UNESCO CHAIR WENDI

RESILIENCE BRIEF 2022

BY GRADUATE STUDENTS

KYOTO UNIVERSITY UNESCO CHAIR WENDI

Course for Creating Resilient Societies

MARCH 2022

The UNESCO CHAIR WENDI Resilience Brief 2022 is a collection of brief reports by Kyoto University UNESCO Chair WENDI graduated students, who have worked on their independent studies or fieldworks under a compulsory elective subject: 1) "Social Innovation and Resilience" or/and 2) "Practices for Creating Resilience" provided by Course for Creating for Resilient Societies (CRS) in UNESCO Chair on Water, Energy and Disaster Management for Sustainable Development (WENDI), Kyoto University, during 2021-2022. The authors have engaged in the above activities by linking different disciplines such as education, disasters, food, the Covid-19, and environment, identifying missing links in existing approaches, and proposing the problem-solving oriented actions. We hope this report will contribute to building collaborative knowledge on creating resilient societies. We will keep working on the theme of Creating Resilient Societies with relevant vigorous activities and research.

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Assessment of Resilience of a Youth Intercultural and Outdoor Summer Program in Okinawa, Japan

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1. Introduction

The United Nations' Sustainable Development Goal (hereinafter SDG) 4.7 focuses on education for sustainable development (hereinafter ESD) and global citizenship education (UN, 2018). Global citizens are members of diverse networks beyond the boundaries of national borders (Brown, 2016). Through global citizenship education (hereinafter GCED), the youth can develop a sense of belonging to a global society with the sense of responsibility to contribute to making the world a more peaceful, safe, healthy, and secure place. Fostering global citizens is essential to achieving not only SDG4 (education) but also all other SDGs (Mochizuki, 2019). GCED and ESD can help youth to understand the interconnection of the world from multiple perspectives and to become actors in solving global challenges.

To provide opportunities for children to receive ESD and GCED, the summer program was developed in Okinawa, Japan by Nonprofit Seishonen Global Organization. It is an intercultural and outdoor summer program established in 2017. Young adults from abroad also join the program to lead the activities as international program leaders. The program is a multi-day overnight summer program in Okinawa, Japan for elementary and middle school children. In the past, the summer program was held in Higashison which is in the Northern part of Okinawa. Participants joined the camp from both locally and internationally. In the past, about 40 children and eight international program leaders join each session of the program. The program includes daily structured English lessons along with numerous outdoor activities (such as going to the beach, sea kayaking, and hiking) and social activities (such as cooking together, playing games, and having bonfires). The participants have the chance to meet and learn from international program leaders and use English to communicate throughout their time at the program. The programs aim to provide youth an opportunity to promote ESD and GCED as well as vitalize the local community. Through interacting with people from diverse backgrounds, youth can gain human to human linkage with different generations and nations. Through outdoor programs, the youth can experience the association with nature and learn the importance of sustaining beautiful nature.

However, due to the global pandemics (covid-19), the program was canceled in the 2020 and 2021 summers. Country borders were closed, and people had limitations to their

mobility similar to many of the other intercultural programs in the world such as study abroad programs. In general, the pandemics have impacted more than 1.6 billion learners in the world (UNESCO, 2021) because of school and program closures.

The global pandemics have reminded society about the significance of having resilient educational systems and programs. Resilient education systems and programs are essential to provide education sustainably. According to UNESCO & UNESCO IEEP note (2020), resilience in education is "the ability of children, families, communities, and systems to withstand, adapt to, and recover from shocks and stresses (e.g. natural disasters, political crises, epidemics, pervasive violence, armed conflict) in ways that support economic and social development, preserve integrity, and do not deepen vulnerability." Since the summer program was canceled due to the pandemics, the author has decided to reassess the resilience of the Okinawa summer program to develop a more resilient education program to different shocks and stresses before restarting in 2022 summer.

The below provides, the author's learning from Yakushima School about humans, social, and natural approaches to assess the resilience of the Okinawa program. After assessing the resilience of the program, the author evaluated the ways to improve the program to make it a more resilient program.

2. The Yakushima School

In 2020, the author had the opportunity to participate in the Yakushima School program organized by WENDI, Kyoto University which was financially supported by a MEXT UNESCO fund. The purpose of the program was to provide opportunities for undergraduate and graduate students to contribute to SDGs by tackling real problems by thinking through a natural-social-human systems approach. The Yakushima School was originally planned to hold in Yakushima, Japan. However, due to the pandemics, it was held online connecting Kyoto and Yakushima and utilizing videos and photos of the Yakushima local sites. 44 students participated and completed the program (Shimizu, 2021).

3. Human, Social, Natural Systems and their Linkages

One of the important themes the author learned in the program was the human, social, and natural systems and their linkages. According to Shimizu & Clark (2019), in the "modern risk society," which is a complex society with dynamic changes in natural, social, and risk environment, it is important to approach the issues from multi-faced perspectives. When considering the resilience of a policy or a program, one must consider how the policies or the program impact human, social, and natural systems. The human system includes family and individuals in the community. The social system refers to a more macro level than the human systems such as communities and organizations/institutions and society/public policy. The natural system is an even more macro level than the human system such as environments and ecological system. To develop a sustainable society for the human, social and natural systems, it is essential to analyze the resilience within each system and evaluate the linkages among them.

In the Yakushima School, the participants learned about different aspects such as culture, nature, businesses, etc of Yakushima. Yakushima was drastically developed as a tourist destination especially after it was selected as a World Heritage site as well as a Biosphere Reserve designated by UNESCO for its exclusive vegetation and the richness of Yakushima cedar trees (Adewumi et al., 2019). To address SDGs, the participants of the program had the opportunity to learn about overarching views for ee each of the SDGs from the perspectives of humans, society, and nature and evaluated the linkage among them. For example, SDG 15 aims to "protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land

degradation and halt biodiversity loss" (UN, 2018). For the human system, the forest can bring be both well-being and economical resources through the tourist industry in Yakushima. For the nature system, the forest is important for the ecological system to sustain. By utilizing the profit that was gained through tourism in forest conservation programs, the region can have a cycle to sustain the natural tourism resource. This human-nature linkage is essential to consider in developing a resilient and sustainable society for both human and natural systems.

4. Assessment of the Current State of the Summer Program with Respect to Operational Components of Resilience

The author applied the insights drawn from the Yakushima School to apply to analyze the Okinawa program by evaluating the human, social natural systems and the linkages among them. A framework for resilience-based approaches from operational views (Shimizu& Clark, 2019) was used to assess the Okinawa program. The framework can help plan how to incorporate resilience into the program. The program was assessed through four critical lenses (linkage lens, temporal lens, process lens, and scale lens) for resilience-based approaches. Assessing the program provides new insights about the program from different dimensions which could help to establish a more effective program in the future. Evaluating the linkage will allow evaluating the contributions and risks the educational program brings to the different systems that are significant to consider in developing a resilience-based program that could lead to a sustainable society. The below provides the results of the two kinds of assessment:

First, the characteristics of the program formation and implication through a resilience perspective were assessed.
There are multiple actors in the Okinawa program such as youth, international program leaders, local community members, nonprofit organizations, etc. The interaction among people from diverse backgrounds (age, gender, hometown, nationality, interests, etc.) allows people to be linked with different communities such as the international community. Specifically, the following can be pointed out:

- The participants can learn about the local nature through outdoor activities such as kayaking. They can learn about the linkage between individuals and nature through those activities.
- The program provides short-, mid-and long-term impacts on individuals, society, and nature. It invests in human capital through global citizen education. Educating global citizens who can think and act with a global mindset can impact on the development of a sustainable society and natural system. For example, youth learning about nature and the ecosystem could help to educate global citizens who are aware of the environmental challenges.
- The program can vitalize the local community by bringing human flow and economic benefits. The linkage of the program with the local community and economy can be seen.

Second, operational components of the summer program were assessed from the aforementioned four critical lenses in incorporating resilience in the program. The below table list operational components or uniqueness of the Okinawa Program along with the four lenses.

Lenses in a resilience-based framework:

Linkage lens	Temporal lens
1. Trust, face-to-face relations, and interactive communication 2. Linkage among different dimensions, actors, organizations, or sectors	1. Timely actions 2. Multi-temporal (short-, mid-, long-term) perspectives 3. Intergenerational perspectives
Process lens	Scale lens
1. Review and learning process 2. Self/civic engagement process	1. Restructuring existing schemes into better ones 2. Rebalancing holistic views by reviewing the whole and parts

As shown in the table, the Okinawa program is broadly associated with the four operational lenses - linkage lens, temporal lens, process lens, and scale lens – and the components under the umbrellas of each lens. The Okinawa program brings human-to-human linkages to individual levels as well as the organization and sector levels. Investing in the education of the youth can have an impact on society in short to long term effect as education is an investment in human capital. Through assessing in multidimensional perspective, rebalancing, and reconstructing the different factors of the program such as finance, location, etc. are considered.

The program contributes to the human system by bringing economic cycle and human development. Human development helps to raise global citizens' global awareness to conserve nature and can contribute to the natural system. However, there are risks of unequal opportunity to participate in the program due to financial and geographical limitations, which can risk the social system through the educational opportunity gap. Additionally, bus and plane transportation cause CO_2 commission, which can risk the nature system, which in long term can also risk the social system with global warming, etc.

With the assessment above, the program can be reducing the risk of educational opportunity gaps by providing more financial aid and distance learning options. This can provide more opportunities for youth in the world to join the program. Additionally, distance learning options can provide also reduce CO_2 commission which can reduce the risk to the natural system. While distance learning options can provide, more opportunities for youth to join the program, there are many benefits to holding it onsite. Further evaluation on the benefits of holding it onsite need to do in further research.

Through the assessment, new insights about the current situation of the resilience of the program in terms of human, social, and natural systems were found. Additionally, suggestions for further research and program improvement were also considered.

Participants fishing on the boat during the program.

Past camp leader of the Okinawa program.

5. Way Forward

With consideration of the assessment of the resilience of the program, further action and reassessment need to be done to evaluate the program. To further evaluate the program, integrated knowledge from experts from

different fields such as economists, culturalists, environmentalists are essential. Further evaluation of the programs with the consideration of risks such as pandemics could be evaluated in the future. Additionally, further research in the assessment of resilience with different educational programs needs to be done to understand deeper about applying the system approach in educational programs.

Reference

[1] Adewumi, I. B., Usui, R., & Funck, C. (2019). Perceptions of multiple stakeholders about environmental issues at a nature-based tourism destination: The case of Yakushima Island, Japan. Environments, 6(8), 93.

[2] Brown, G. (2016). *The Universal Declaration of Human Rights in the 21st Century*. Open Book Publishers.

[3] Mochizuki, Y. (2019). SDG 4.7: Fostering global citizenship. *Values Education and Global Citizenship towards Achieving the Sustainable Development Goals*.

[4] Shimizu, M. and Clark, A. L. (2019). Nexus of Resilience and Public Policy in a Modern Risk Society

[5] Shimizu, M. (2021). "Looking at Nature, Humans and Societies in a Continuum" in Yakushima – Toward Transformation for SDGs

[6] UNESCO & UNESCO IIEP. (2020). Building back resilient: how can education systems prevent, prepare for and respond to health emergencies and pandemics?

[7] United Nations Educational, Scientific and Cultural Organization. (2021). Acting for recovery, resilience and reimagining education: the Global Education Coalition in action.

[8] United Nations. (2018). Sustainable development goals.

Toward Promoting Resilience in the Field of Education
-Learning from the Recovery Process in Maehama, Tohoku, and Connecting to the Future of Children-

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1．Introduction and Background

This article is a record of a small resilience activity project to seek for how to nurture resilience for school children in educational fields. The author conducted the fieldwork in Maehama, Tohoku in 2021 to listen to the voices of local people who have affected Tohoku Disaster in 2011 and to convey what happened at that time and the role that local music played to the children of the generation who did not know much about the disaster.

About ten years have passed since the Tohoku Disaster (complex disaster: earthquake, tsunami, nuclear power plant explosion. At least 15,000 dead and 7,500 missing (Cabinet Office, 2011).), and as time passes, it tends to be recognized the Disaster as something in the past. Such perceptions may be led to delay of actions which could affect the outcome of disasters when other events happen (Takachiho, 2019) since the risk of natural disaster is always present especially in Japan. The school children who have not seen the event during the Disaster and live in the different location from the affected area and not experienced today's elementary school. Therefore, we need to relay the experience of the Tohoku Disaster referred to the Disaster here in after to the school children.

Therefore, the project highlighted how music and traditional performing arts which have contributed to the recovery efforts during the Tohoku Disaster moreover, to provide elementary school students with the opportunities to learn from these activities. As a method, the author, myself, visited the Maehama area in the Tohoku region for the fieldwork and interviewed local people about the situation at the time of the Disaster and their relationship with music. Through the fieldwork, it was revealed the realities of the Disaster and the possible roles of the music and traditional performing arts rooted in the region. In order to learn about the contribution that music and traditional performing arts have made to the recovery process, the author focused on the "Ohya Tairyou Utaikomi[1]".

Based on what I saw in the area and heard from people who were affected by the Disaster, this project allowed the author to convey the fieldwork experience to 6th grade elementary school students in Osaka using a music unit called "Sharing Hearts, Connecting Minds" (Educational publisher: 6th grade music textbook) (see Figure 1). Through these activities, the author tried to play a role of mediator to bridge between the affected people and young school children away from the place,

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[1] In Japanese 大谷大漁唄い込み which means Ohya: name of location, Tairyou: a big catch of fish, Utaikomi: to sing with emotion in the lyrics

in other words, "connect the dots" (Shimizu & Clark, 2019).

Figure 1. 6th grade music textbook

Especially referring to dimensions of resilience (see Figure 2) to nurture in communities or society, the following questions raised:

How can "linkage" be created between the local people affected in Tohoku people and the school in Osaka who have not shared "time" and recovery "process" with Tohoku people? How is this activity relevant to "scale"?

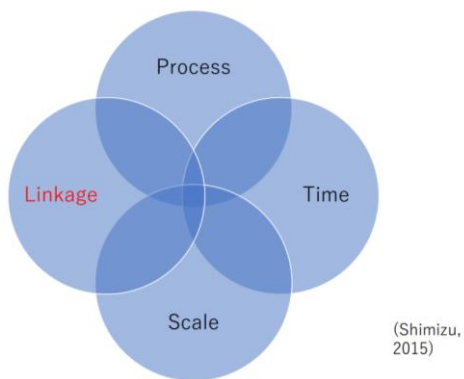Furthermore, how can this kind of activities can connect to the future?

Figure 2. Dimensions of Resilience

2. Maehama, Miyagi and Music
2.1 History

"Ohya Tairyou Utaikomi" is a song that has been sung by the fishermen of Maehama for a long time. Originally, it was sung by fishermen on their boats to celebrate a great catch and express gratitude to the Gods of the sea and mountains. The song has the unique feature of singing with musical accompaniment while beating the paddles on the deck.

2.2 The Current Form of Music and Local People's Perceptions

Today, the song "Ohya Tairyou Utaikomi" is still sung by the local people. However, singing on the deck of a boat is no longer common because fishing methodology has changed gradually over time and has become more mechanized, and also the working style of fishermen has changed. Instead, the song is sung at events though Preservation Association for "Ohya Tairyou Utaikomi" and the members of the Association sing the song at local festivals (see Figure 3). Before the Disaster, the former Maehama Marine Center, which boasts a high utilization rate among citizens, had been the site of frequent local cultural events. In addition to the "Ohya Tairyou Utaikomi", which has the aspect of community development and re-recognition of local folklore, the New Year's Party and the Respect for the Aged Party have the concept of connecting local people through folk arts and other activities (Chiba, 2016).

Figure 3. "Tairyou Bata": Flag to rejoice a big catch

3. Role of Music During the Recovery
3.1 Activities of the Music Preservation Association
3.1.1 Immediately after the Disaster

In the immediate after of the earthquake and tsunami, houses and buildings, including evacuation centers, were swept away. Almost all infrastructure functions stopped working, and the foundation of residents' lives was shaken. In this situation, the government was ineffective when it comes to the immediate post-disaster period (Minakata, 2012). The government tends

to delay immediate actions because the government is overwhelmed with emergency response and cannot cover different kinds of needs of the citizens. At such times, it is important to consider how much local residents can work together to protect their own livelihoods. In Maehama area, citizens voluntarily set up a task force and took various actions. The reason for this was that people who had been connected to each other through Preservation Associations were able to unite together quickly. It should be noted here that the connection between local residents naturally existed as a result of the local songs that were rooted in the area. This foundation made it possible for them to respond to the Disaster quickly.

3.1.2 Recovery Process

For several months after the Disaster, the Preservation Association members were a little hesitant to sing "Ohya Tairyou Utaikomi" at festivals as usual. The reason for this was that the song was a celebration of a great catch, and it was not appropriate to sing it in the presence of people affected by the Disaster. However, from the author's interviews with people in Maehama area, following stories was heard:

- One of the members took the leader's role and said, "Let's sing loudly and cheerfully so that the tsunami will be blown away". From there, we started to feel like, "Okay, let's do it!"

The characteristic of "Ohya Tairyou Utaikomi", as introduced in 2.1, is the beating of the deck with paddles while loudly chanting the music. Such characteristics also helped to energize both the singers and the listeners through music.

3.2 Relationship with the "Mochi-Tsuki Uta" of Mogami Town, Yamagata Prefecture

There is another major role played by music: Maehama has kept deep relationship with the town of Mogami in Yamagata Prefecture which is located closely to Maehama since the Tohoku Disaster. It started as a volunteer activity to help recovery activity of Maehama because Mogami Town has a

traditional song called "Mochi-Tsuki Uta[2]", they connected with "Ohya Tairyou Utaikomi" in Maehama, and in 2014, they made a friendship exchange agreement and started to sing together at each other's events. When the Maehama Marine Center was rebuilt, large trees were donated by Mogami Town, and they were used to be a part of the Center (see Figure 4). Thus, it can be pointed out that music also has the aspect of creating and enhancing connections with people from other areas.

Figure 4. Large tree donated by Mogami Town to Maehama

4. Music Workshop in Elementary School
4.1 Background and Overview

Based on the fieldwork and interviews described above, the author conducted a workshop for sixth grade elementary school students in Osaka (Homepage of Takadono elementary school) after the fieldwork in Tohoku on December 2021. Located in Asahi district of Osaka city, the elementary school is in an urban area surrounded by buildings, which is a huge difference from Maehama closer to the sea and nature. The school is a member of ASPnet (UNESCO Associated Schools Network) and is actively involved in Education for Sustainable Development (ESD). In this school, the author was allowed to give a special lecture to the elementary school students. Based on the music unit "Sharing Hearts, Connecting Minds" in the

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[2] In Japanese 餅つき唄 which means song sung when making rice cakes

6th grade music textbook (see Figure 1), I prepared for the workshop with the focus of the relationship between the Tohoku Disaster and music. Since there are three classes of sixth graders with about 25 students per class, I was allowed to conduct the same workshop three times.

4.2 Workshop Structure

The workshop was divided into the following six parts:

(1) Students fill out worksheets with the objective and today's materials:
- Objective: "Let's think about how to live when things do not go as planned."
- Today's material: "Ohya Tairyou Utaikomi"
(2) The author shared information about the Great East Japan Earthquake, the uniqueness of Maehama and "Ohya Tairyou Utaikomi".
(3) Appreciation of the song: "Ohya Tairyou Utaikomi".
(4) Students filling in the worksheet with what their felt.
(5) Sharing stories that the author heard directly from local people and their connection to Mogami Town.
(6) Students listen to the stories and write their own thoughts on the worksheet.

In preparing for the workshop, I recognized it was important to allow as much time as possible for the students to think and to share their thoughts. Thus, the author concentrated on sharing important information from the fieldwork it conducted. The rest of the time was arranged for the children to think for themselves (see Figure 5).

Figure 5. Workshop in elementary school

4.3 Results

4.3.1 Reactions to the Class from the Students

Different opinions from various perspectives were expressed both in the impressions after listening to the song and in the part of thinking for themselves. As the author was careful not to guide the students' thinking as much as possible, a variety of opinions were expressed. Some of the comments about the song were "powerful" and "energetic". The following comments were received in response to "Let's think about how to live when things do not go as planned":

- "Think positively."
- "Work with others to solve problems."
- "Find out why things are not going the planned way."
- "I think it happens sometimes."
- "I have never felt like things were not working the way I wanted them to."

It was apparent that many of the students had the opportunity to reflect on their own way of thinking and life through music.

4.3.2 Reactions to the Class from the School teacher

The following comments were received from the school teacher in charge of the music class and from the teachers who had observed this class.

- Just having a different person talk to them is a new stimulus for students.
- Since it is practically difficult for teachers and staff who have a lot of time constraints to conduct special classes like this one, graduate students were able to share the role in a sense.
- It was a discovery that music classes can be conducted from this perspective.

5 . Discussion and Implications: Using Elements of Resilience in Education

The author has learned mainly three lessons through these activities. First, by looking at natural, human and social systems from different angles, even though at first glance they may not seem to be very related, connections can

be found. In order to make resilience practical, it is necessary to take this into account and incorporate the process of connecting the dots to form the lines. This will be the response to creating a "link" between the people in Tohoku and the children in Osaka.

Second, a series of activities I involved through this small project gave me the opportunity to learn how the activities are related to "scale" which is a critical component of enabling resilience as discussed in the above: The Japanese archipelago is always exposed to the risk of natural disasters due to its geographic features. Osaka is not an exception to this reality. Even though people tend to think the Tohoku Disaster is away from them, it is a close topic when considered from different scales.

Third, I recognized the significance of arranging the classes to cultivate the capacities of students to think by themselves. This time, through the medium of music in the tradition, students could address the question of how to live with large-scale disasters and adversities although they have not experienced them yet. The process of capturing relationships among the past, now and future is quite important for enabling resilience.

Based on the above, it is essential to continue to collaborate with people from other fields which stimulate student's imagination and support their human capacity building. Specifically, by making connections among people from several fields and backgrounds, and creating the cycle of learnings among the people beyond time and scales, we can contribute to nurturing resilience in our communities and society.

References

Cabinet Office (2011). 『特集　東日本大震災』 (Japanese) Retrieved from https://www.bousai.go.jp/kohou/kouhoubousai/h23/63/special_01.html#:~:text=%E4%B8%89%E9%99%B8%E6%B2%96%E3%81%AE%E5%AE%AE%E5%9F%8E%E7%9C%8C%E7%89%A1%E9%B9%BF,%E8%A6%8F%E6%A8%A1%E3%81%AE%E5%9C%B0%E9%9C%87%E3%81%A7%E3%81%97%E3%81%9F%E3%80%82. Accessed 27th Feb 2022

Chiba, H. (2016). 特別講義 『「海と生きる」 順応的復興の模索: エコロジカルな伝承の未来のために』. 地域構想学研究教育報告, (6), 1-12. (Japanese)

Educational Publishing. (2020). 教育出版株式会社編集局. 『小学音楽　音楽のおくりもの　6』 (Japanese)

Homepage of Takadono elementary school. (Japanese)
Retrieved from
http://swa.city-osaka.ed.jp/swas/index.php?id=e681513.
Accessed 27th Feb 2022

Minakata, J. (2012). 『地方自治体の視点からの東日本大震災の報告: 震災直後の地方自治体と要援護者との関係を中心に (東日本大震災特別企画 シンポジウム 震災で問われる社会福祉学の役割: 原理と実践の探究)』. 社会福祉学, 53(1), 129-132. (Japanese)

Shimizu, M. (2015). 『協働知創造のレジリエンス: 隙間をデザイン』. 京都大学学術出版会. (Japanese)

Shimizu, M., & Clark, A. L. (2019). Nexus of resilience and public policy in a modern risk society. Springer Singapore.

Takachiho,Y. (2019). 『風化と日常性バイアス下の公共経営の課題. 論叢』 玉川大学経営学部紀要, (31), 49-61. (Japanese)

The relationship between food and communication:
Effects of reduced communication during COVID-19 pandemic

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1. Introduction and Background

Recently lifestyle-related diseases and mental illnesses have become a critical social challenge and the underlying issue for the diseases or illnesses is the lack of interpersonal communication: People who eat alone have poorer eating habits that lead to lifestyle-related diseases, which suggests the importance of sharing meals with family and friends through communications. Especially in the digital age which have been accelerated during the COVID-19, the lack of face-to-face communication is contributing to the increase in lifestyle-related diseases and mental illnesses.

While people are highly interested in topics such as "food" and "sociality," much of the information on these two topics is not academically rigorous or accurate in public. In addition, there is a lack of academic exchange between those who examine people's health (biological and medical aspects) and those who provide information on the nutritional aspects of food (food and agricultural aspects). Thus, "communication" issue tends to be isolated or disregarded.

Based on the above, this article highlights the communication function of food, which has been proposed as the fourth function of food [1], and will examine the issues of lifestyle-related diseases and mental illnesses from communication perspectives by adopting a multifaceted and bird's eye view which is based on resilience thinking[2][3].Thus, this article aims at examining how to reduce the impact of the decreases or illnesses beyond traditional approaches in interpersonal communication on the health of individuals.

Specifically, this article, built on a small project I engaged in the university during COVID-19, examines (1) how COVID-19/the digital age impacted on personal communication, and (2) how the impact influenced personal dietary habits or environments. Based on the examination, the article proposes what can be alternative ways to promote communication for the individuals' physical and mental health with foods even during COVID-19 and the digital age. In turn, responding to these questions will contribute to increase the resilience of individuals exposed to the social environmental changes of the digital age and coronary disasters.

2. Methods of Surveys

Regarding the above research questions (1) and (2), the author conducted the following two kinds of surveys at Kyoto University for

students in 2022/01/21 – 2022/02/11.

2.1 Survey on Nutritional balance and dining styles

The first survey aimed at comparing the differences in nutritional balance depending on dining styles, specifically, between meals taken by one person (solitary meals) and meals taken by several people (communal meals).

The survey utilized the receipts received at the student cafeteria when people pay for their meals, and investigated nutrient values indicated on the receipts to see what kinds of trends can be observed. For the survey method, a survey form was created to ask the respondents to read the QR code on the posters and flyers and SNS was also utilized.

2.2 Questionnaire Survey on dining styles and communication with the focus on Covid19

The purpose of the second survey was to understand the differences in awareness of their food between solitary meals and communal meals, as well as the impact on and attitudes toward food in the Covid-19. The location, period, target audience, survey method, and notification method were the same as in the first survey.

Fig.1 Kyoto University Cafeteria where the survey conducted

https://www.s-coop.net/shop_guide/yoshida_shop/

3. Survey Results

3.1 Relationship between nutritional balance and dining styles

The results were extracted from the nutritional information printed on the receipts includes the number of points in the red, green, and yellow groups of the intake standard, as well as the amount of protein, vegetables, salt & calcium equivalent, and calories. The intake standards are based on the concept of dividing foods into three food groups (red, green, and yellow) according to their nutritional functions, and setting target values for these groups to ensure a well-balanced diet. There were 287 responses to the survey, of which 148 were women and 137 were men. Mainly the following two results were found:

First, regarding the rate of achievement of the intake standards, for males, there was no significant difference between solitary meals and communal meals. On the other hand, for females, in addition to getting close to the target value in the red group, there was a tendency for the yellow group to suppress the overachievement rate. This suggests that eating together may have the effect of suppressing the excess intake of the yellow group in females.

Second, regarding the intake of other nutrients, there was no change in intake for most nutrients between solitary and communal meals. However, there was a decrease in salt intake for both males and females in communal meals (but still over compared with target values set by the Ministry of Health, Labor and Welfare). There was no change in the calorie attainment rate for males, but females were closer to the target when eating together. All these results suggest that eating together may lead to healthier eating.

3.2 Questionnaire survey on dining styles and communication with the focus on Covid 19
3.2.1 Relationship between Dietary Styles and Communication

There were 143 responses to the survey. In comparing the difference in awareness of their food between solitary meals and communal meals, in terms of the time takes to eat, it was found that there is a difference of about 10 minutes between solitary and communal meals. One of the major factors that led to this difference was the availability of communication.

In comparing what people want to achieve in a meal, many people chose eating easily because mealtime is shorter for solitary meals. In addition, when communal meals, there was a strong tendency to choose meals as a means of communication.

Regarding whether media is used during meals, the percentage of respondents who chose **not** to use media was only 13.3% in the case of solitary meals, while it was 60.1% in the case of communal meals, suggesting that media is used to compensate for the lack of communication. Among those who chose to use media, solitary eaters were more likely to use SNS to obtain interpersonal communication.

3.2.2 Impact of the COVID-19 pandemic

About 60-70% of the respondents answered that the number of people, the number of times, and the length of time in which they shared meals had decreased. This suggests that the number of solitary meals has increased due to COVID-19, and the number of opportunities to eat together has decreased.

As for eating and cooking at home, 37.8% of the respondents said that the number of times they cooked for themselves increased, 25.9% said that the time and effort required increased, and 58.7% responded that the number of times they cooked increased. These results suggest the COVID-19 has increased the number of meals eaten at home, leading to more opportunities to cook for oneself and more time and effort spent on cooking.

In addition, about 30% of respondents felt the opportunities to feel richness (i.e., deliciousness and enjoyment) through food had decreased, suggesting that the loss of communication was a factor.

Regarding awareness of food, 68.5% of respondents were conscious of eating more vegetables, while only 26.6% were conscious of cutting back on salt and 29.4% were conscious of cutting back on fat. This indicates that many people consider it is more important to eat more vegetables than to prevent excessive salt and fat, which suggests that many people may place more importance on maintaining a good nutritional balance than on avoiding risks such as lifestyle-related diseases. The fact that most of the respondents were in twenties, rather than middle-aged and older, and the government's policy of eating 350 grams of vegetables a day may be a factor.

In addition, 67.2% of the respondents want to have meals with friends through face-to-face if countermeasures against COVID-19 were taken, while only 30.2% want to do the same if no countermeasures were taken. This indicates that there are many people who seek for communication during meals, and that many people consider meals as a place for communication.

3.3 What the Results Indicate

The first survey (2.1) compared the differences between solitary and communal meals by utilizing receipts to obtain data on individual nutritional balance and intake. The results suggested that eating with more than one person may have a positive impact on eating, especially among females. In particular, the study found a suppressive trend in the achievement of intake standards, especially in yellow group, although this was not seen in men. This result left the author wondering what is the cause of the difference between males and females. One of the descriptive responses to the survey indicated that females enjoy chatting while eating, while males often enjoy conversation after the meal is over. This suggests that the difference between solitary and communal meals is greater for females.

The second questionnaire survey (2.2) was conducted to investigate the difference in awareness between solitary and communal meals, and the impact of COVID-19. Of particular interest was a question regarding the impact of COVID-19, which indicated that approximately 30% of the respondents felt that their opportunities to experience the richness of food had decreased. This suggests that loss of communication is a factor, which represents the importance of communication in food.

These results indicate that the link between food and communication is strong, both from a social and a nutritional perspective. In addition, it was demonstrated that people value communication at mealtime and feel the impact of the Covid-19.

4. Implications

Based on the survey results, some implications are provided from resilience perspective especially with the focus on relationships among foods, individuals/society, communication, and Covid-19:

The first implication is for the elderly people: the survey I conducted mainly focused on university students, but they are not the only ones affected by COVID-19. Isolation of the elderly has become a problem during the Covid-19. In particular, the elderly has fewer opportunities for communication with others and don't use SNS as much as young people.

From this point of view, it can be suggested that delivery meals can be as a source of communication. For example, when persons deliver foods to elderly people (as a gift, or volunteers), the persons can focus not only on deliver foods, but also communication: Talking to the elderly people even for a short time, can be useful as seeds of communication.

The second implication is for school children. Most of school children don't have experience of eating while communicating. Given the fact children are at a critical stage in their human development, lack of communication could result in serious problems an important issue for them. Therefore, it is necessary to find alternative ways in communications such as those without words, i.e., non-verbal communication during mealtime.

Third implication is related to nature. In the world where direct communication between people is difficult, one way of communication is to communicate with nature. For example, eating a meal with a sense of connection with nature is an example of this. Another means is to enable

an environment for people to imagine where our food comes from or to create opportunities to communicate with the producers of food ingredients and agricultural products.

5. Conclusions

Before concluding this paper, some suggestions are provided especially to the co-ops that have cooperated in conducting this survey. From the results of survey, it was found that there was a deficiency of the green group and an excess of the yellow group in terms of rate of achievement of intake standards. Looking at the actual cafeteria menu, it is difficult to know what to choose in order to achieve the intake standards. One suggestion can be posting ideal menus (combinations) to facilitate the provision of menus (set menus) that can easily achieve the intake standard. Given that communication is decreased in COVID-19, and females, in particular, significantly exceed the yellow group intake standard when eating alone, it is encouraged to post a poster for a well-balanced diet and other means to inform people about their dietary tendency.

As a conclusion, this research project can be a stepstone to my future research in the verification of the communication function of food.

From this survey, it was found that females tended to reduce their excessive intake of the yellow group. Dr. Sasaki, a professor in our laboratory and my supervisor, has shown the existence of a neural circuit called the FGF21-OXT system in the brain. It has been shown that the hormone FGF21, which is known to be secreted by the liver when sugar is consumed, stimulates the release of the hormone oxytocin (OXT), which is responsible for uterine contractions, sending the message that enough sugar has been consumed. My research is based on the idea that a similar function to this neural circuit works between food and communication (sociality), and the hypothesis is that "the activation of the OXT nerve via the FGF21-OCT system by sugar can also serve as a sociality-promoting stimulus, making it easier for people to feel familiar with each other. From this study, it is found that the data supports that communication stimulates the activation of OXT nerves and suppresses sugar cravings, because the excessive intake of sugar in the yellow group is may have been suppressed. These results support that my own research isn't wrong and will help me in my future research.

References

[1] Nakagawa Rieko, et al. "Functions and possibilities of communal eating: a consideration for making nutrition education more effective." (2010): 55-65.

[2] Holling, C. S. "Resilience and stability as shown by models of ecological systems." *Mathematical problems in biology*. Springer, Berlin, Heidelberg, 1974. 93-95.

[3] Shimizu Mika, and Allen L. Clark. *Nexus of resilience and public policy in a modern risk*

society. Springer Singapore, 2019.

[4] Aida Tomomi, et al. Relationship between coprophagic behavior and health and nutritional status as well as food and nutrient intake: A literature review using domestic literature database and hand search. Journal of the Japanese Society for Health Education, 2015, 23.4: 279-289.

[5] Eto Kumiet al. Relationship between Family Eating Behaviors and Health and Nutritional Status and Food and Nutrient Intake: A Literature Review Using Overseas Literature Database. Journal of the Japanese Society for Health Education, 2015, 23.2: 71-86.

[6] Yamamoto Ryohei, et al. Living alone and prediction of weight gain and overweight/obesity in university students: a retrospective cohort study. *Journal of American College Health*, 2021, 1-10.

[7] Ministry of Health, Labor and Welfare, Summary of Patient Survey

[8] Okubo Ryo, et al. "Urbanization level and neighborhood deprivation, not COVID-19 case numbers by residence area, are associated with severe psychological distress and new-onset suicidal ideation during the COVID-19 pandemic." Journal of affective disorders 287 (2021): 89-95. yl