) notes, “Food cultures cover the process of food, from being produced to reaching the human stomach, in other words, from production, storage, and through processing⁶⁾.” Based on the definitions by Ishige, Yoshida, and other researchers, Ehara (2011) referred to food

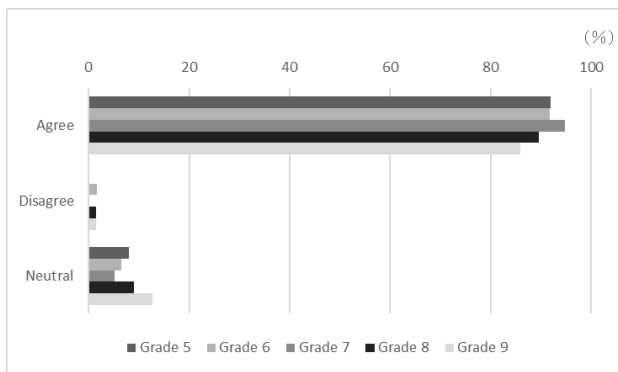


Figure 5: Do you agree that “Japanese food culture should be passed down to the next generation”?

culture as the “lifestyle related to food intake that has been shared by races, groups, regions, or periods, becoming a custom in a certain style and rooted so deeply that it is passed down from generation to generation,” comprising “from production and logistics through cooking and processing, being arranged on the table, to eating in a certain manner⁶⁾.” Yamajo (2012) categorized cultures into three types, material, institutional, and spiritual cultures, and said, “Food cultures (material, institutional, and spiritual) are local unique dietary life shared by people in a community⁷⁾.”

Thus, definitions of food cultures have been interpreted in many ways to date and are a relatively new idea. The understanding of food cultures is based on learning the following elements: climates unique to regions (natural and historical background); ingredients and food materials produced locally in the unique climates; seasonings and cooking methods to make the most of the local ingredients and food materials; tools (cookware and dishes) that enable kitchen wisdom and the creativity, style, presentation, and manner embodied by combining various factors⁸⁾ that are roughly categorized into material, institutional, and psychological factors⁸⁾.

As an effort to help junior high students maintain their interest in food culture in response to the features of their awareness at

their age, teachers should choose educational materials that allow students to see an integrated or “bird’s eye view” of various elements for the understanding of food cultures. The idea of a food culture shares its constituent elements with food life. Our daily lives, that which is essential for grasping the essence of home economics, are driven by the interactions among humans (including individuals themselves), things, and the environment (artificial and natural) that support and all activities. Studying daily life from a cultural perspective will, consequently, provide students with explicit guidance to achieve the educational objective while also strengthening their view and ways of thinking in a manner unique to home economics⁹⁾. The implemented program was a session for junior high school students that called for them to study continuously Japanese cuisine and Japanese food culture and to use noodles for their educational materials throughout Grade 9. This was accompanied by a proposal from a global viewpoint to carry out a plan and verify its results after implementation. During the session, high school students studied meals from the Edo period (1603–1868), made observations while comparing with the foods of today, and examined the results of the food cultures study session.

(4) Analysis and observations of a session at the junior high school

1) Developing a themed session

A themed session was planned to develop a home economics class that would deepen students’ understanding of food culture, a relatively new concept, through cooking practice with noodles and a study of ingredients that will contribute to their future life.

The session focused on rice, wheat, and buckwheat (in a broad definition), three representative grains and noodles. First, to help students understand the features of the three grains, the teacher held a noodle

cooking practice using the three kinds of flour to draw their attention to key factors of food culture, including ingredients, tools, cooking methods, how to eat, the natural environment, and regions. Students organized their ideas based on what they found and thought throughout the cooking practice, in addition to what they studied about the three kinds of flours as a part of their summer-holiday homework. They presented their ideas by exchanging them amongst themselves, which consequently deepened each student's understanding of food culture.

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The lesson was presented across 10 class periods to 24 students (12 boys and 12 girls) in Grade 9's Class B at the junior high school. Classes met from August 28, 2017 through October 18, 2017.

i) Objectives of the themed sessions

The objective of the themed sessions was to develop students' understanding of the histories and cultures behind food in the world through a noodle-making experience and a survey on noodles' dissemination history. This encouraged students to determine what they can do to pass down traditional Japanese food culture and helped them to develop the ability to put into practice what they found.

ii) Educational guidance plan and session overview

<Stage 1: Studying rice, wheat, and buckwheat flours (2 hours)>

- a. Students watched a documentary video, "What humans have eaten -noodle version-" (NHK Software). The video showed a family making noodles from oats that grow even on poor land and shared thought about noodles from many perspectives, including the natural environment, ingredients, tools, cooking methods, and nutrition. Among the tools, students were also led to consider why a noodle extruder machine was invented.
- b. Teachers gave explanations about wheat, buckwheat, and rice, including their places of origins and the varied ways to enjoy eating them. Then, students cooked rice flour; this enabled them to make first-hand observations of the flours of the three grains and to compare them.

<Stage 2: Cooking practice with buckwheat and wheat noodles, and rice flour noodles (4 hours)>

Students practiced noodle cooking using wheat and buckwheat flours, and tried working with commercial rice flour noodles.

- a. During the practice with wheat flour, they cooked handmade udon noodles and spaghetti made using a pasta machine.
- b. In the practice with buckwheat flour, they followed the instructions of invited teachers (Shizuo Maehama, President of Hiroshima Soba (Buckwheat) Making Club, and three others), and they learned about traditional buckwheat noodle making. They experienced the entire noodle making process in groups of six.

<Stage 3: Exploring food cultures and preserving our own (4 hours)>

- a. Under the teacher's guidance, students organized their ideas based on their findings and thoughts after their summer holiday pre-study and the cooking practice. Then, they exchanged their opinions with the group members.
- b. They noted the individual natures of the noodle dishes (include local ingredients) that they wanted to pass down to future generations and made presentations on

them in groups by using paper with drawings and characters. Each group chose a recommended dish and introduced it to the class. Among the recommendations, they chose dishes that they wanted to continue eating and they had practice cooking.

2) Outcome of the session

In the question about “Interest in Japanese food culture,” the number of students who said “I am interested and think it is important” increased slightly after the session than before it (Figure 6).

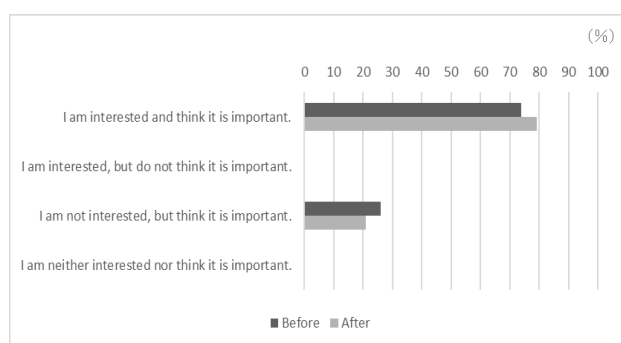


Figure 6: Interest in Japanese food culture (before and after the session for Grade 9)

In the question of “How to cook Japanese cuisine,” some students (boys) chose “I am neither interested nor think it is important,” while the number of students who chose “I am interested and think it is important” increased after the session (Figure 7).

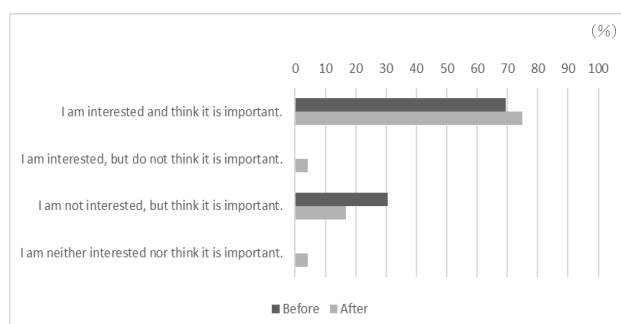


Figure 7: Interest in how to cook Japanese cuisine (before and after the session for Grade 9)

In the question about “Deepening the understanding of Japanese food culture,” the

rate of students saying “I have heard of it” and “I know” decreased after the program. This is, presumably, because students who had once understood Japanese cuisine only simply (vaguely, in an abstract and conceptual way) realized its profoundness as a result of the session and consequently deepened or clarified their understanding of Japanese cuisine. In the meanwhile, we observed an increase in the rate of students choosing “I understand that there are many ways to think about it, and I can form my own thoughts about it” or “I can spread the information using my own words and ideas.” The increase presumably indicates that the session drew students’ attention to thoughts on what they can do to support Japanese food culture (Figure 8).

In the question asking, “Do you agree that ‘Japanese food culture should be passed down to the next generation?’”, the rate of students choosing “Agree” increased after the session, while that of students choosing “Neutral” decreased. No students chose “Disagree” (Figure 9).

The students’ free responses among those who chose “Agree” after the session included words such as “I” and “myself” and used them linked to the term “culture” (the related figure omitted), seemingly implying the session’s contribution to their burgeoning self-awareness as being a key role player in the maintenance of Japanese food culture.

Students’ interest in Japanese food culture grew after the session, as shown by the increased rate of students choosing “I understand that there are many ways to think about it, and I can form my own thoughts about it” and “I understand that there are many ways to think about it, and I can spread the information using my own words and ideas.”

The free responses after the session also included many comments with “I” and “myself” linked to Japanese cuisine, indicating that the session allowed students to independently get an idea about food

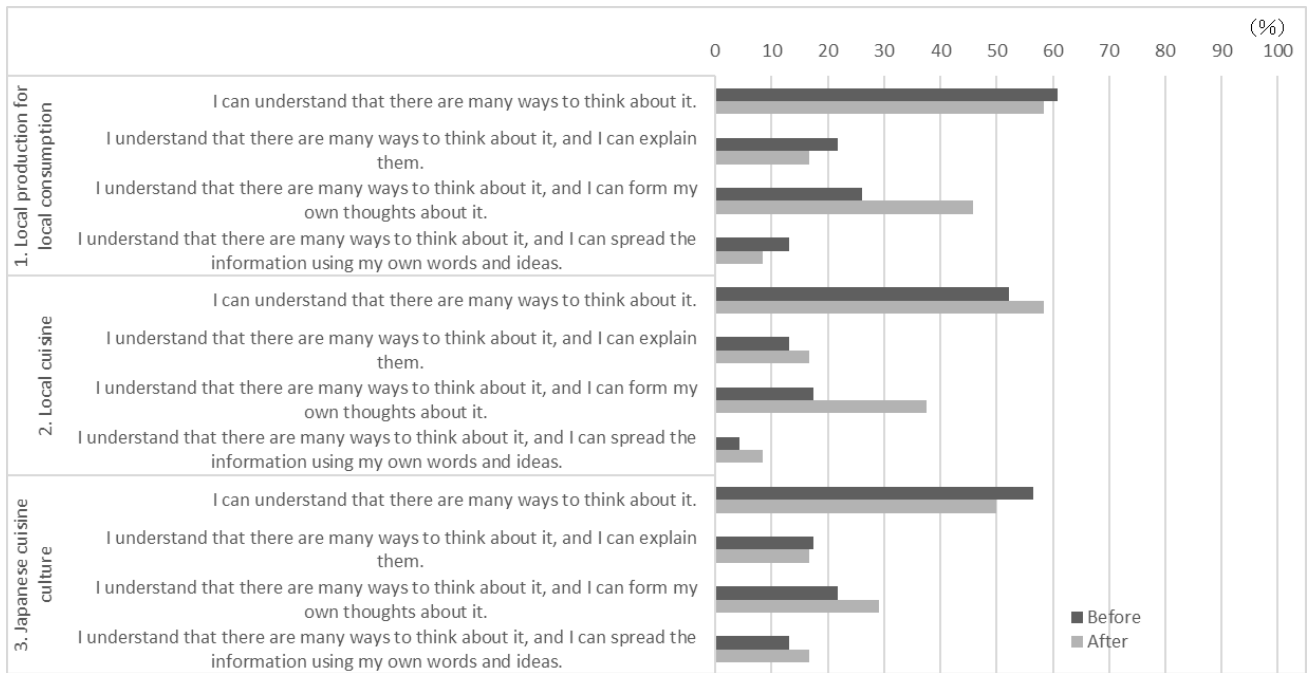


Figure 8: Deepening the understanding of Japanese food culture (before and after the session for Grade 9)

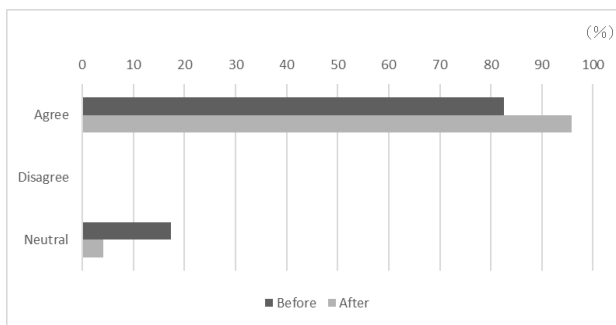


Figure 9: Do you agree that “Japanese food culture should be passed down to the next generation”? (before and after the session for Grade 9)

culture and to explore what they can do to promote it and spread information about it.

(5) Analysis and observations on the session at the high school

1) Developing a themed session

A themed session was planned to develop home economics classes from the perspective of meals from the Edo period. These aimed to develop students’ understanding of deeply rooted local dishes by actually experiencing them while teaching them to examine the features of food cultures locally and globally and develop their ability to create a future dietary life by reflecting on their present

diet. Students examined local traditions retained in today’s globalized dietary life by turning their attention to Japanese cuisine perfected during the Edo period without microwave ovens or refrigerators. Students were also encouraged to find essentials for today’s meals by recreating the dishes of the period, so that they could make an effort to link local culture with diversity in the life and production of the future. The lesson was presented across nine class periods to 41 students (23 boys and 18 girls) from Grade 10’s Class 1 at the high school. Classes met from September 25, 2018 through October 30, 2018.

i) Objectives of the themed sessions

The objectives of the themed sessions were:

- To explore the features of food cultures of Japan and the world, to clarify their commonalities and differences, and to reproduce the dishes of the Edo period, when Japanese cuisine developed markedly.
- To identify problems with students’ current diets, to plan menus designed to incorporate the success of the food culture, and to cook the dishes.
- To think about creating a better dietary

life and devise a plan to do so.

ii) Educational guidance plan and session overview

Students were given preparatory homework during their summer holidays: 1. Study the features of Japanese cuisine during the Edo period (ingredients and how to eat them) and their representative dishes; 2. Choose a country (or a city) and study features of its cuisine and representative dish.

<Stage 1: Studying cuisine of the world and Japan and features of their food cultures (2 hours)>

Students explored the features of the food cultures of Japan and the world by studying their cuisines, clarifying commonalities and differences, expanded the idea of Japanese cuisine from the individual level to the group level, and sorted out the requisite elements of Japanese cuisine.

<Stage 2: Reproducing meals from the Edo period and the present (3 hours)>

To develop an understanding of ordinary people's diets during the Edo period, when Japanese cuisine developed, students recreated meals from that time. Based on a main dish ranking listed in *Hibi tokuyo ken'yaku ryori sumo torikumi* (Daily reasonable side dish ranking list), which is an example of then-popular parlour games of ranking lists called *mitate banzuke*, an idea borrowed from sumo ranking lists), students made a meal plan and engaged in a cooking practice of rice boiled with greens, tofu wrapped in an egg layer, chopped burdock root cooked in sugar and soy sauce, thinly sliced daikon and carrot pickled in sweetened vinegar, and eggplant in miso soup.

<Stage 3: Studying meals from the Edo period and the present (1.5 hours)>

Under the teacher's guidance, students reviewed the recreated dishes; summarized their findings and comments about ingredients, seasonings, ways of cooking and eating, and the taste of the dishes; and had group discussions about dishes from the Edo

period and the features of people's diets at that time. The teacher introduced them to many published cookbooks and people's meals from the period, as shown in paintings and prints of daily life, including polychrome woodblock prints, and led them to explore ideas about food from many aspects related to the cuisine that have been passed down regionally and in people's homes.

<Stage 4: Creating a future dietary life (2.5 hours)>

After studying the 200-year-old meals of the later Edo period in the previous stages, students were asked to draw their attention to those from the 1920s, about 100 years later. They put together features, representative ingredients, and dishes from the time by referring to *Dietary life in Japan* (published by the Rural Culture Association) and compared them with the dietary life of the present. Finally, students explained what is necessary for a better diet, what they should pay particular attention to in their diets, and what Japanese cuisine is, while making and cooking a menu of Japanese cuisine.

2) Outcome of the sessions

The responses to the question "What is Japanese cuisine?" asked on a worksheet distributed after the session included the comments listed below.

- The cuisine is a rare existence that is globally recognized as "Japanese cuisine" due to its features of making the most of each ingredient's natural flavor and considering its season. It is a world-renowned cuisine known for elegance and aesthetics. (male student)
- Japanese cuisine makes the most of each ingredient's natural flavor and uses *umami* carefully. It is also healthy, as it uses lots of vegetables. At the same time, the cuisine tends to contain a lot of salt, because of the use of various seasonings. It is historical and traditional. Many dishes using dashi soup stock make the most of umami. (female student)

- It is a cuisine that developed by blending its unique cooking methods with those of other countries, including China, which were introduced from the Continent of Asia while making the most of the culture that Japanese people like and the vegetation in Japan. The cuisine also has a distinct feature of using preserved foods. (female student)
- Japanese cuisine makes the most of each ingredient's natural flavor. That is why it has a relatively light taste, but also brings out deep flavors. The cuisine generally requires chopsticks. We should learn many manners for chopsticks and follow them. The cuisine uses seasonings that play a key role in flavor. Soy sauce, miso – many of them contain a lot of salt. Further, dashi soup stock, which is frequently used in Japanese cuisine, makes the most of ingredients' natural flavors. Japanese cuisine features the best use of ingredients themselves to bring out the features of Japanese food. (male student)
- Traditional Japanese meals are prepared not only to delight the eye but also put much attention on manners, situations, and human health. (female student)

According to the above comments, grasping Japanese food culture longitudinally, by comparing the situations of the past and the present, deepened many students' understanding of elements of food cultures and led to their independent, multifaceted, and comprehensive recognition of food cultures. The session presumably contributed to further deepening students' awareness of dietary life and food cultures.

4. Summary and prospectus

The session brought to us outcomes that will lead to the development of a six-year cooperative curriculum for use with elementary- through high-school-aged students. First, the session revealed transitional changes between elementary school students and junior high school

students through the differences in their awareness of and understanding of food culture. Next, the sessions were formulated and implemented for Grade 9 students, aiming to broaden students' views across a range of topics, and for Grade 10 students, aiming to broaden their view of changes over time, respectively, and teachers collected the results from the two sessions.

According to the results, a curriculum for understanding food cultures should be developed based on the features of each school level (elementary, junior high, and senior high) in consideration with the differences among individual students. At the elementary school level, students should be encouraged to develop an interest in food culture by acquiring basic knowledge and skills; at the junior high level, curricula should be developed using educational materials that encourage students to broaden their understanding of food culture while also developing their critical thinking abilities; and at the high school level, classes should encourage students to broaden and deepen their understanding further and to grow their independent and creative awareness of food cultures. If the above education developments are successful, they will enhance students' views and thoughts on daily life activities, so that home economics education will achieve its objectives.

Cooperative curricula among elementary, junior, and senior high schools should be continuously examined and focused on their essentials and issues.

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