



Executive Office, EARTH on EDGE Consortium EDGE-NEXT Project Office

FY 2020

Ministry of Education, Culture, Sports, Science and Technology (MEXT), EDGE-NEXT Common Fundamental Project Entrepreneurship Program for Leading a Resilient Society

Future Resilience through Review of the Reconstruction Process

- Fathoming the "Present Situation" upon Proposal of New Resilience —

A REPORT



Program Overview

The widespread novel coronavirus infection plunged the world into utter chaos in 2020. During the height of such confusion, this program was held since its launch last year for the second time, now under the theme of "fathoming the 'present situation' for proposal of new resilience." Hitherto unknown infectious diseases greatly impact society and our lives, whether this be due to harm - without saying - on our health overall or by adversely impacting society and livelihood through the worsened economic climate. As humankind fights to overcome a virus taking innumerable lives even at this very minute, attempts to fathom the "present situation" upon driving resilience have become essential.

Even while facing this new viral pandemic, we must not overlook the tremendous harm caused by natural disasters that occur worldwide each year. According to data from the United Nations Office for Disaster Risk Reduction (UNDRR), 7,348 large-scale disasters have struck over the last 20 years since 2000, killing 1.23 million people and causing 2.97 trillion dollars (approx. 313 trillion yen) worth of damages. Japan has also been stricken by numerous disasters in recent years, such as flooding from typhoons and torrential rains. These include the Great Hanshin-Awaji Earthquake of 1995 and the 2011 Great East Japan Earthquakes, in addition to the 2018 Hokkaido Eastern Iburi Earthquake. Time has passed since these earthquakes caused such significant damage. Kobe is currently undergoing a period of investigation to ascertain what is necessary and what should be done for better reconstruction. While in the midst of its own recovery, Tohoku is facing a period of reflection about the reconstruction process thus far to re-examine future reconstruction policies.

In this program, we look at the state of recovery in Hokkaido and disaster prevention initiatives of other regions with emphasis on disaster reconstruction processes after the Great Hanshin-Awaji and the Great East Japan Earthquakes, to understand unique regional characteristics and changes in reconstruction processes over time. This education aims to develop human resources who can discern vulnerabilities in social systems as well as to create and sustain businesses that generate creative value. The spread of the novel coronavirus infection has made the on-site fieldwork conducted last year difficult.

Therefore, this program held lectures and workshops online to teach processes that create business ideas in order to achieve a resilient society. As part of the Ministry of Education, Culture, Sports, Science and Technology (MEXT) EDGE-NEXT program, this project is handled by the EARTH on EDGE Consortium.

(Cover photo) Ocean View from the JR Onagawa Station in Miyagi Prefecture (Back cover photo) Okawa Elementary School Disaster Memorial in Ishimaki City, Miyagi Prefecture About EDGE-NEXT About EARTH on EDG

About EDGE-NEXT

Exploration and Development of Global Entrepreneurship for the Next Generation

A human resource development program supervised by MEXT.

The program educates next-generation entrepreneurs based on Research & Development results gained at institutions such as universities in order to stimulate production of Japanese innovation. It aims to apply knowledge from entrepreneurial education provided by universities throughout Japan to develop and implement educational programs, not only for turning undergraduate and specialized graduate students but also for turning junior researchers into human resources, capable of generating ideas and building business models that bring about transformative changes to future industrial structures.

About EARTH on EDGE

Entrepreneurial Action Renaissance in Tohoku and Hokkaido on EDGE-NEXT

A consortium formed by six institutional universities in the Tohoku and Hokkaido areas for the EDGE-NEXT program

EARTH on EDGE, an entrepreneurial consortium providing impetus for enterprise-focused education from the Tohoku and Hokkaido areas, works in tandem with Tohoku University (principal university), Hokkaido University, Otaru University of Commerce, Miyagi University, Kyoto University and Kobe University, as well as government, industry, academia and financial institutions, to undertake the "EDGE-NEXT" program for next-generation entrepreneurial education.



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Overview

The word "Resilience" generally means "the elasticity, restorative force, capacity to recover from illness, etc., or toughness" (Digital Daijisen, Shogakukan Inc.). It is a word used more recently in the context of psychology to refer to "processes or capabilities that adapt deftly despite circumstances posing difficulties and threats." Moreover, the concept of resilience has come to be seen as a crucial capacity for disaster prevention and mitigation which must be found within industrial and governmental organizations, not to mention in the social and economic fields.

For this program, "resilience" is defined as "the capacity of a system, enterprise, or a person to maintain its core purpose and integrity in the face of dramatically changed circumstances" (Andrew Zolli and Ann Marie Healy, Resilience, 2013), and a resilient society as "a society that can maintain its core purpose and integrity in the face of dramatically changed circumstances." It is supposed that a resilient society is one that can achieve the following three states.



Rather than trying to restore society to the same circumstances found before the damage caused by a disaster, achieving a resilient society in the future will most certainly require a new mindset of creative restoration. We must aim for regeneration in a form that improves on the past in light of our newfound clarity on how our living spaces were exposed to high risk of earthquake and tsunami (Nobuaki Hamaguchi, On Creative Restoration, 2013). We must also encourage activity that builds new regional histories (Toshihiko Hayashi, Economics of Major Disasters, 2011).



Human Resources Driving Construction of a Resilient Society

Based on the definition of resilience and the concept of creative restoration put forward by Andrew Zolli and Ann Marie Healy, this program defines the "human resources that drive the construction of a resilient society" as "people who create and sustain enterprises that give rise to creative value by discerning the vulnerabilities of social systems and forecasting the changes brought on by disaster." We believe that having the following four capabilities - together with basic entrepreneurial skills and ability will drive construction of a resilient society through the design and realization of new enterprises, in bringing about reconstruction and disaster prevention/mitigation.

1. Discerning the Vulnerability of Social Systems

The causes of vulnerability in social systems can be divided into (1) design, (2) realization and (3) operation. Moreover, even within the same social system, different vulnerabilities may emerge depending on the context (historical, cultural, geographical, industrial, etc.).

2. Understand impacts due to dramatically changed circumstances

Rather than merely understanding current circumstances, it is necessary to forecast the ways in which society could change due to potential future disasters.

3. Adopt the perspectives of self-help / mutual aid / public support

By making use not just of individual personal abilities but also of local communities and governments as well as the national government, enterprises that contribute to reconstruction and disaster prevention/mitigation can improve the potential for instituting and sustaining results.

4. Establishing social value together with economic value

We aim to achieve sustainability of enterprises by providing economic value simultaneously with value related to reconstruction and disaster prevention/mitigation (social value).

Program Process Frame

In considering a project which contributes to the construction of a resilient society, we designed this program assuming that the project makes advances by intercommunicating with processes (iteration).



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Program Design / Management Faculty

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(In no particular order)

Schedule Overview

Aug. 25 Special Orientation

Estimate Drastic Changes due to Disasters and Identify Vulnerabilities of Social Systems

Aug. 31	Lecture 1	Vulnerabilities of Social Systems
	Lecture 2	Introduction to Systems Thinking
Sept. 1	Lecture 3	Workshop on Systems Thinking
Sept. 2	Lecture 4	Disaster Mitigation based on Study of Historical Heritage Assets
	Lecture 5	Computational Simulation of Disasters
	Lecture 6	Increased Hazards due to Simultaneous Occurrence of Pandemics and Disasters
	Lecture 7	Psychological Aspects of Disasters
Sept. 3	Lecture 8	Online Fieldwork - Footages from The Great East Japan Earthquake
Sept. 4	Lecture 9	The Great East Japan Earthquake Recovery - Example of public housing reconstruction
	Lecture 10	The Great East Japan Earthquake, Onagawa and Ogatsu:

Social Vulnerabilities and Drastic Changes

Self-help / Mutual Aid / Public Support

Sept. 7	Lecture 11	Vulnerabilities of Society and Adaptive Systems - Case study of BCP -	
Sept. 8	Special	Mid-term Presentation A	
Sept. 10	Special	Mid-term Presentation B	
Sept. 13	Lecture 12	Stakeholders and Resources: Understanding Cases through Use of Subsidiarity Framework	
Sept. 14	Lecture 13	Problems Confronted and Vulnerabilities of Subsidiarity	
Sept. 16	Lecture 14	Understanding Subsidiarity: Self-help, Mutual Aid and Public Support	
Sept. 18	Lecture 15	The Dialogue - Experience before and after the Earthquake	

Social and Economic Value

Sept. 20	Lecture 16	Achieving Both Social and Economic Values	
Sept. 21	Lecture 17	Business Model Monetization and Feasibility	
	Lecture 18	Business Model which Creates Value and Leads to Profitability	
Sept. 22	Lecture 19	[Workshop] Achieving Both Social and Economic Values	

Sept. 29 Special

Achievements Presentation

On demandReal time

Lectures 1 to 10

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Estimate Drastic Changes

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Disasters and Identify Vulnerabilities

of Social Systems

Estimate Drastic Changes due to Disasters and Identify Vulnerabilities of Social Systems

Students deepened their understanding about the vulnerabilities of social systems and the drastic changes in circumstances as well as expanded upon this understanding to learn about the state of damage and the reconstruction process while looking at historical materials, such as videos of regions afflicted by the Great East Japan Earthquake and data about the damage. These lectures also considered the role of historical heritages in disaster situation and psychological aspects of disasters as well as the ideal approach to evacuations during the novel coronavirus pandemic. In the real-time lectures, students learned techniques to flesh out their business ideas by working to create causal-loop diagrams, system charts and other plans in work groups.



Lecture 1

Vulnerabilities of Social Systems

Hiroki Tsuruta, Associate Professor, Kobe University V.School

Assoc. Prof. Hiroki Tsuruta explained social systems and vulnerabilities to foster an understanding about the vulnerabilities of social systems and provide a road map on where plus how students can connect their ideas to the resilience of a society. He also introduced the seven "PLETECH" perspectives that divide and look at social systems from the standpoints of politics, law, economy, technology, environment, culture and humans. This methodology uses concrete examples and other means to think about vulnerabilities to teach students how to organize their business ideas into proposals that aim for solutions to specific vulnerabilities.

Lecture 2

Introduction to Systems Thinking

Keiko Gion, Assistant Professor, Kobe University V.School

Students learned about systems to flesh out their business ideas and techniques to draw system diagrams. There are two key points when considering challenges through systems thinking: (1) look at both the trees and the forest, and (2) consider mutual relations. As a means to those ends, Asst. Prof. Keiko Gion explained the MECE principle to see things from multiple perspectives while drawing logic trees that are exhaustive and do not double count any level of the hierarchy (the key is to bring together everything at an abstract level). Students learned to take advantage of PLETECH to organize circumstantial changes in the backdrop surrounding their systems.

Workshop on Systems Thinking

Keiko Gion, Assistant Professor, Kobe University V.School

Students learned to draw causal-loop diagrams. After breaking into five groups, students discussed a single selected business idea and drew a practical causal-loop diagram. During this group work, lecturers provided guidance on the importance of illustrating relationships and learning concepts while moving on to presentations in the full session.

Lecture 5

Computational Simulation of Disasters

Satoru Oishi, Professor, Major in Civil Engineering, Graduate School of Engineering, Kobe University

Systems that greatly integrate virtual and real spaces are driving Society 5.0, which balances economic advancement with solutions to social problems, together with digital transformation, which betters the lives of people through the prevalence of digital technology. Prof. Satoru Oishi provided an overview of how the integration of these two spaces can aim for a safe and secure society. The lecture also touched on examples of estimation analysis through supercomputer simulations, such as the scale and frequency of damage in addition to the present state and challenges of said technology.

Lecture 6

Increased Hazards due to Simultaneous Occurrence of Pandemics and Disasters

Goh Ohji, Associate Professor, Infectious Disease Department, Kobe University Hospital

Assoc. Prof. Goh Ohji began by explaining the characteristics of the novel coronavirus infection (COVID-19). He then described how traumatic injuries are a problem right after a natural disaster strikes while treatable diseases are a constant issue in medical facilities, and introduced the reality of how easily diseases spread through evacuation facilities as well as of effective countermeasures. Various other problems that occur in cases of long-term evacuation were also pointed out, such as the lack of clean water necessary to prevent the spread of diseases. Based on this information, Assoc. Prof. Ohji asked students to consider the question as to the best way in handling an evacuation after a natural disaster during the COVID-19 pandemic. This lecture also introduced analysis methods using hexagon exploration tools that help objectively evaluate remedial measures to problems.

Lecture 4

Disaster Mitigation based on Study of Historical Heritage Assets

Masakazu Matsushita, Associate Professor, Office of Promoting Regional Partnerships, Kobe University

Assoc. Prof. Masakazu Matsushita explained his work to support activities that preserve old documents and other historical materials, activities that leverage historical heritages in urban development undertaken by local government bodies, not to mention activities that utilize disaster prevention organizations utilizing records of past disasters. Using slides, Assoc. Prof. Matsushita then introduced various activities to rescue historical records put in harm's way by disasters and daily efforts to carry on local traditions. Students analyzed monuments and other historical records while reading messages entrusted to us by our ancestors to further their knowledge about the drastic changes in circumstances caused by disasters.





Lecture 7

Psychological Aspects of Disasters

Seiichi Saitoh, Associate Professor, Graduate School of Human Development and Environment, Kobe University

Assoc. Prof. Seiichi Saitoh described the mentality of disaster victims during the acute, reaction and recovery phases along with passage of time after a disaster and described Post-Traumatic Stress Disorder (PTSD), sorrow and complicated grief. His lecture divided psychological support for disaster victims into three stages - general disaster victim level care, observational level care and disorder level care - and introduced the role of mental health teams deployed to disaster areas and counselors at each level of care. Regarding the psychology involved, Assoc. Prof. Saitoh also explained cognitive hardiness upon enduring high levels of stress and resilience to fully recover after nearing breakdown, plus the growth of an individual after experiencing a trauma. The lecture illustrated points which should be emphasized when interviewing actual disaster victims for the purpose of fleshing out future business ideas.

Lecture 9

The Great East Japan Earthquake Recovery -Example of public housing reconstruction Masashige Motoe, Associate Professor, Graduate School of Engineering, Tohoku University

Assoc. Prof. Masashige Motoe, who lives in Sendai City, used photos to talk about his experience of the damage and chaos in the city right after the Great East Japan Earthquake. This discussion clarified the flow of disaster victims as they evacuated to shelters immediately after the earthquake before migrating from temporary emergency housing to temporary post-disaster housing and public disaster recovery housing. Therein, many coastal residents whose lives had been closely intertwined with the sea wished to move back to their homes even after experiencing the horror of the tsunami, yet many people in urban areas hoped to find a safer abode. Assoc. Prof. Motoe also presented the housing that started to be built more than a year after the disaster and showed examples of the recovery housing he himself was involved in.

Online Fieldwork - Footages from The Great East Japan Earthquake

Hiroki Tsuruta, Associate Professor, Kobe University V.School

Students watched video taken during the Great East Japan Earthquake to gain insight about the drastic changes in circumstances from PLETECH points of view.



Lecture 10

The Great East Japan Earthquake, Onagawa and Ogatsu: Social Vulnerabilities and Drastic Changes

Akinari Abe, Representative of Community Reconstruction Working Group, Ogatsu, Miyagi prefecture

Mr. Akinari Abe compared the circumstances before and after the disaster in Onagawa-cho and Ogatsu-cho while incorporating his experience drifting all night atop the roof of his home in Ogatsu-cho, Miyagi Pref. after the Great East Japan Earthquake. Presenting aerial photographs of both towns before and after the disaster, students saw a visual representation of the drastic changes in circumstances due to the tsunami and viewed data about the town populations along with the damage status resulting from the earthquake. Mr. Abe explained how the rate of population decline in Ogatsu-cho was double that of Onagawa-cho after the earthquake, even though Onagawa-cho suffered a higher number of fatalities. The lecture also referenced the distinct vulnerabilities in each town before the earthquake and the differences in their approach to reconstruction.

Lectures 11 to 15

Self-help / Mutual Aid / Public Support

Students learned about self-help, mutual aid and public support, giving thought as to vulnerabilities for each when a disaster occurs. To provide students an even greater understanding of self-help, mutual aid and public support, these lectures introduced examples from Otsuka Pharmaceutical Factory, which has its head office in Tokushima Prefecture, in addition to other examples that included the BC Cooperation Nadeshiko cooperative work by construction companies to strengthen disaster response capabilities. In the real-time lectures, students organized self-help, mutual aid and public support pertaining to each of their projects as well as business ideas, and worked to flesh out those ideas.



Lecture 11

Vulnerabilities of Society and Adaptive Systems - Case study of BCP -

Example 1

Kana Sumiyoshi and Takeyasu Nishiwaki, Otsuka Pharmaceutical Factory

Yasufumi Yuasa, Assistant Professor, Research Center for Management of Disaster and Environment, Tokushima University

Otsuka Pharmaceutical manufactures the majority of infusion solutions produced in Japan. This company considers a stable supply of highquality pharmaceutical products backing up the on-site medical infrastructure during disasters as its Corporate Social Responsibility, and has positioned its Business Continuity Plan (BCP) as part of its management strategy. As specific initiatives, this example presented an overview of Otsuka Pharmaceutical Factory efforts to build frameworks that prevent factory flooding, secure a means of distribution during disasters and ensure sufficient product inventory, not to mention providing a stable supply of products in addition to seminars that simulate shipments during disasters. Active efforts in local disaster prevention activities were also explained, such as the provision of temporary tsunami evacuation sites in the region.

Example 2

Kayo Sato, BC Cooperation Nadeshiko Yasufumi Yuasa, Research Center for Management of Disaster and Environment, Tokushima University

This example introduced the BC Cooperation Nadeshiko initiatives for facilitating cooperation between 18 construction companies in Tokushima, Okayama, Wakayama and Kochi prefectures through the conclusion of agreements for mutual assistance in the event of a disaster. The example explained the work of efforts involving the nation, prefectures and other participants in joint training to think about specific measures from lifesaving during disasters to the removal of obstacles on the road to ensure access for emergency vehicles and to strengthen disaster response capabilities. "Nadeshiko Patrol" was also referenced as an effort to inspect the hygiene, environment and safety of construction sites from a female perspective. The example illustrated how these activities function to not only help reform on-site environments and improve productivity by offering new opportunities, such as tours to learn the latest construction technology when conducting patrols, but also drive effective cooperation even in normal times.

Lecture 12

Stakeholders and Resources: Understanding Cases through Use of Subsidiarity Framework Takayuki Tomobuchi, Assistant Professor, School of Project Design, Miyagi University Kesennuma Future Plan Osawa Team

The Kenennuma Future Plan Osawa Team is an organization made up of three volunteer universities, including Miyagi University. Through this team's work, students analyzed self-help, mutual aid and public support trends while living in evacuation shelters and undergoing reconstruction of Osawa-ku where many homes were damaged during the Great East Japan Earthquake. The lecture summarized self-help, mutual aid and public support from equipping homes with wells and firewood as well as securing independent infrastructure (self-help) plus operating designated evacuation centers (public support) where each person decides their role in life at the evacuation shelters (mutual aid) to residents with relatively minimal damage opening their doors to help disaster victims (mutual aid). Asst. Prof. Takayuki Tomobuchi also described the reconstruction process for relocation to higher grounds throughout the region, such as urban development aiming to facilitate communication between residents as well as community cafés built by the local residents themselves. He also explained the importance of supplementing areas where public support is lacking with self-help and mutual aid.

Lecture 14

Understanding Subsidiarity: Self-help, Mutual Aid and Public Support

Takayuki Tomobuchi, Assistant Professor, School of Project Design, Miyagi University

In this real-time lecture, students worked to create a worksheet that included the form self-help, mutual aid and public support would take in the projects and businesses that they are envisioning. The worksheet organizes the self-help, mutual aid and public support for each of the stakeholders as well as project and business content to verify how the business ideas help better the three types of support by bringing it all together in one place. After filling out their worksheet, students shared their ideas with one another in work groups. Each group then shared the ideas hashed out in their group with everyone. Mr. Nobuyuki Komatsu from Sendai City's Industry Promotion Section introduced the Sendai City BOSAI-TECH Innovation Program which aims to create disaster prevention industries before the lecture because some of the students who are business professionals in this program participate in his project.

Lecture 13

Problems Confronted and Vulnerabilities of Subsidiarity

Takayuki Tomobuchi, Assistant Professor, School of Project Design, Miyagi University

Yu Ishida, Associate Professor, School of Project Design, Miyagi University

Students discovered new perspectives about the purpose of self-help, mutual aid and public support in addition to learning the impact these three types of support have when disasters occur and as a function during normal times. The lecture first asked each student to consider how they themselves can take self-help action during a disaster, what mutual aid is available plus what kind of public support there is, and to simulate how they can take advantage of such support. Going one step further, students were asked to propose specific simulations of changes for each type of support during disasters by varying the scene setting by population scale, community connections, and other such factors. The lecture also provided an overview of how the three types of support vary depending on the set of circumstances.





The Dialogue Experience before and after the Earthquake

Messrs. Aoyama and Doi from the Public-Private Partnership Office of the Onagawa-cho General Affairs Section in Miyagi Prefecture were invited as lecturers to the real-time lecture and dialogue with students on September 18th. First, Aoyama and Doi provided an overview of the reconstruction process in Onagawa-cho. Students learned about the development of Onagawa-cho alongside the fishing industry as a lowlying town near the sea where almost 90% of the buildings were damaged during the disaster, with reconstruction being undertaken as market-driven public-private urban development and the adoption of a "disaster mitigation" approach that does not install seawalls but rather establishes residential areas on high ground and commercial areas on lowlands relatively close to the sea. The floor was then opened to a free open exchange of ideas with students.



Public-Private Partnership Office of the Onagawa-cho General Affairs Section Left: Office Director Takahiro Aoyama Right: Chief Officer Hidetaka Doi

Student What kind of mental healthcare did you offer residents during the reconstruction process?

Doi I think the important thing to emphasize when undertaking the reconstruction is to give everyone a sense that "You are needed." Therein, we thought about what was needed for each person to actively participate.

Aoyama To make sure everyone can take an active role, it is important to never dismiss anyone's ideas. We need to focus on assuring "psychological safety {reassurance}" so that everyone can relax. By doing so, many people shared a wide range of ideas.

Student I think communication with local residents is essential to urban development. What is the best type of support for active communication?

Doi First, it is important to create an atmosphere where everyone feels free to speak. Town planning is the accumulation of small successes. If something takes shape, people feel it firsthand exclaiming, "They're using my ideas!" This energy brings about a virtuous cycle that attracts even more people.

Independent Measures Born from a "Disaster Mitigation" Approach

Student A "disaster mitigation" approach that does not obstruct the sea yet ensures safety while making connections is fantastic. What kind of tsunami protection measures are put in place in commercial areas near the ocean?



Doi The residential districts are of course built on safe higher grounds, but the measure used in commercial areas built in disaster danger zones generally is to remove oneself from harm's way. Thus, evacuation sites are built close enough so senior citizens can walk and escape. These commercial areas do not have neighborhood associations similar to those in residential districts, which hampers training and the exchange of information. That is why organizations like the industrial districts are created instead to do things like share information and conduct evacuation training.

Student I am interested in how memories of the earthquake will be passed down to coming generations. What kind of approach do you take to share these memories in Onagawa?

Doi In Onagawa, I think we would

rather leave remnants of the reconstruction process rather than tragic memories. In particular, the old Onagawa police box remains toppled by the tsunami, and we have set up panels describing the urban development process.

"Donations"

Student I am currently considering a donation-type business. Has Onagawa entered a phase where support is not donations or other direct support but rather something different?

Aoyama Onagawa has been taking advantage of donations up to this point as it tackles the reconstruction. However, I think it is important to prioritize donations to regions needing them more than Onagawa because disasters are occurring

To Reach a Phase Requiring "Investment" More Than

around the world every year. Right now, I think programs such as the "hometown tax scheme" in Japan act as measures for people to provide support in a different form.

Doi I think what we need now is support in the form of an "investment" that capitalizes on human rather than monetary resources, such as proofof-concepts in which companies and universities use the social challenges faced by Onagawa. We are currently looking into the initiatives necessary to accomplish this.

Student I am interested in local assemblies. Could you please tell me about the actions taken by town assemblies in the reconstruction process?

Aoyama In Onagawa, the Onagawa Town Society of Commerce and Industry (Onagawa FRK) is a body of

The Dialogue Experience before and after the Earthquake



復興とは、その道のりを通じて 地方の新しい価値や可能性を生み出すこと



commercial and industrial associations as well as other private organization that launches a variety of projects and has worked in the reconstruction. However, no budget is granted unless the proposal is finally approved by the local assembly. Our solution to this is to discuss our plans in advance with the local assembly representatives to find common ground before submitting anything to the assembly. By approaching it in this way, I think we are able to advance the reconstruction much more smoothly.

Student I am sure there are many instances where you have to ask for help in the reconstruction from a lot of different people. Could you please tell us what is important when asking for this support?

Doi Most people are willing to help if we can communicate how truly in need we are. That is why I let down my guard and speak from my heart. It is also important to find mutual benefits for both parties in long-term relationships. That is why I think about how to build "win-win" relationships with everyone involved.

Now, we want to turn the table and ask you the students some questions as representatives of **Onagawa-cho!**

Doi We would like to ask everyone the following questions: (1) What are Onagawa's strengths? (2) What is the role of local government? (3) What are key points to resolve social challenges?

Student For question (1), I think one of Onagawa's strengths is the attractive urban development involving people from many generations.

Student In regards to question (3), I feel it is important for local residents to talk about the charm of their region.

Student I will share my thoughts on question (3). I think it is important to think about people's feelings.

Doi We asked a certain company to analyze the "foundation of debate about challenges and trusting relationships" as factors of the success in the Onagawa reconstruction. In the future, we plan to value efforts that "consider people's feelings."

Student I will share my thoughts on question (2). As things move to an online format due to the coronavirus pandemic, I think we should migrate urban functions to rural areas.

Doi I agree. The promotion of "telework" and "workations" are generating an influx of people to the region. Each local government will tap into things such as the quality of their environment, and I believe Onagawa puts this forward as one of its strengths.

Aoyama Thank you so much for so many great answers. I hope to build a town that I can pass down to the local children when they all grow up. We will refer to and I hope reflect on all of your ideas in future urban development.

Doi All of you are among the generation who will take the baton from those of us in our forties today. I hope you will look at the positive stance of "old men" like us and use that to enjoy yourselves as you build better cities and a better Japan for yourselves.

Lectures 16 to 19

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19

Social

and

Economic Value

Social and Economic Value

Students learned techniques for verifying economic value to elevate the level of the ideas they have had thus far into sustainable projects and businesses. Students learned specifics such as the importance of balancing social value, customer value, technological value and business value plus methods to draw up business flow charts to include in the planning worksheet. In the real-time lectures, students discussed the actual information included on their planning worksheet in groups to brush up each project and business idea.



Achieving Both Social and Economic Values Jun Mikami, Academic Researcher, Commercial Science, Otaru University of Commerce

Mr. Jun Mikami demonstrated how economic backing is essential to continually conduct even businesses with social value. He went on to introduce social value, customer value, technological value and business value as four perspectives necessary to establish social value together with economic value. Students

reviewed whether the actual business examples given balanced these four perspectives. As one example balancing these four aspects of business, Mr. Mikami showed and described a system of business that repurposes / sells metal collected and dismantled from illegal firearms from developing countries as decorative ornaments.

Lecture 17

Business Model Monetization and Feasibility Jun Mikami, Academic Researcher, Commercial Science, Otaru University of Commerce

Jun Mikami illustrated two key points for establishing social value together with economic value: (1) differential advantage consistently chosen by customers and (2) innovative charging systems (monetization) to increase profitability. Therein, he provided an overview and explained simple ways for students to handle (2) by categorizing the business flow chart to include in their planning worksheet into eight groups, such as selling things, retail, advertising and matching. Moreover, Jun Mikami encouraged students to do one final check to make sure their business model helps realize social value and does not rely on public assistance as a precondition.

Lecture 18

Business Model which Creates Value and Leads to Profitability

Jun Mikami, Academic Researcher, Commercial Science, Otaru University of Commerce

Students learned the " $3 \times 3 = 9$ viewpoints" framework to check whether their ideas are a system that consistently generates economic value as preparation for presenting their business models. This framework verifies the strength of the ideas by checking the Who, What and How of customer value, project value and technological value as well as inspires answers to nine questions, such as who their customers are. This lecture emphasized various points to be noted, such as making sure no stakeholder loses out. Students also reflected on existing business documents and other materials as an added means of learning business concepts.

Lecture 19

[Workshop] Achieving Both Social and Economic Values

Jun Mikami, Academic Researcher, Commercial Science, Otaru University of Commerce

Students drew business model diagrams of their business ideas, then broke up into groups and reviewed those ideas to check whether the plans established social value together with economic value.

COLUMN Office Hour

This program was not only for university students but also business professionals. The transition of these lectures to an online format surely was a benefit to business professionals who have very little time to spare. In the survey after the lectures, business persons expressed feedback unique to professionals working on the front lines of corporate business with comments that included "I learned a lot about how to overcome the struggle when starting projects and plans." and "I gained new perspective on how innovative business ideas that remain in society should be unique and simple." Meanwhile, university students presented unique project and business proposals with differentiating features which proved to be very stimulating for all involved.





Lecturers set up office hours to answer student questions outside of the real-time lectures to make up for time which would have been spent for in-person lectures and on-site fieldwork. This office hour acted as a good scheme for students to consult with these experts. This office hour also helped students deepen their ideas by examining weak points and challenges as well as areas where they should extend their ideas. Moreover, several students participated in the office hour to discuss their ideas and challenges together, which provided a great learning opportunity.

FINAL PRESEN-TATIONS

Achievements Presentation

As the long-awaited crowning moment of the program, the last class session near the end of September, the 29th — the final day of the program — 21 students presented their business ideas. Each student had five minutes to present; then, former Kyushu University Professor Toru Tanigawa, Tohoku University Professor Makoto Okumura, Sendai City Industry Promotion Section Chief Nobuyuki Koike, Tokushima Commerce, Industry, Labor and Tourism Corporate Support Section Manager in charge of business promotion and management support Kazuya Matsunaga, Onagawa-cho General Affairs Public-Private Partnership Office Director Takahiro Aoyama and Chief Officer Hidetaka Doi evaluated said business ideas.

During the presentations, students shared their screen to use materials which elaborated on each of their innovations and explained the ideas they had refined thus far. Each presentation laid out operations both during normal times and emergencies, then clearly demonstrated potential approaches to use certain aspects of self-help, mutual aid and public support. Afterwards, these business ideas were examined to polish each idea as a sustainable business even from the perspective of monetization. All of the projects and business proposals were fleshed out into a plan that incorporated the four capabilities in our definition of "human resources that drive construction of a resilient society."

In the overall evaluation, students listened intently to feedback and advice from the panel: Mr. Doi commented, "There were some ideas that could be combined to realize better businesses." Mr. Aoyama expressed his view, "I want everyone to think about business proposals that determine what problem

REVIEW I hope everyone will use the skills they learned to succeed in business.



Former Kyushu University Professor Robert T. Huang Entrepreneurship Center Deputy Director General Toru Tanigawa Although this one month has been short, ideas came together using a variety of approaches and innovations at a time when fieldwork was not possible. I am amazed by everyone's ability to pinpoint problems and make proposals based on their intuition. I would like to highly praise proposals for not relying only on information found online but with firmly grounded content.

Even though some explanations of business models had weak points, the important thing is for everyone to take



can be solved through their work while identifying that value." Prof. Okumura told the students, "A privilege of youth is the ability to come up with new ideas. I hope to see you all come up with many more of these new ideas." Mr. Koike exhorted, "It is important to not only consider what is happening today but also examine what challenges society will face in the future." Mr. Matsunaga reflected, "Business opportunities come when the dissatisfaction and concerns felt by people around the world, your motivation and your ability all align."

action starting now. Please talk with target users and test your ideas to come closer to making those ideas a reality. By doing so, all of your business ideas will quickly grow into something great.

The theme for the program this year was disaster prevention. I think the greatest value of our program is that knowledge and techniques learned here can even be used in other fields. I ask that you engage in discussion with many people in the future and move forward optimistically to manifest these ideas.

Final Presentation List

Name	Affiliation	Title	Description
Yudai Nishi	Kobe University	Community Motivation	This project uses online formats to build a community which motivates students to apply themselves.
Keita Shiomitsu	Kobe University	A Place to Connect Children and Adults	Junior high school / high school students plus adults who together plan and run events to establish a local community.
Keito Mishima	Tokushima University	Inculcation of True Disaster Prevention Leaders	This project forms teams made up of students who are certified as disaster prevention experts to actively utilize when disaster strikes.
Atsunori Utsunomiya	Kobe University	Disaster Prevention Encouraging Self-help through City-wide Simulations	This project popularizes a disaster estimation app to heighten evacuation awareness in the local community.
Mari Nakano	Kobe University	Different People, Different Provisions	This project sells customizable disaster prevention bags and raises youth awareness as to disaster prevention.
Ryota Takahashi	Kobe University	Community Job App for Students Living Alone	Students living alone use this app to find jobs needed by local residents to connect with the community.
Ryoichi Yoshida	Kobe University	Everyone's "Everyday" Disaster Response: Creating Disaster Response and Recovery Bases at Cafes / Restaurants	This project offers specialty goods and other products from disaster-afflicted regions to bring awareness of disasters into everyone's daily life.
Kaori Yokohori	Tokushima University	Matching Service for People with Emotional Trauma	The platform operates as a system to introduce users to appropriate counselors.
Yoshimitsu Sawaoka	Kobe University	Circular SCM for Use and Sale of Disaster Waste	This project reuses, commercializes and sells disaster waste via use of a tailored certification mark.
Kyoko Takeda	Kobe University	"A Sigh of Relief" Hot Cafe	This cafe operates for the purpose of creating communities in temporary emergency housing complexes.
Keisuke Uzu	Tohoku University	To Function as Volunteers during Emergency	This project clarifies the purpose of association activities in normal times to facilitate every function during emergency.
Miho Yamashita	TREK Co., Ltd.	Web Service to Update Evacuation Information and Conditions in Real Time	This project develops a web system to create a framework that can assure smoother evacuation in the event of a disaster.
Tatsuya Yamaguchi	IQGEO Japan KK	Proposal for the Launch of a Municipal-wide Resilience Platform	This project builds a digital platform to gather disaster conditions and other information.
Kenyu Ito	NEC Platforms, Ltd.	Communication Measures after Disasters	This project standardizes Wi-Fi facilities to build a local network in anticipation of severed Internet links.
Rika Shiraki	Miyagi University	Urban Development Resilient to Flood Damage	This project provides hazard maps and other information to cultivate disaster prevention awareness in the Furukawa District of Osaki City, Miyagi Prefecture.
Hiroto Tsuchiya	Shizuoka University	Satellite Meetings	This project holds efficient meetings to secure young assembly members. Satellite meetings also help operations during disasters.
Honoka Amanai	Miyagi University	Evacuation Consultation Service	This project inspects evacuation sites during normal times to expand shelters where people can evacuate safely over the long term.
Kanae Ono	Miyagi University	Panoramic Fundraising	This system facilitates small, simple donations through crowdfunding.
Prem Tamil	Tohoku University	Smart Farm Share	This system provides a farming experience to urbanites. It also introduces robots to make agricultural work more efficient.
Yusaku Hayashi	Otaru University of Commerce	Work Recovery: Rescuing the Farming Industry in Hokkaido	This project provides agricultural consulting during normalcy but deploys paid volunteers during disasters.
Masahide Kishikami	COMSYS JOHO SYSTEM Corporation	Making Inspections of Communication Facilities Easy	This project simplifies the inspections of communication facilities using drones to prevent the loss of communications during disasters.

Planning Sheet Sample



Evaluation Sheet Sample



Planning Sheet

Columns are provided for participants to conceptualize their enterprise visions on their own, describe problems and issues in society, specify content of their solutions, etc., with the social and economic values being entered on left and right side, respectively.

Feedback Sheet

A set-up has been structured to allow participants, after presentations, to evaluate and score the clarity, explicitness and other aspects of own advocated items, with instructors being enabled to offer their feedback about these presentations.

Toward the Next Fiscal Year

The entrepreneurs who are needed all over the world are most likely those who can act immediately to solve complex social problems likely to emerge in the future. From the standpoint of Sustainable Development Goals (SDGs), the people needed are those who have a bird's-eye view of the ripple effects from a project, establish social and economic values in tandem, and solve specific problems. The "Educational Program to Drive Construction of a Resilient Society by Inculcating the Entrepreneurial Spirit" takes on the challenge of developing such human resources on themes of disaster prevention and mitigation.

This fiscal year saw all of the curriculum being held online due to the impact of the novel coronavirus pandemic. Over roughly one month, the program faced greater hurdles for both students and staff than the previous class, while considering disaster response under the new limitations of this infectious disease. Unlike the previous fiscal year however, some students have moved their project and business proposals into the implementation phase after completing this program. With involvement by universities alone, there are limitations on further accelerating this trend toward implementation, which makes cooperation by numerous stakeholders such as industry and local government essential.

Tokushima University participated as a co-sponsor of the fiscal 2020 program, and I believe the alliance with Sendai BOSAI-TECH Innovation Program has taken our program to another level. In the coming fiscal year, 2021, we aim to expand internationally while collaborating with universities and institutions abroad, and promote participation among numerous universities, research institutes, local governments, corporations, NPOs and others with the hope of building an even more fulfilling system.

If you concur with the aims of this program, we would gratefully appreciate any support or cooperation you may be able to provide. We would very much like to work together to educate entrepreneurs who will drive the construction of resilient societies.

Design and Management Faculty of Entrepreneurship Program for Leading a Resilient Society

Main sponsorship / Co-sponsorship / Support / Cooperation

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Implementation System

EARTH on EDGE Consortium

Tohoku University (Main Body) EDGE-NEXT Operations Office

Hokkaido University

Otaru University of Commerce Major in Entrepreneurship, Graduate School of Commerce

Miyagi University School of Project Design

Kyoto University Office of Society Academia Collaboration for Innovation Endowed Research Chair Innovation Management Science (SACI)

Kobe University V.School

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