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Collaboration among Universities for Region-wide Educational Ecosystem -The Practice of the Evidence-based Approach Project in Southeast Asia and Japan-

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A Doctoral Dissertation
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Abstract of Doctoral Dissertation of Academic Year 2020

Collaboration among Universities for Region-wide Educational Ecosystem -The Practice of the Evidence-based Approach Project in Southeast Asia and Japan-

Category: Action Research

Summary

Southeast Asian countries are closely connected in terms of geographical environment, economy, culture, and history. The region has also been sharing social issues comprised of diverse aspects, and those issues are expected to emerge in the future. At the same time, the region is not only geographically dispersed, but also presents various economic levels and multiple cultures, religions, and languages. This scenario indicated that it is necessary to foster a new generation of human resources capable of dealing with such common issues by cooperating from multiple lenses. In order to realize that, this research proposes to create an ecosystem where universities could collaborate equally, share knowledge on problem-solving of social issues, and learn from each other.

This research was born with the aim of building such an educational ecosystem, required by the initiative called EBA (Evidence-based Approach) Consortium—formed in 2012 by Keio University and other 8 universities in 6 countries in Southeast Asia. The EBA Consortium has built an educational ecosystem, building collaborative relationships among coordinators, designing learning that enables peer learning/working in diverse for addressing of social issues in the region, and field-oriented programs to share local issues and its expertise. In this dissertation, from an EBA program designer and producer perspective, the author clarifies, through the building process, the elements necessary for building an educational ecosystem to stimulate collaboration among learners, coordinators, and universities.

This dissertation describes two main research activities to investigate the impacts of the educational ecosystem initiatives for solving social issues in Southeast Asia. First, the author analyzed the internet-based educational cooperation project for human resource development, AI3 and SOI Asia Project— consisted of 28 higher education in 14 countries in Japan and Asia-, based on the findings from the literature review and related works. SOI Asia project started in 2002, and the author has been involved as a program coordinator since 2014. The results of this analysis revealed the essential elements and issues that served as the foundation for realizing the EBA educational ecosystem.

Second, as an EBA program program designer and producer, the author conducted action research in this field by designed and implemented field-oriented EBA programs for four years from 2014. These actions comprise 26 EBA fieldwork programs in 7 countries and had more than 445 participants from 9 consortium partner universities. The evaluation was conducted to clarify the transformations of the EBA community and the analysis of the elements of the educational ecosystem. It also defined the essential elements for the successful educational ecosystem from the problem-solving capacity building perspective by mixed methods, including questionnaires and interviews with EBA community members such as students, lecturers, local citizens, and other stakeholders.

Additionally, this dissertation discusses the research's contribution through the lenses of recent actions to tackle social issues related to the COVID-19 pandemic in the region, emphasizing the importance of this ecosystem. The outcomes and results from all research activities confirm the vital role and value of the educational ecosystem, clarify its core components, and propose the way of educational collaboration among universities in the region.

Keywords:

Southeast Asia and Japan, consortium design, learning community, peer learning in diversity, universities collaboration, educational ecosystem

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Chapter 1
Introduction

1.1. Emerging Issues in Global Society

“A social problem is an issue within the society that makes it difficult for people to achieve their full potential. [$\cdots$] Not only do social problems affect many people directly, but they also affect all of us indirectly”(Glicken 2010).

After the industrial revolution, we, humans combined resources, technology, and capital as a new business model and had achieved population growth and economic development. At the same time, we have been experiencing various social problems such as the depletion of the earth's resources, various pollution problems arising from technology, and the disparity between the rich and the poor that originates from the capital.

“In the contemporary situation, with scientific and technological advances; with social, economic and political changes taking place with ever increasing rapidity,” (Lengrand 1975). Science and technology have progressed significantly and speedily in the past decades. At the same time, various social issues have been arising, and globalization has increased the complexity of many of those issues. These are critical problems for the globe as a whole in this era of closer relationships of interdependence. The definition or categorization of social problems varies according to groups, organizations, or countries. Moreover, there are issues which may potentially become actual problems in the future. Thus, this dissertation adopts “social issue” instead of “social problem”.

In order to tackle such issues, individuals are demanded to understand diversity, have a sense of global mindset, be capable of seeing a situation from multiple perspectives, and think creatively for answering issues that have no simple solutions.

This study discusses how university education contributes to foster those individuals in Southeast Asia and Japan.

1.2. University Collaboration in Southeast Asia and Japan

Southeast Asian countries and Japan, the field of this dissertation, are closely connected in terms of the geographical environment, economy, culture, and history. The region has been sharing social issues comprising diverse aspects, and cooperating in different levels, such as political, economical, and educational, to deal with those issues.

From the perspective of developed countries, such as Japan, sharing issues and knowledge caused by prioritizing economic development with developing countries will contribute to addressing the emerging social issues in Southeast Asian countries, which have been making rapid progress in the economy. On the other hand, developed countries learning from developing countries will be able to contribute to a better understanding of the issues that have multiple aspects from different perspectives.

In Southeast Asian countries, where the administration was not stable until a few decades ago, universities with a long-term perspective and its knowledge have the key to better grasp the actual situation and its backgrounds. Considering these circumstances, this research proposes a closer collaboration among universities in Southeast Asia and Japan as an effective approach to create a diverse educational environment for developing their students to address social issues in the region. Sharing issues and knowledge among universities is beneficial for not only themselves but also the region.

There are several challenges to be faced. The region is geographically dispersed and presents economic disparities, political differences, socio-cultural contrasts, including religions and languages. In addition, the educational policy, scheme, or curricula in universities are incompatible among the countries. These differences turn into obstacles for collaborations among universities in the region.

This study analyzes the action research on a university collaboration project conducted for four years (2014-2017), to foster students capable of addressing social issues in the region, together with diverse members, overcoming these obstacles.

1.3. Research Object

This dissertation describes the design of an educational ecosystem that comprises universities collaborating to foster students capable of addressing social issues and its impacts in the region. The design of this educational ecosystem is defined by three main actions, as described below.

Consortium Design : to define each universities' roles to enhance the commitment of all nine partners of the EBA Consortium (seven Southeast Asian countries and Japan)

Peer-Learning Community : to build learning community to encourage peer learning among students with diverse background using online and onsite common platform

Field-oriented Programs : to develop field-oriented programs with partners for participants to explore social issues and to stimulate knowledge sharing of local expertise.

The achievement of this study objective will be analyzed by answering the following research questions:

1. What are the impacts of this ecosystem on their local and regional communities?
2. What are the required components to build a sustainable educational ecosystem for the development of human resources to address social issues?
3. In which way university consortium should take action to build the educational ecosystem?

1.4. Introducing the Fields

This study conducted action research in two main fields.

1.4.1 AI3 and SOI Asia

Asian Internet Interconnection Initiatives (AI3) and School on Internet ASIA (SOI Asia) project is a cooperative educational project among Higher Education Institutions (HEIs) in Southeast Asia and Japan. The author was involved in this project as a program coordinator from Keio University (Keio) from 2014 to 2019. AI3 project started in 1995, aimed at developing and researching digital infrastructure and technology for Southeast Asia and Japan. Based on this project, SOI Asia started in 2001 to create an internet-based educational platform for member institutions. AI3 and SOI Asia project has conducted an educational collaboration with 28 HEIs in 14 countries in Asia.(Table:1.1 · Figure:1.1)

Table 1.1 Active Members of AI3 and SOI Asia (As of 2020)

Name of HEIs	Short Name	Country
Bangladesh University of Engineering and Technology, Institute of Information and Communication Technology	BUET	Bangladesh
Tribhuvan University of Nepal, Institute of Engineering	TU	Nepal
University of Computer Studies, Mandalay	UCSM	Myanmar
University of Computer Studies, Yangon	UCSY	Myanmar
Institute of Technology of Cambodia	ITC	Cambodia
Universitas Syiah Kuala	UNSYIAH	Indonesia
University Sains Malaysia	USM	Malaysia
Institute Teknologi Bandung	ITB	Indonesia
Universitas Brawijaya	UB	Indonesia
Universitas Hasanuddin	UNHAS	Indonesia
Universitas Sam Ratulangi	UNSRAT	Indonesia
United Nations Educational, Scientific and Cultural Organization Office in Jakarta[1]	UNESCO Jakarta	Indonesia
Universidade Nacional Timor Lorosae	UNTL	Timor-Leste
Keio University	Keio	Japan
Department of Science and Technology– Advanced Science and Technology Institute	DOST-ASTI	Philippines

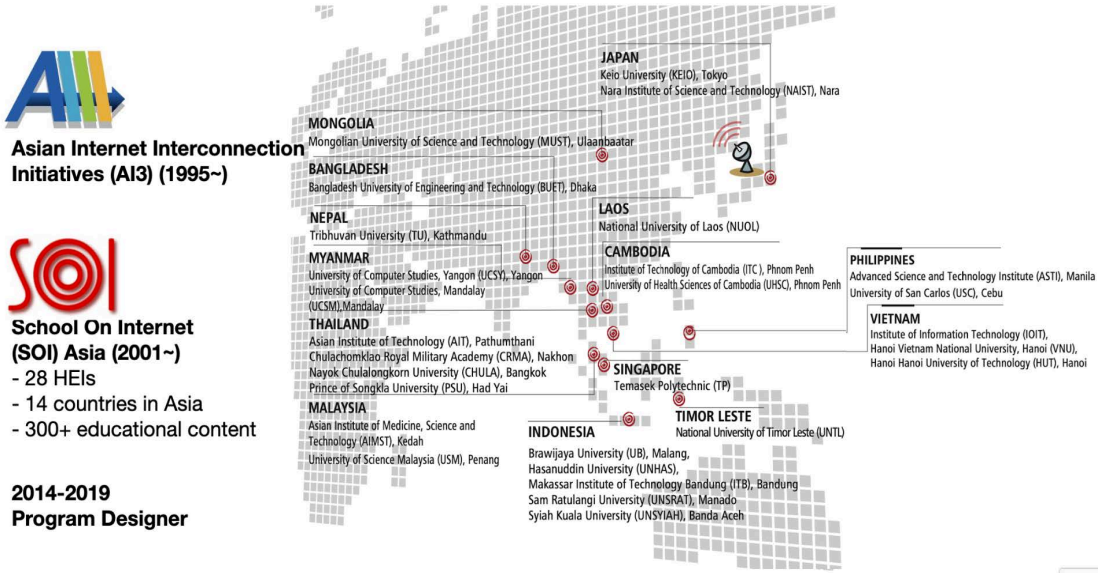

Figure 1.1 AI3 and SOI Asia Partner HEIs

1.4.2 EBA Consortium

The Evidence-Based Approach (EBA) Consortium was established in 2012 as an initiative led by Keio with eight universities in Southeast Asia. This Consortium started with the aim to develop human resources capable of identifying and solving the issues in Southeast Asia and Japan, combining evidence-based approach methodology which consists in analysis for finding and solving problems to be based on evidence. The curriculum covers specifically in the field of “Environment and Energy”, “Health and Public Health” and “Disaster Prevention and Security” providing programs. The author was involved in the project as a program designer and producer, and staff from Keio from 2014 to 2017. nine universities from seven countries in Asia are members.(Table:1.2・Figure:1.2)

The action of creating the educational ecosystem, described in this dissertation, was conducted on EBA Consortium.

1.5. Dissertation Outline

This dissertation is organized into seven chapters. Following this work introduction in chapter1, chapter2 introduces the literature review and related works explored to investigate the elements to create the educational ecosystem in EBA.

Table 1.2 Members of EBA Consortium (As of 2020)

University	Short Name	Country
Keio University	Keio	Japan
University of the Philippines Dilman	UPD	Philippines
University Sains Malaysia	USM	Malaysia
University of Malaya	UM	Malaysia
Chulalongkorn University	CHULA	Thailand
Institute Teknologi Bandung	ITB	Indonesia
Universitas Brawijaya	UB	Indonesia
Hanoi University of Science and Technology	HUST	Vietnam
University of Computer Studies, Yangon (Partnership in process)	UCSY	Myanmar

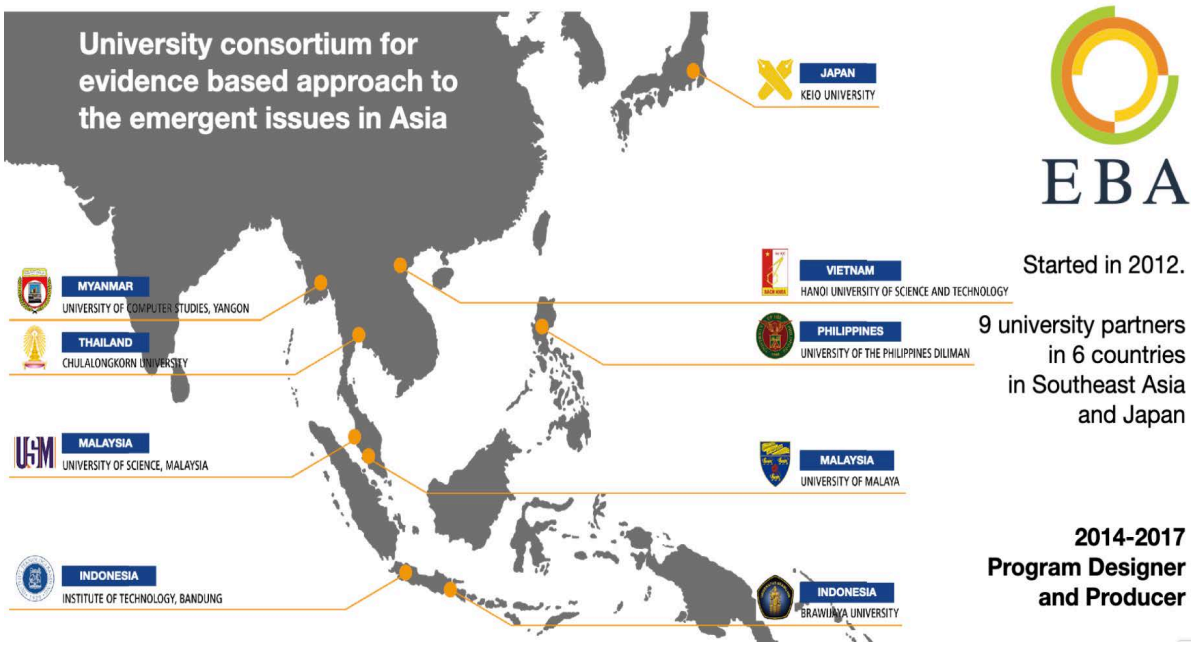

Figure 1.2 EBA Consortium Member Universities

In chapter3, the author presents the details of the action research plan, including the goal and structure, as well as the evaluation framework. Based on the findings in chapter2, chapter4 describes the investigation conducted in AI3 and SOI Asia to analyze specific approaches, their design, components, and prepare for implementation in EBA. Chapter5 summarizes the actions conducted for EBA from 2014 to 2017, which comprised overview, implementation, evaluation, and improvements of each cycle. In chapter6, the author analyzes the effectiveness of the educational ecosystem through participants' actions to address social issues in the region. Also, she shares the key elements that appeared in the creation process, answering the research questions. Lastly, chapter7 summarizes this study making recommendations for the future of collaboration among universities.

1.6. Significance of the Study

This study provides directed, in-depth insights into the practices and the perspective of a unique approach for a region-wide collaboration among universities. The contributions of this work can be categorized into three main pillars, as below.

INDIVIDUALS : evaluated and verified the impact of the EBA educational ecosystem to develop human resources capable of addressing emerging common issues.

EDUCATIONAL ECOSYSTEM : built the ecosystem and clarified the essential elements to enable equal contribution, knowledge sharing and peer learning for problem-solving of social issues.

UNIVERSITIES : successfully established EBA Consortium, clarified the role of universities, and proposed recommendations to the future of collaboration in higher education.

Notes

1 UNESCO Jakarta is a member of the project, who has been working on promoting and supporting sciences for sustainable development in HEIs in the Asia-Pacific region.

Chapter 2
Literature Review&Related Works

The guiding research is to design and create an educational ecosystem for fostering human resources which is capable of addressing social issues, and collaborating among universities in Southeast Asia and Japan. This chapter reviews the literature and previous works from four aspects. The first part reviews knowledge sharing in universities in the post-digital age to find out what is the element of the educational ecosystem of the EBA Consortium and how it should be created and developed. The second part is exploration of educational methods for facilitating learning from the universities' perspective, and a summary of components of organised learning. The third part outlines some relevant approaches aimed at addressing social issues to clarify the university's strength and approach. Then, the last part outlines the collaborative projects among universities, in order to explore how the educational content should be created.

2.1. Internet-based Learning in University

The internet has impacted the university education. In the late 1990s, by the widening of the internet and computers, e-learning was started in universities. Khan comments that, " (This) can be viewed as an innovative approach for delivering well designed, learner-centered, interactive, and facilitated learning environment to anyone, anyplace, anytime, by utilizing the attributes and resources of various digital technologies along with other forms of learning materials suited for open and distributed learning environment"(Khan 2003). It has provided students with a virtual learning space and educational resources that they can access anytime, anywhere. The internet has never been neglected in university education.

One of the significant changes in university has started at Massachusetts Institute of Technology (MIT) in 2000. “ MIT faculty considered how to use the Internet in pursuit of MIT's mission -to advance knowledge and educate students- and in 2000 proposed **Open Course Ware (OCW)** ” (MIT OCW 2020). In 2002 they published courses and course materials on MIT OCW not only for their students but everyone. After this, many universities all over the world have followed and started OCW. The European Commission (EC) defines OCW as “a free and open digital publication of high quality higher education institutions level educational materials. It is organized as courses and often includes course planning materials and evaluation tools as well as thematic content. OCW is openly licensed, accessible to anyone, anytime via the internet ” (EC 2013). This movement has enabled universities to share their knowledge production and experience with not only their own students but all. It has created a place on the internet where a learner could access learning materials and conduct independent learning.

OCW on Higher Education in Developing Countries

In 2002, UNESCO convened the forum on the impact of OCW on higher education in developing countries.“Representatives of universities from ten countries, in addition to those from MIT and other North American institutions, plus representatives from international and non-governmental organizations, met to examine the possibilities and issues of Open Courseware – a term they relabeled as **Open Educational Resources (OER)** ” (Witherspoon 2002). EC defines OER as “ any type of educational materials that are in the public domain or introduced with an open license. The nature of these open materials means that anyone can legally and freely copy, use, adapt, and re-share them ”(EC 2013). The conference concluded that the concept of this new movement could contribute to developing countries' suffering from a lack of educational resources. On the other hand, it emphasized that HEIs learners, teachers, and staff in developing countries should actively participate in the project, not become onlookers. So that respected local teachers are able to continue their research in the local context, and the role of the HEIs in the local would not be diminished, which achieves the concept of OCW, “ shared ” not “ imposed ” in developing countries.

The Rise of MOOCs

The impact of digital technology has been shifting the way of teaching and learning. In such a post-digital era, Siemens advocated a new learning theory **Connectivism**. Downes defines the central claim of this as "the knowledge is found in the connections between people with each other and that learning is the development and traversal of those connections" (Downes 2012). Siemens claims that, "(This) presents a model of learning that acknowledges the tectonic shifts in society where learning is no longer an internal, individualistic activity. How people work and function is altered when new tools are utilized. The field of education has been slow to recognize both the impact of new learning tools and the environmental changes in what it means to learn" (Siemens 2005). In 2008 Siemens and Downes designed and opened courses "Connectivism and Connective Knowledge" the first MOOC to share their theory and conduct an experiment based on connectivism. This MOOC was categorised as Connectivist MOOC (cMOOC). Through this experiment, they found that attending community or networks (physically or virtually), enables communication with other participants so it could enhance the learning effect. In 2012, well-known universities in the U.S. and worldwide started to produce MOOCs on the mega MOOC platforms, such as edX, Coursera, called eXtended MOOC(xMOOC). It mainly targets university students and well-educated adults. The platform added the digital technology features, such as video-recording, quizzes and testing, automated evaluation, and certification based on that evaluation, to the traditional university education style, which is one-way from teacher to students. Siemens points out the difference between cMOOC and xMOOC as "cMOOC focuses on knowledge creation and generation, xMOOC [$\cdots$] focuses on knowledge duplication" (Siemens 2012). With the emergence of the xMOOC, the public are able to learn various academic fields without entering a university. After the rise of these types of MOOCs, all kinds of variations of MOOCs have been developed.In 2018, more than 100 million people from all over the world had signed in the course in MOOCs(Shah 2019). Since then, the methods and types of MOOCs have been continued to evolve. It suggests that education is available for more and more learners through the internet. Moreover, it indicates that universities could create and deliver a learning experience that suits learners' needs and learning styles, so that rendering their learning

more meaningful, more prosperous, and efficient.

From the literature reviews, it has found that to create and generate effective knowledge dissemination in the post-digital era, it is important to connect learners to each other and enable them to share information within the community via the internet. In this study, for fostering student learning, member universities of EBA Consortium should create such an educational ecosystem made up of the biotope (environment) and the biocenosis (members of the Consortium). The author defines the elements of learning in this era as the internet (digital infrastructure), information to share (learning content), and individuals who learn/share (people), which are the elements of the educational ecosystem.

Barriers of Online Learning Environment in Developing Countries

However, it is said that such an online learning environment is mainly for western countries, the global north. According to King et al., because the following components have not been taken into consideration in developing countries (the global south): “1.access to the internet, 2.participant literacies, 3.online pedagogies, 4.the context of content, and 5.the flow of knowledge between North and South” (King et al. 2018). Ma and Lee's study summarised the barriers for students in Asia to encounter for adopting Open Education (MOOCs) as “usage barrier, value barrier and tradition barrier” (Ma and Chei Sian 2018).

It suggests that since the focused region of this dissertation consists of countries that are economic disparities, political differences, and socio-cultural contrasts, so while conducting the research, these elements should be taken into consideration. The author explores the existing barrier between the global north and south to create the educational ecosystem from the perspective of its elements: digital infrastructure, content, and people.

Digital Infrastructure

The internet became a necessary technology for learning in the university. However, the International Energy Agency(IEA) says in 2019 in the report, “Southeast Asia's growth in electricity demand, at an average of 6% per year, has been among the fastest in the world, but a number of power systems in the region are facing significant financial strains” (IEA 2019). Thus, some parts of Southeast Asia are

still suffering from intermittent power supply limitations, which happens to be necessary for the internet. Although the internet has been widespread in Southeast Asia, according to We Are Social, as of 2018, internet penetration in the area is 63%(Kemp 2019). Thus, yet the internet has not fully spread in there. When looking back at the situation of internet-based distance education broadcasting in the universities' classrooms in developing countries, it is said there were many difficulties. Bates states one of this as "because of the high cost of ground equipment (including security from theft or damage)" (Bates 2019). Besides, there are few people who could repair these once they stop functioning. It is assumed that this situation remains the same even if the infrastructure shift to the internet.

Content

The second is the content and its delivery methods above democratic digital infrastructure. Kings et al. points out that the situation of current open online education as "much of the research reproduces 20th century top-down development thinking in the global North" (King et al. 2018). This approach causes "People to worry that this could lead to a one-way transfer of educational materials from the rich countries to the poor countries will amount to a wave of "intellectual neo-colonialism"" (MOOC Panel 2014). For example, the content of the online courses is mainly the current trends in developed countries, or a high-quality lecture by a famous professor at top universities in the world, which reflects the western mainstream. The question is whether this is the most needed knowledge, information for learners in developing countries. It is said that the cost of MOOC production and delivery in famous its platform as "ranging between $29,000 and $244,000 per MOOC (the data dashboard was assumed by Coursera)"(Hollands and Tirthal 2014). Since the creation costs are high, it is obvious to design it mainly for learners in the developed countries, align with western academic culture, pedagogy, and language.The culture, pedagogy, or philosophy of education are different according to national traditions, however, it may not reflect local characteristics. Top-down information shared from western countries might have risks of losing the unique culture of developing countries or "to the exclusion of explorations of southern learners"(King et al. 2018). For this study, it is required to create content and delivery methods that suit members to avoid one-way from

a developed country(Keio) to members in Southeast Asia.

People

To create this platform, naturally, people are essential. Especially in the countries and universities in EBA Consortium, their backgrounds and contexts are diverse, however, they should create collaborative relationships among stakeholders to create such environment as well as content, avoid top-down linear.

2.2. Educational Methods for Facilitating Learning

In this section, the related educational methods are explored, and then it is clarified how EBA Consortium should deliver the knowledge (content) to learners.

Education and Learning

Lengrand, a member of the UNESCO Secretariat, claims that "[...]terminal formal education characteristic of traditional school and colleges is no longer adequate to provide adults with a stock of knowledge sufficient to assist them to meet the new problems facing society, to adjust to the new changes taking place, or to help them to understand and control the new forces at work in society" (UNESCO 1965). Nowadays, science and technology have changed rapidly, a variety of social issues have been arising, and globalization brings these with myriad aspects. It indicates that universities as pioneers of new techniques and methods should innovate their teaching approach to reach the current needs of the public. That being said the traditional style of one-way teaching, from teacher to student, should be reformed to consider delivering content from the learner's point of view. Thus, self-directed learning is vital. The difference between education and learning, the simple answer is that in Ito's words, "Education is what people do to you. Learning is what you do for yourself" (Ito 2014). Cliff indicates that, "Learning is behavior change governed by acquired knowledge and skills and directed by a thought process consistent with the knowledge and skills" (Roberts 2007).

Learning in University

There has been a shift from traditional teaching (teacher-centered) to produce learning (student-centered) in university. Barr and Tagg describe this paradigm shift as, " (University's) purpose is to create environments and experiences that bring students to discover and construct knowledge for themselves, to make students members of communities of learners that make discoveries and solve problems " (Barr and Tagg 1995). In this shift, the mission of the university is to produce a learning environment and creating " cooperative, collaborative, and supportive " (Barr and Tagg 1995) learning experiences for their students.

Learner's Fundamental Skills for organized learning (LFS) The traditional educational structure, such as teacher-centered classroom, memorization learning has shifted to continuing education structure, such as learner-centered, individual-based for answering a learner's new demand. In this context, a learner's self-directed motivation to keep their continuous study is essential to the success of a person's learning. In order to design learner-centered learning, the field of this study, composed of diversity in many aspects, which means that the educational experiences are different depending on each university or country, even though the learners are more than university-level students. Thus, the Consortium should understand the learners' learning experience and deliver the content suitable for them to learn more effectively. The author identifies the components of Learner's Fundamental Skills for organized learning (LFS) for this dissertation as motivation for learning, learning experience, and learning environment for taking the lecture.(Figure:2.1) The related works on each point are explored.

Learning Motivation

Firstly to clarify what is needed for learners to keep learning motivated in the post-digital era, the MOOCs learning strategy is researched.

Learner's Motivation First of all, the topics of content should be attractive for learners. Thus, it is required to understand the **learner's interest**. When it comes to learning via the internet, we, humans, basically prefer being part of a group or community, however, learning on the internet hardly allows learners

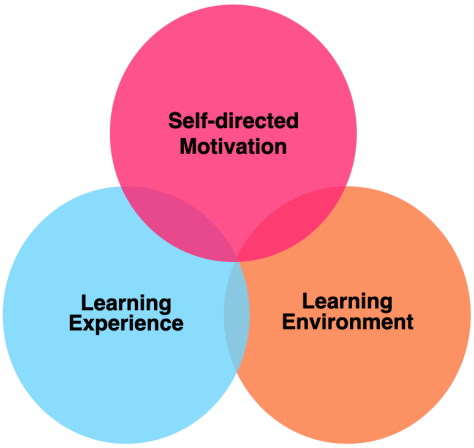

Figure 2.1 Learner's Fundamental Skills for Organized Learning (LFS)

to physically connect with others. The online learners are challenging to stay motivated due to the features of learning in isolation at their own pace.

In 2016, MOOCs communication support resources were only available in English. In Indonesia, not an English speaking country, " some learners took the initiative to form their own community. " (Firmansyah and Timmis 2016). The research reported it is required to create face-to-face learning among learners, in addition to online learning (MOOC) so that learners can make learning more meaningful in the local context.

Educator's Motivation In order to create learner-centered content, of course, content designer/creator/deliver who refers to the educators (lecturers, staff) in this dissertation, is necessary. Besides, it is required to keep their motivation for creating and conducting content is vital.

Learning Experience

The second is the skills for learning and studying. In this study, it is assumed that learners have diverse learning backgrounds. Therefore, the core basic learning skills are explored to enable universities to create/design such diverse learning experiences. Royal Roads University (RRU) defines basic learning skills as " a term that describes the tasks involved in learning, including time management, note-taking, reading effectively, study skills, and writing tests"(RRU 2020). Or,

Kono states that the learning experience is a necessary factor for learners to ensure learning in the classroom(Kono 2004). The author summarizes these and defines the following two as the factors of the learning experience for this study.:

Learning Habits Methods that the learners familiar with for learning.

Learning Strategy Methods that learners systematically apply what they have learned in a way. Oxford states, “(it can) make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations”(Oxford 1990).

The educators should understand learners' learning habit and decide the methods that suitable for learners, as well as decide the methods of the learning strategy that learners can learn with enjoyable.

Learning Environment

The third one, the learning environment in the post-digital era. “Learning environment is everything that surrounds each student” (Tanaka 2018). According to the studies of the connections between learning spaces and learning outcomes such as Blackmore et al.(Blackmore et al. 2011), it influences learners' behavior, results, and experience. In the post-digital era, the internet has created opportunities for people to learn and share information globally. As mentioned in cMOOC, learning occurs when learners connect to the story and other people and share it, however, the learning environment on the internet hardly makes learners personal connections with others. To create an environment that makes learners feel more real, human on the internet, MOOCs adopt communication systems such as Learning Management System (LMS), which enables the learner to access the learning material as well as interact with others. It is contributed to keeping the learner's motivation of online learning.

Findings: Content Creation

In summary, the paradigm shift from education to learning in the university showed that educators should facilitate learners' learning. Especially in content creation and conduct, the educators are required to align with and deliver it based on LFS: motivation, learning experience, and learning environment.

2.3. Approach Methods to Solve Social Issues

In this section, to clarify EBA Consortium's method and approach to foster the students capable of addressing social issues, the investigation is conducted of in which way groups or organizations have been tackling social issues.

There are plenty of projects which address solving social issues, and approaches or methods are different according to the targets or category of issues. Firstly, it explores the social worker, a professional who helps people facing social issues, to illuminate how they identify the issues confronting them. Also, it is explored the approach of a private company, government, international organization, NPO・NGO, and university for it, collecting essences for this dissertation.

Social Worker

The social worker is the profession concerned with helping individuals (micro), groups (mezzo), or communities (macro) who/which are suffering from issues. Persons points out,"The overriding goal of social work activity has been to enable people to overcome those conditions which hinder them from participating in the benefits of the society, and to get their needs met so they can develop and function within their environment to the best of their potential" (Parsons 1991).

According to The Open University (OU) (OU 2014), the social work theories explain the why of human behavior, and the practice model shows how to create change for the targets. Although theories keep in transition with the times, and practice models are different according to the target's culture, backgrounds, experiences, or needs, their method has the following fundamental components.:

- It is started by understanding what makes their target is facing.
- It is necessary to focus on the problem that the target has, not just its symptoms. Therefore, they are required to meet/visit the person to collect data to diagnose the person's problem with evidence-based.
- It is required to assist long term, not temporary for solving issues.

Private Company

The company's purpose is "to have a meaningful vision and then to be long-term sustainable profitable in achieving it" (Nevins 2019). For addressing social issues, companies adopt Corporate Social Responsibility (CSR) to be socially accountable as a business management strategy. United Nations Industrial Development Organization (UNIDO) describes, "CSR is generally understood as being the way through which a company achieves a balance of economic, environmental and social imperatives (Triple-Bottom-Line-Approach), while at the same time addressing the expectations of shareholders and stakeholders" (UNIDO 2020). This is based on the idea that companies will grow together with the improvement of the world. Nowadays, "employees and customers place a premium on working for and spending their money with businesses that prioritize CSR"(Skye Schooley 2020). There is cause-related marketing, as one of the CSR methods, which is a method of promoting sales of a product or service and improving the image of a brand or company, by showing consumers that the purchase of a particular product or service will contribute to society, such as environmental protection or donations. Although the goal is to increase sales and awareness of the product or service, it can be said that companies have been trying to **increase buyers'(social) self-awareness of social issues and change their perceptions**.

Government Approach

It is investigated Japan's Official development assistance (ODA) to foreign aid, as a government approach of tackling social issues. The Organisation for Economic Co-operation and Development (OECD) defined ODA as "government aid designed to promote the economic development and welfare of developing countries" (OECD 2020). According to the Ministry of Foreign Affairs of Japan (MOFA), "[$\cdots$] shortly after the end of World War II, crucial issues for Japan included achieving a rapid post-war reconstruction, restoring friendly relations with countries in Asia and around the world, and improving its position in the international community. To achieve these objectives, the ODA of Japan initiated"(MOFA 2006). At that point, the aid was financial assistance to support the recovery and development of the economies between Japan and Southeast Asian countries. ODA plays an important role in Japan's economic, export promotion

policy, or diplomatic policy by contributing to the development of the region at the same time. Japan, which highly relies on resource imports, provides financial and supporting technical assistance to developing countries through ODA, which has been making it possible for achieving development together. Moreover, they believe sharing the knowledge and experience gained through it with the world benefits the global stability and peace and Japan. From this, **creating win-win relationship** would be the key to collaborating with developing countries.

International Organization

International Organization is one that includes more than two nations to work on issues of common interest. It play an important role in helping countries works closely to tackle problems which are most likely could not be solved by a single nation, such as, climate change, public health, or terrorism. This time, one of this, UNESCO's approach is explored to see how they tackle global issues with diverse stakeholders.

UNESCO established in 1946 as a specialized agency of the UN with the purpose of " contribute to peace and security by promoting collaboration among the nations through education, science and culture in order to further universal respect for justice, for the rule of law and for the human rights and fundamental freedoms which are affirmed for the peoples of the world, without distinction of race, sex, language or religion, by the Charter of the United Nations " (UNESCO 2019). As of 2020, it has 193 members and 11 associate members. Besides, more than hundreds of organizations and private sectors, foundations, schools, and institutions are members. Together with these members, they have been coordinating international cooperation in terms of education, science, culture, and encouraging peace. Their approach is to clarify and share the mission to align with the countries, partners, and sectors of members with each other, and decide the direction in which they should be heading in its global goal. In order to develop the global connection while bridging the gap between the social, cultural, and historical differences between the partners and their current situation, they hold a general conference, once every two years, to confirm the priorities and actions to be taken with members, then decides on strategic objectives to achieve the mission.From their approach, it is necessary to **meet regularly to discuss and update the**

issue and bring the members together to grasp mission statements.

NPO · NGO

Non Profit Organizations (NPOs) are private sector organizations that have been working to solve social issues. Non Governmental Organizations (NGOs) are organizations that can continue to help independent of domestic and global trends, governments, and inter-governmental intentions. Both have been raising public awareness by sharing real situations and information that they have collected in the local areas, communities, and presenting these to the government and society, creating opportunities for people to participate in solving social issues easily. From this, it is necessary to **share the issues with the public to raise public awareness.**

University

In 1998, UNESCO's World Conference on higher education adopted the " World Declaration on Higher Education " (UNESCO 1998), defined global standards of higher education's ideal way and accessibility in the Twenty-first Century. HEIs, full of specialized and extensive knowledge essential for realizing sustainable development, have tackled issues in society by utilizing their knowledge and skills from various perspectives. The conference proclaimed higher education's mission and functions that have mainly three core functions: education, research, and community relations. The university is important in terms of knowledge production, and so that contributes to social innovation. Research-based knowledge production and its dissemination foster the new generation to conduct research. Besides, Japan International Cooperation Agency (JICA) suggests, " Recently, contributions to society have increasingly been demanded of higher education institutions. This means the higher education institutions need to have activities to ensure that accumulated knowledge is circulated directly back to society " (JICA 2004):Community Relations. Especially to see the approach of the Community Relations, a real project and curricula of the university are investigated.

MOOC for Preserving Infectious Disease London School of Hygiene & Tropical Medicine (LSHTM) is " a world-leading center for research and post-

graduate education in public and global health(LSHTM 2020)". This school has been sharing their knowledge and information through one of the mega MOOCs platforms, Future Learn, and their own website, for free.(Figure:2.2) Mainly the courses are designed for learners who have a professional background of medical, healthcare, a person who is working in health organizations, or those who are interested in the science behind public health. According to Senthilingam's

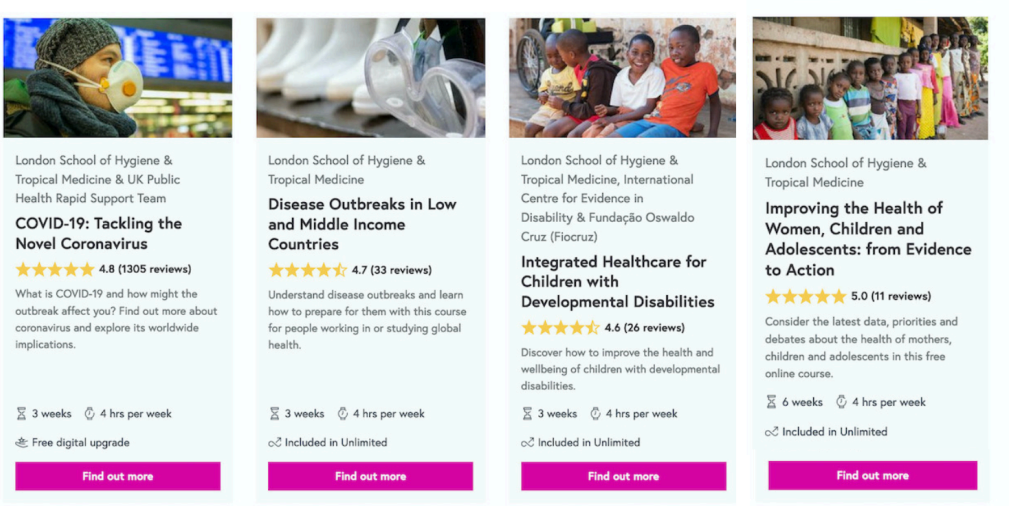

Figure 2.2 Courses of LSHTM in Future Learn (16 courses are open, as of October 2020), Retrieved from Future Learn `https://www.futurelearn.com/partners/london-school-hygiene-tropical-medicine`

report(Senthilingam 2016), which includes interviews with professional frontline workers who belong to this school, have been tackling infectious diseases, such as the Ebola virus, SARS, COVID-19 or many other health threats. From the medical professional perspective, " The first step in any outbreak is establishing strong leadership and delivery of an effective response to control the situation as quickly as possible "(Senthilingam 2016). To achieve this, " our staff and students mobilized to help investigation from all angles and seek solutions as quickly and effectively as possible "(LSHTM 2020). To counter the outbreak, the school have been sharing their latest research findings collected from their teams and partners with the local frontline workers who are facing disease outbreak, using the MOOC as a media. They have been approaching this issue, not only from the medical professional perspective but other approaches, such as a community-based approach,

anthropological approach, collaborating with other faculties in the school. Because they have learned that to improve people's situation with social issues, they must understand the language they speak, religion, background, and the environment they are living in. Then, communicate with them to solve their problems together, empowering them, rather than using a force-feeding approach.

From the project, it has found that firstly, in order to achieve the role of the university to create new knowledge through research, they collect the data and consider ways to solve social issues, through collaboration with various professionals or students in their school. Then, share the public the latest knowledge revealed by research. Thus, it indicates that the university must foster students capable of identifying current or potential social issues with evidence-based, seeking solutions with multi-disciplinary teams, and sharing with the public.

The related works continue to investigate how EBA Consortium should create the program, for fostering such human resources, specifically.

University Curricula for Addressing Social Issues **Service-Learning** is one of the educational activities that began in the U.S. in the 1960s. " This is a form of experiential education where learning occurs through a cycle of action and reflection as students work with others through a process of applying what they are learning to community problems, and at the same time, reflecting upon their experience as they seek to achieve real objectives for the community and deeper understanding for themselves " (Eyler and Giles 1999). The University of Washington (UW) suggests that, " This experience goes beyond traditional ideas of classroom learning, practicum training or off-campus volunteering.[⋯] When engaged in genuine service students participate as both learners and community members"(UW 2020). Through this practical activity, students glow social awareness or their social roles as they connect the knowledge of a discipline as they learned in classes to actual communities, and they consider the needs of society and the community. Then, they develop the necessary qualities and abilities not only as students but also as citizens self-directly. Also, " This extends learning beyond the academic term; it lays the foundation for continual personal growth throughout the student's academic experience and beyond.(UW 2020) "

The university's core mission is to research, educate, and Community Relations.

To realize these relationships with well-balanced, the university must create new knowledge by investigating issues with evidence-based and finding solutions with collaboration among various people (educators and students) in the university. Additionally, in the context of Community Relations, they should create solutions to the local diverse and complex issues, by collaborating with members of the university and local community and learning from each other. This could develop a sustainable relationship among concerned parties to maintain this circle. (Figure:2.3) Therefore, EBA Consortium should create a field-oriented program

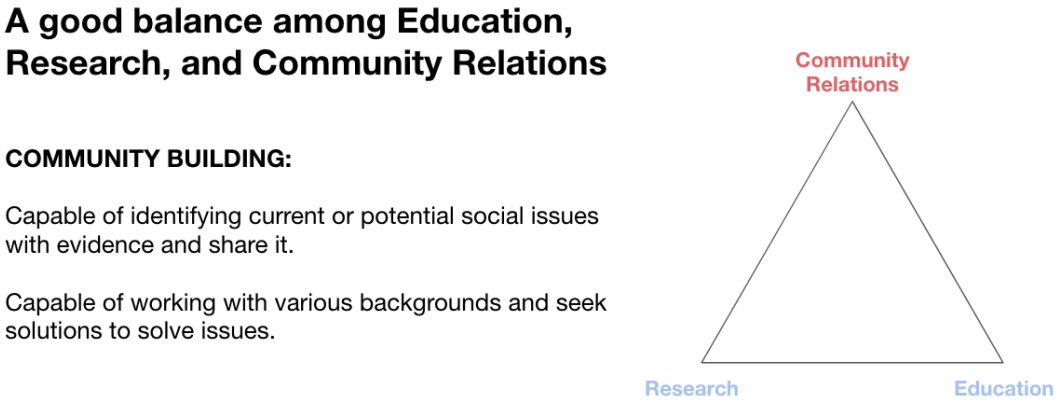

Figure 2.3 University's three functions

for students to investigate the local issues with evidence-based and allow diverse people to work together.

Findings

In summary of this section, it has found factors in content and people, the elements of the educational ecosystem.:

People: Relationships among Universities The member universities, consisting of countries that are economic disparities, political differences, and sociocultural contrasts, should help each other and build relationships that benefit them.

People: Relationships among Members The member universities, consisting of different backgrounds and educational policy incompatibilities, should create an opportunity to meet and discuss regularly and share updates on the local situations. It helps them better understand the common mission that fosters students to address issues in the region.

Content: Skills of Addressing Social Issues: EBA Skill To foster students capable of addressing social issues, firstly, it is required to collect data, information to understand the situation with evidence-based while visiting the place and meeting locals. Analyze the root of the issues rather than the symptoms. Find out the solutions collaborating with members from different backgrounds, understanding the issues from multi aspects. Then, share the outcomes with the public to raise awareness of the issues and change the perceptions. In this dissertation, this method which is 1.collect data 2.analyze data 3.tell the story to the public, refers to EBA Skill. (Figure:2.4)

Figure 2.4 EBA Skill

Content: Field-Oriented Program To achieve the university's core mission (Figure:2.3), the university should create new knowledge by investigating local issues with evidence-based and finding the solutions with collaboration among members in the university, share it with local area and community. Nowadays, social issues have become more complex and diversified, and the region has been sharing it with multi aspects. In this context, the university collaboration project in the region, EBA Consortium should share the local-based field-oriented program, fostering students who capable of understanding a situation from multiple

perspectives, and think creatively for answering issues collaborating with diverse students from the region.

2.4. Collaborative Projects among Universities

In this section, the educational collaboration projects among HEIs in different countries are investigated to clarify the requirements for this study.

COMPETEN-SEA

COMPETEN-SEA is a consortium of HEIs in Southeast Asia (Malaysia, Indonesia, and Philippines), and Europe (Netherlands, Spain, and Germany) "to design, develop, promote, and deliver MOOCs for public outreach with the goal of solving various economic and social problems" (COMPETEN-SEA 2020). The project also aims to stimulate the internationalization of local universities in Southeast Asia countries and improve the quality of education in the local areas through sharing MOOC creation and practices from the HEIs of Europe.

To understand a better picture of the actual situation, I conducted face-to-face interviews with members of the project in Brawijaya University(UB), one of the creators and deliverers of MOOC on 3rd October 2018. From the interviews, they decided to create it targeting the local community in the rural coastal areas. The project had been in collaboration with lecturers, staff, and students from the faculty of computer science and the faculty of fisheries and marine sciences in UB.

The local university, a beginner at creating and delivering MOOC to the public was in charge of selecting the target group/community and creating and delivering the content by themselves. The reasons the local university had been taking the initiative, the targeted learners were diverse in terms of locations, educational backgrounds, and digital literacy, even though the region had been facing similar issues in accessibility and quality of educational systems. Thus, the local university had researched to understand the local areas and community's real needs and built a suitable learning method for the target audience efficiently, collaborating with faculties, staff, and students inside the university.

European HEIs, who have knowledge and experience of MOOC creation and delivery to the public, mainly supported and advised the local university's ac-

tion. This approach is able to raise the local university's commitment and design/create/deliver the MOOC by themselves, which contributes to developing the local university's capacity. Also, through the project, the local university can deepen the community relationship between local areas.

In this project, as a result, the various topics of the MOOC content and targets were created. (Table:2.1) Also, through the project, European HEIs could gain knowledge for creating MOOCs for a more diverse audience.

Table 2.1 Members of EBA Consortium (As of 2019)

Country	Theme of the MOOC
Malaysia	Empowering single mothers in rural and urban area
Indonesia	Increase awareness and knowledge in a coastal rural conservation area to support income generation via eco-tourism
Philippines	Professional skills development for rural health worker

Erasmus+ Program

The Erasmus+ program "is the EU's program to support education, training, youth and sport in Europe" (EUREKA 2020). The program provides the groups or individuals of Europeans to study, train or teach, and gain experience at an institution abroad. It gives participants opportunities to develop their academic skills, as well as personal skills in terms of making adjustments when exposed to a different culture and skills to collaborate with people from different backgrounds, which is a necessary skill set in a global society. Harris-Byrne and Wikman indicate that ,"When undertaking multicultural collaboration programs and working in an international environment, students are necessitated to apply international standards and practices and consider views from outside their context" (Harris-Byrne and Wikman 2020). The project also aimed at improving the quality and strengthening of HEIs. It offers HEIs in Europe from various countries to collaborate equally and stimulate globalization. Especially, the host HEIs are required to upgrade themselves to support diverse participant's needs and requests and create a flexible learning environment, such as digitizing and globalizing their education.

Findings

Content: Students Mobility and University Capacity Building The related projects clarify that the participant's mobility to study/teach at HEI in a different country brings the host HEI to build capacity for collaborating equally with a different HEI and brings the participant to develop the ability to act on a global stage. Thus, to develop human resources as well as each member university into the leader of the region, the program should be conducted in the local area.

People: Collaboration for Creation For the content, the lead university should assist the local university in terms of creating the local-based content to respond to the local needs. In the process, to build the local university's ability, it is required to raise commitment from them, which achieves the avoiding of the one-way transfer. It is also a benefit to the lead university in opening up their knowledge to new diverse audiences.

2.5. Summary of This Chapter

At a time when learning is impacted through technology, it enables us to open not only educational resources but education itself. Learning is no longer an internal, individualistic activity. As the finding of cMOOC, by attending community or networks (physically or virtually), communicating with others, learners enhance their learning effect. That means learning occurs by stimulating learners' ability to communicate, collaborate, understand differing points of view among diverse learners, and creating new value.

Education in university has shifted from providing traditional teacher-centered to student-centered. Education has transformed from knowledge duplication to knowledge creation and generation among learners(Downes 2012) .To create such learning in EBA Consortium, fostering students for addressing issues in the region, they should create an environment where students can understand diversity, have a sense of global mindset, be capable of seeing a situation from multiple perspectives. Then, think creatively for answering issues that have no simple solutions.(peer learning with diverse members.) To create such an environment, member universities should share their knowledge with and learn from each other, designing

educational local-based field-oriented content to develop learners as global citizens. To create such a learning environment and relationships among people of the Consortium, it is required to create an educational ecosystem that consists of three elements, digital infrastructure, content, and people, and it should be designed as follows.:

Digital infrastructure

In order to make use of technology, it is vital the affordable digital infrastructure for local areas, and people who can maintain and develop.

Content

For the content, it is required to design learning as follows:

Educators should create **Learner-Centered** content for diverse learners who have different learning backgrounds and experience. For this study, the Consortium should align with and deliver the content based on LFS (motivation, learning experience, and learning environment).

To **Foster Students Capable of Addressing Social Issues(EBA Skill)**, design the learning collecting data to understand the local situation with evidence-based. Analyze the root of the issues, and find out the solutions collaborating with different backgrounds, understanding the issues from multi aspects. Then, share the outcomes with the public to raise awareness of the issues.

Field-oriented Program: Each member university is required to create a field-oriented program for sharing the local issues and its knowledge. In addition, students should visit the actual place and meet diverse other learners.

People

This dissertation focuses on learners and coordinators from member universities, who are the main actors.:

Relationships among Coordinators should collaborate equally and share their issues and their knowledge in the field-oriented programs among learners.

Relationships among Learners should be capable of learning from and collaborating with peers from diverse perspectives and backgrounds.

Elements of Educational Ecosystem

The educational ecosystem, as it is the same in a natural ecosystem, “there is no center to an ecosystem, meaning that no one element is more important than another. However, the relationships between factors are such that a change in one factor has multiple direct and indirect impacts on many of the other factors” (21CLEO Research Team 2019). In this dissertation, the main actors, elements, and the environment of the educational ecosystem should interact with each other and dynamically respond to learners' varied and evolving needs as well as the pace of change. In other words, this ecosystem should be a synergistic environment where diverse people can share knowledge, collaborate, and learn from each other.

As opposed to the natural ecosystem, Niemi states, “it needs human actors, and it is dependent upon conscious human behavior. For an educational ecosystem to be sustainable, its participants must intentionally share joint aims and take action to ensure interconnectedness, interdependence, and open and transparent mutual communication between all partners” (Niemi 2016). Thus, it is also required to focus on the main actors' behavior and transformation through this ecosystem. (Figure:2.5)

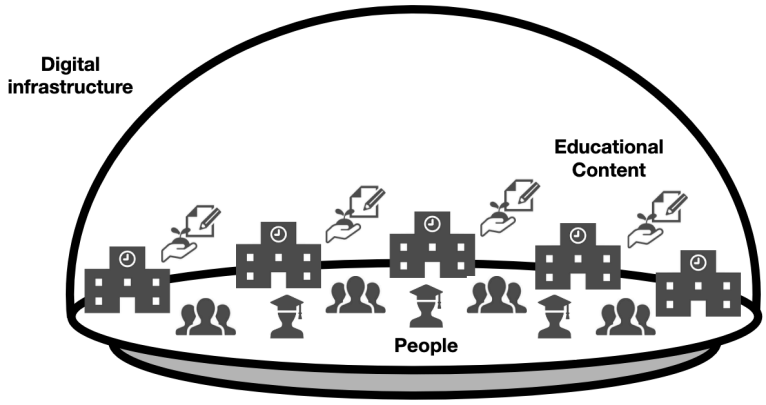

Figure 2.5 Educational Ecosystem

Chapter 3
Planning for Action Research

3.1. Research Design

This dissertation aims to summarize and analyze the process of building an educational ecosystem in the EBA Consortium to foster a new generation of human resources capable of dealing with common issues in Southeast Asia and Japan by cooperating from multiple lenses.

The EBA Consortium's goal that to build an educational ecosystem to foster human resources capable of addressing social issues and stimulate collaboration among universities in Southeast Asia and Japan. This ecosystem would allow member universities to collaborate equally, share experience and knowledge on problem-solving of social issues, and learn from each other. The findings gained through this process are summarized from several perspectives as a project's insider, a program designer and producer, also staff, and the results are shown in proposals for future actions for universities' collaboration.

This dissertation will answer the following three research questions to clarify the relevance of the created ecosystem, its internal and external impacts, its core design components, and the way to create it.:

1. What are the impacts of this ecosystem on their local and regional communities?

2. What are the required components to build a sustainable educational ecosystem for the development of human resources to address social issues?

3. In which way university consortium should take action to build the educational ecosystem?

For answering those questions, this study was divided into two phases. The first phase was an investigation of the internet-based educational cooperation project for human resource development in AI3 and SOI Asia (2014-2019). Then based on the findings and results, the second phase of action research was conducted in the EBA Consortium (2014-2017) for creating an educational ecosystem. (Figure:3.1)

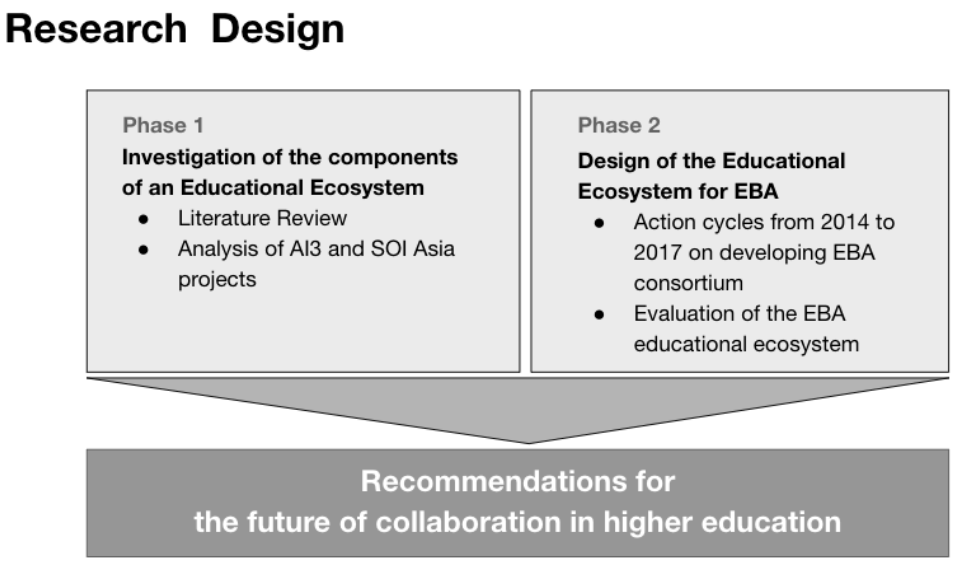

Figure 3.1 Action Plan Overview

3.2. Phase 1:Investigation (AI3 and SOI Asia)

First, the author analyzed AI3 and SOI Asia in Chapter4. The author investigated the project from the aspect of the elements of the educational ecosystem.: digital infrastructure, content, people(collaboration among partner members) and its transformation, and each actor's transformation, and the EBA Consortium perspective. Then, clarify how the ecosystem should be specifically designed in the EBA Consortium.

3.2.1 Evaluation Methods

Firstly, to understand the project's overall, literature reviews and stakeholder interviews were done for project activities since 1995 (AI3), 2001 (AI3 and SOI Asia). Also, the activities from 2014 to 2019, in which the author joined the project as program coordinator, were described. For the investigation, the qualitative method was used for two main actors, learners of the program and partner members. For partner members, questionnaires were conducted two times. The first one was carried out in August 2019 to investigate the overall of AI3 and SOI Asia and how it impacted, empowered partner members and their HEIs. Another survey was carried out in September 2020 to evaluate the initiative for AI3 and SOI Asia under the COVID-19 situation. Also, several questionnaires carried out targeted program participants to get responses concerning the program. Aside from the survey, interviews were conducted with participants to understand their experience in the project more in-depth.

3.2.2 Evaluation Topic

The evaluation was described in aspects as follows to answer the research questions.

Digital Infrastructure : It was investigated how the project built the digital infrastructure for the partner HEIs in Southeast Asia, then how it developed in the local area.

Content : From a program coordinator's perspective, it analyzed how content was created and delivered to the learners aligning with LFS (motivation, learning experience, and learning environment). Then, clarify the required components for designing content on an internet-based program.:

Motivation: There are two main topics under this category to be considered: learner's motivation and educator's motivation

From the survey results, it was analyzed how learners kept being motivated to take the lectures and how educators kept being motivated to participate in the project.

Learning Experience: There are two main topics under this category to be considered: learning habits and learning strategy

It was investigated how the project aligned with and delivered the content based on LFS to learners who have diverse backgrounds of basic skills of knowledge and learning habits.

Learning Environment: It was investigated how the project prepared to take internet-based lectures, from both perspectives of the learner and HEIs, and in between.

People: Among Partner Members : In order to build the educational ecosystem, it is required to stimulate collaboration among partner members. It was investigated how the project tackled to achieve this.

Transformation of the Elements of Educational Ecosystem : It analyzed how each element of the educational ecosystem developed/transformed through the project.

Community Transformation

It was investigated how each of the main actors of the project, learners, partner members, and partner HEIs, transformed inside of the community, through participating in the project.

The EBA Consortium Perspective

It was analyzed the project from the perspective of the creation of an educational ecosystem in the EBA Consortium.

3.3. Phase 2:Actions (EBA Consortium)

Based on the outcomes and results from phase 1, the action research was set up to create the educational ecosystem in the EBA Consortium, which will be discussed further in chapter5.

The reason for adopting the action research method is “(It) requires an understanding of the researcher's involvement in the research. Research involvement

and the change the researcher brings through action are reviewed" (Nadamitsu et al. 2014). In accordance with action research processes, through four years of action research, it was explored the design and implementation process of creating collaborative relationships among members, learning programs, and field-oriented programs, the author clarifies the components of the educational ecosystem to develop human resources addressing social issues in the region from the aspects of the elements of the educational ecosystem.: digital infrastructure, content, people(collaboration among main actors) and its transformation,and each actor's transformation.

3.3.1 Evaluation Methods

To understand the overall of the project, firstly, literature reviews and stakeholder interviews were done for project activities in 2012 and 2013 before the author joined. Then, both qualitative and quantitative methods were used in the action research process. For the qualitative method, a naturalistic observation method was implemented to closely observe the participant while attending the program. Aside from the observation, feedback from educators and coordinators was received at the end of each action cycle to discuss the problem, shared opinions regarding the program and participants' reaction toward the program. Another evaluation method was the qualitative survey with participants. The objective of this was to get responses from the participants about the program. The survey was distributed to all participants after each fieldwork finished. The additional survey answered by participants was conducted in August 2017, to understand what or how participants changed joining the program. Also, interviews were conducted with local citizens of the fields after the program to investigate how the EBA program impacted them. Additionally, the observation was implemented on what action EBA participants took during COVID-19.

3.3.2 Evaluation Topic

The evaluation was described in aspects as follows to answer the research questions.

Digital Infrastructure : It was investigated how the project utilized the digital infrastructure built by AI3 and SOI Asia.

Content : It was analyzed from the perspective of designing of the EBA learning program and EBA field-oriented program:

Learning Design: This topic showed the learning performance, points for improvement. It was analyzed how it delivered the goals and what were the difficulties in conducting the lecture of the EBA learning program (problem-solving capacity and peer learning with diverse members) through surveys and observations to participants, educators, and coordinators. Then, clarify the required components for designing the learning for the EBA program.

Program Design: This topic showed the EBA field-oriented program performance, points for improvement. It was analyzed how it delivered the goals and the difficulties in creating and conducting the program through surveys results and observations from coordinators. Then, clarify the required components for designing programs that can share knowledge on problem-solving of social issues from each member university.

People Consortium Design: It is required to stimulate collaboration among people, coordinators from member universities to build the educational ecosystem. It was investigated how the project tackled to build relationships that can collaborate equally, share knowledge and learn from each other.

Transformation of the Element of Educational Ecosystem : It was analyzed how each element of the educational ecosystem developed/ transformed through the project.

Community Transformation

It was investigated how each of the main actors of the project, participants, coordinators, educators, and member universities, transformed inside of the community, through participating in the project.

This dissertation aims to summarize and analyze, along with answering the research questions mentioned above, by examining the implementation of the creation of collaborative relationships among members, programs that enable peer learning in diverse members learning EBA Skill, and programs for problem-solving of social issues in Southeast Asia and Japan. The outcomes and results from all research activities will define the vital role and value of building this sort of educational ecosystem, and clarify its core components.

3.4. Action Plan

Based on the investigation in the literature review, and AI3 and SOI Asia, the educational ecosystem was designed by three improvements to search for the best way for the EBA Consortium. It was approached by a cycle of plan, action, observation, and reflection on making this action research. Through four years, the first cycle was done for 4 programs and 7 coordinators meetings from August 2014 to December 2014, the second was done for 9 programs and 8 coordinators meetings from June 2015 to February 2016, and the third was done for 12 programs and 9 coordinators meetings from June 2016 to March 2017. (Figure:3.2)

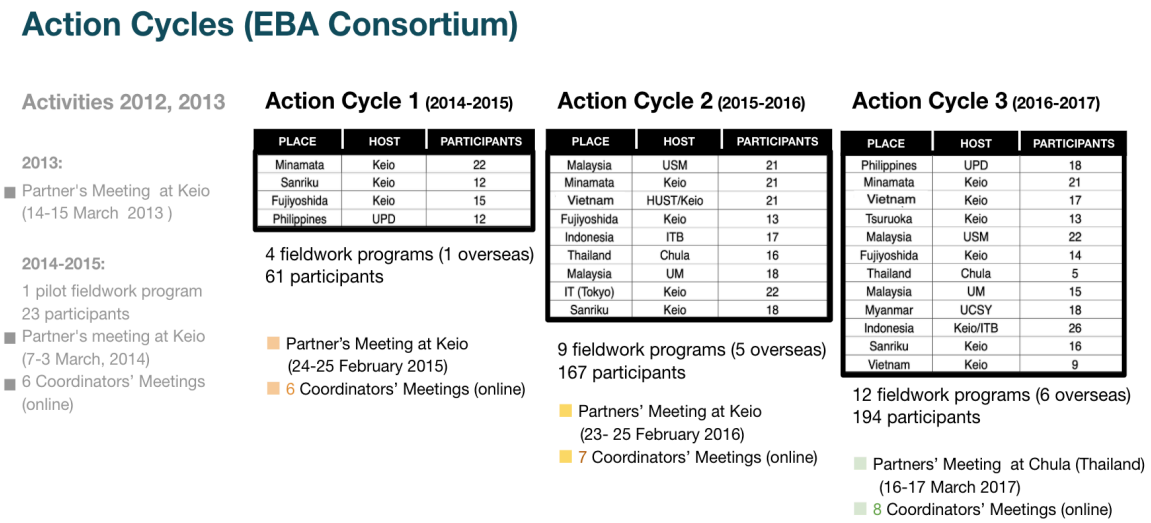

Figure 3.2 Action Cycles

Chapter 4

Phase 1: Investigation (AI3 and SOI Asia)

In this chapter, phase 1, the AI3 and SOI Asia project is described to investigate how the project has designed the elements of the educational ecosystem explored in Chapter2, specifically. Firstly, the section contains a description of its approaches since its beginning, as well as the activities from 2014 to 2019, in which the author joined this as program coordinator. The evaluations were done through the questionnaire and interview surveys answered by partner members and program participants. The analysis was done from the perspective of the elements of the educational ecosystem: digital infrastructure, content, and people(collaboration among partner members) and its transformation, and each actor's transformation, and designing of the educational ecosystem in EBA Consortium.

4.1. About the Field

AI3 and SOI Asia

The emergence of the internet has impacted education in HEIs. Since then, the research and educational communication among HEIs were started on a domestic and international scale to share knowledge and collaborate research. However, these actions were mainly conducted in or among developed countries. In Southeast Asia, the internet infrastructure was undeveloped yet. In 1995, AI3, lead by Japan, including Keio, started to construct a network environment that was a relatively wide band but affordable to the local areas in Southeast Asia, such as utilizing the satellite internet link infrastructure and technology, as well as designing UniDirectional Link Routing (UDLR). It was aimed at creating a joint

research network on internet communication technology among HEIs in Asia.

The project was supported by WIDE Project (joint research organizations)[1] and JSAT Corporation (currently, SKY Perfect JSAT Corporation)[2].

After constructing such digital infrastructure in partner HEIs, firstly, the project leader, Keio, started to educate students, lecturers, and staff from partner HEIs who were studying or studied IT fields, as operators of the digital infrastructure on their campus that the project built. At the beginning of this project, partner HEIs had similar issues that "shortage of local teaching resources is the restricted condition" (Patcharee et al. 2008). The AI3, WIDE Project, and Keio established the SOI Asia project in 2001, based on AI3 partner members and its infrastructure, to reduce such issues. The project was supported by Asia-SEED Institute[3]. Since then, SOI Asia has shared information (education) to develop human resources of partner HEIs as the operators via the internet, collaborating with AI3.

Stakeholders

Five groups are considered as the main actors who impact this project.:

Learners refer to students, staff, or operators who are from partner HEIs in Southeast Asia.

Project Leaders refer to the lecturers and staff from Keio. Since its start up, they have led the project, designed the program together with the partner members, conducted the programs, and evaluated the final results.

Partner Members are staff, operators, or lecturers from partner HEIs. Mainly they are educators in the fields of technology, engineering, or IT. Every twice a year, the AI3/SOI Asia Joint Meeting is held to discuss the project's overall operation, the concrete activity, and sharing each site IT situation on the campus. They develop internet-based learning environments on each campus as well as design the program in conjunction with the project leader. They also play a role as a facilitator who supports learners in each campus when they face problems.

Partner HEIs refer to the project's member HEIs that the partner members belong to, including universities and institutions in Asia.

Content Partners several universities and organizations from outside of the project offer lecture courses for the learners of the project.

AI3 and SOI Asia Organization

AI3 and SOI Asia consist of four committees: operators, academic, steering, and secretariat. Each partner HEI is required to assign members for each committee. The operators committee members share to update on the situation and issues related to the institution's digital infrastructure and discuss the development. Then, operate/update/develop this based on the discussion. They also conduct training sessions to improve their skills as operators. The academic committee members share to update on the situation and issues related to the institution's educational content and discussing around course planning, then, conducting it. The steering committee is responsible for the project's overall operation, and they decide the concrete activity. They hold a conference, AI3/SOI Asia Joint Meeting, twice a year. The secretariat committee supports and mediates other three committees to conduct project matters smoothly. The author has joined this group as a program coordinator in 2014. I organizes and manages the Joint Meetings with the partner members and designs and implements activities under the operators and academic committees.

AI3/SOI Asia Joint Meeting

In each meeting, committee members are assembled and shared information to clarify what actions have been taking for a half year each. Then, discuss with all members for the next step and determine overarching objectives or priority issues as well as the activity schedule. The author has organized and managed 11 meetings together with the secretariat members since 2014. (Table:4.1)

Activities

The activities of the project, in which the author has been deeply involved as a program coordinator (2014-2019), are described from the perspective of LFS.

Table 4.1 AI3/SOI Asia Joint Meetings (2014 Fall-2019 Spring)

Year	Host	City	Date
Fall 2014	Ateneo de Manila University	Manila	November 22-24
Spring 2015	UB	Bali	May 28-30
Fall 2015	Keio	Tokyo	October 16-19
Spring 2016	USM	Penang	May 26-28
Fall 2016	ITB	Bandung	September 5-7
Spring 2017	UNSRAT	Manado	May 15-17
Fall 2017	UNESCO Jakarta, UNTL	Jakarta	October 12-14
Spring 2018	DOST-ASTI	Manila,	May 22-24
Fall 2018	UNSYIAH	Banda Aceh	October 9-11
Spring 2019	UCSY	Yangon	May 12-14
Fall 2019	Keio	Tokyon	October 22-24

Motivation

As mentioned, the project started to foster IT human resources in Asia. Initially, partner HEIs had a shortage of educational resources. Therefore, the content was mainly created and delivered from Keio. In order to create learner-centered content, the topics were designed based on the results of the updates by each partner member and discussion in the joint meeting.

They mainly offered internet-based distance learning, besides this, the following actions were taken to keep learners and lecturers motivated.

Learner's Motivation -Online & On-site Workshop- : They adopted a combination of online and on-site learning to keep learners motivated. In 2014, the project held Web Architecture for SOI Asia Broadband Infrastructure (WASABI) Workshop for students and new operators from partner HEIs to develop a more suitable collaborative online learning environment for the project. Firstly, the normal SOI Asia online class was conducted while collecting data related to learners' behaviors. An on-site workshop was then conducted in Japan to improve the learning environment of the project utilizing the data collected from the online class. As a result, an application to detect learner's behavior for improving and support lecturers' teaching was designed for the project.

- Web Technology & WASABI 4 day online workshop (October 2014) 142 students registered from USM, UB, UNHAS, BUET and others (Iraq, Yemen, Thailand), 16 students submitted all assignments.
- WASABI Camp (6-13, December 2014) 12 students from an online workshop were invited to the camp in Japan.

Lecturers Motivation -Develop Human Resources On-site - They have been conducted On-site, hands-on workshops for local operators and students aiming at developing the human resources of future operators of the project in the partner HEIs. It was mainly conducted before the Joint Meeting at meeting host HEIs, the topic was designed based on the host needs.

Various Lecture Content Initially, the content was related to IT, then it had gradually widened. They have offered various courses, including those not related to the IT field, such as entrepreneurship, marine science, water resources, and collaborating with HEIs in the region who were not partners of the project. As of 2019, over 300 lecture content have been created.

Learning Experience

The learners have basic learning skills. However, as for the learning habits, in the beginning, since the majority of learners were not familiar with online learning on a regular basis and the maximum time difference among members is 3.5 hours, the project decided to deliver the class mainly in real-time. It enabled participants and lecturers to communicate during the class, avoiding one-way to learners. Also, even though participants have learned about IT, the knowledge level was diverse. They conducted additional On-site, hands-on workshops to meet each HEI's needs, collaborating with operators.

Learning Strategy: Learn + Hands-on As for the learning strategy, they have offered a place for practice, such as on-site workshops, internship programs, targeting students and partner members.

The internship program was started in 2006. Three-month training at Keio SFC (Shonan Fujisawa Campus), aimed to learn the internet network and operation

and practice in the actual field, then acquire the skills to be an operator of the project. As of 2019, 48 participants from 19 partner universities in 12 countries joined. Since 2012, when collaborating with Yamaha Cooperation[4], participants practiced their skills at the company, as well. The author has supported this as a communicator between the company and participants since 2016. As of 2019, in total, 7 participants had been joined from partner universities.

Learning Environment

The project has taken the following two steps:

1.Eliminate physical distance : Firstly the project created the actual classroom (SOI Asia room) in each member university for taking online/remote class. The classroom was designed opting for H.323, largely used for audio-visual communication and videoconferencing equipment, which could attend different types of connectivity with flexibility, allowing the inclusion of lower connectivity sites and higher ones. Therefore, these systems, including some other supporting equipment such as display, PCs, web/video camera, and audio mixer, were prepared, besides the desks and chairs.(Figure:4.1)

Figure 4.1 SOI Asia Room (ITB)(As of 2019)

2.Improve Interpersonal Distance : Since some learners could not participate in the lesson in real-time for various reasons (includes overlapped with their school class), the place that can access the lecture materials (video archive, lecture materials) and communication platform was created on the internet. The project

adopts existing LMS (Edmodo[5]) and communication (Facebook [6] closed group) to create online environments that learners can access lesson materials and other learners and educators at any time.

3. Improve Learning Environment by Themselves : Several projects were started to create a more suitable learning environment for AI3 and SOI Asia. For example, the project adopted a commercial LMS and a communication platform, however, "social learning phenomena that take advantage of SOI Asia's diversity such as student-centered interaction, discussions or mutual teaching have not been observed" (Hayashi 2015). To stimulate students' active participation and enable more interactive communication among them, they designed and implemented a MOOC style web platform for social learning in remote environments.(Figure:4.2)

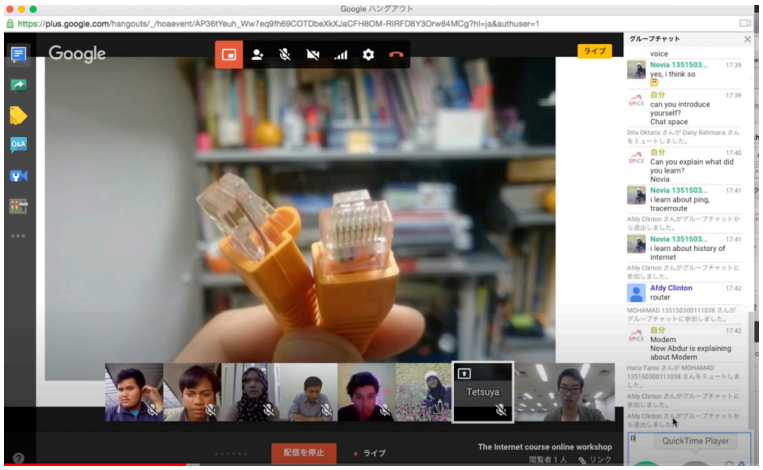

Figure 4.2 Students Social Learning on SPICE SOI Asia

People

It is investigated that what collaboration among main actors, partner members and learners have been done, during 2014 to 2019.

Partner Members' Relationships - SOI Asia Monthly Seminar The project decided to create a working group to discuss further collaboration, online study sessions have been held once a month since 2018.

Partner Members' and Students' Relationships - Research Projects-

Various fields of projects beyond IT have been conducted collaborating with them, as follows. (Table4.2)

Table 4.2 SOI Asia Joint Researches (2014-2019)

University	Project Name
Keio/UCSY/USM	AGORAsia Youth
Keio/ITB/USM/BUET	Teachers-To-Be
Keio/USM/UB/ITB/UCSY	EBA Consortium
Keio/USM/ITC/ITB	Global Workshop
Keio/UB	Spice SOI Asia
Keio/ITB	In 360
Keio/ITB/UNSIAY/UNHAS/UNSRAT	MOOC of Quantum Computing
Keio/UNESCO Jakarta	The Intergovernmental Hydrological Programme(IHP) (Master class)
USM/UNSRAT/UB/Keio	COMPETEN-SEA Project
UNSYIAH/Keio	SATREPS Proposal
USM	Internet of Things
UNHAS	SPELL-IDE Programming class
BUET/USM/UB/ASTI	The Distributed and Cloud-based Network Defense System for NREN

4.2. Evaluation

The qualitative method was used to evaluate the project activities for two main actors, learners and partner members. To evaluate the program in which the author was involved in the project as program coordinator, from 2014 to 2019, the open-ended questionnaire and interview surveys were conducted with the program participants. For the overall evaluation, the open-ended questionnaire survey targeted partner members was conducted in August 2019. (Table:4.3)

The evaluation takes place described in aspects of the elements of the educational ecosystem.: digital infrastructure, content based on LFS, and people (among partner members), as well as the transformation of its, and each actor's transformation.

Table 4.3 Evaluation Targets of AI3 and SOI Asia

	Targets	Method
1	Participants of WASABI Workshop in 2014	Open-ended questionnaire
2	Participants of Internship in 2016 and 2017	Open-ended questionnaire, Interviews
3	Partner Members, Conducted in 2019	Open-ended questionnaire

Content -Learners' Motivation-

From surveys answered by participants of the program (No.1 and 2 of Table4.3) who were students or younger operators from the partner HEIs, the learners' motivation to take the course in the project is investigated.

1. Workshop Participants This open-ended questionnaire survey was conducted in December 2014, answered by participants of the WASABI Workshop after they returned to their country. This workshop was held on 6-13 December 2014 at Keio, Japan. 11 participants (8 Malaysian, 3 Indonesian) out of 15 participants (students and young operators of the project) answered this. Firstly the comments, feedback related to the program and learner's motivation are shown, then there is an evaluation of this workshop from this perspective.

What the Participants learned?: When asked about the things that participants gain through the workshop, everyone answered the skills, knowledge of IT. It indicates the quality of the program successfully met the learners' needs. Besides this, some answered that the culture of the host country (Japan) as follows.:

- This was my first time going abroad. It was my dream to join a programming camp like this and work on the latest tools and technologies. I learned many new things and explored Japanese culture as well.
- I could learn so many things not only in programming skills, teamwork but also the very admirable Japanese culture.
- It was an amazing experience in Japan. Despite dealing with something technical, we are also exposed to Japanese culture, food, and many more.

Learning Motivation: 6 comments were mentioned that the program supported to keep their motivation in their career or study after the participation,

and the followings are some of them.:

- I could go abroad and learn many things in my study field in an advanced country. It motivated me to become a researcher.
- Through this program, I gained innovative knowledge and experiences. I will contribute to my university's improvement in science and technology.
- Learning from one of the developed countries opened my mind. It also helped me see what is needed and how it should built in Indonesia, especially in the Computer Science field.
- I experienced the first hand process of developing a modern web application/service which has many differences compared to the old technology I am used to. [$\cdots$] I am also very impressed with the instructor's mastery of the subject matter that makes the whole learning experience enjoyable. Combining these tips that I found in this, I will update my career.
- Japan is a nice place to live in with a good transport system, technological skills, and culture. I want to continue my studies and come back to Japan as a worker.

Comments or Suggestions : When asked about the program's improvement or advice, all suggested ideas related to the workshop content, or schedule. There were two comments that participants would like to work with students from the host university (Keio).:

- I was not exposed to Japan's university lifestyle in terms of educational practice. [$\cdots$] I wish I had a little bit of exchange with Japanese students.
- It would be better if there's also a Japanese student participating in this program so that we can understand more about Japan.

2. Internship Participants The targets of the questioner surveys were participants of the SOI Asia Internship program in 2016 and 2017. 7 Participants (2016: 4 students (2 from each UCSY and UB), 2017: 3 students(1 from each USM, ITB, UNTL)) answered after the participation. Aside from this, Face-to-face interviews

with participants were conducted two times in 2017 targeted participants of 2016. They had already graduated from university and started a new career. The purpose of these was to collect in-depth information beyond surface-level answers and a follow-up survey on how the program impacted the participants.

What the Participants learned?: When asked about "What did you learn from this internship?", all answered the skills and knowledge related to the IT. Besides this, there were comments that they learned different culture, habits, or, communication skills to exchange their opinions, follows are some comments.:

- I gained and learned a lot from this program, making one step further to study the future internet and improve my hands-on skills. I had a chance to discuss with other intern students as well.

- I could meet people from different countries and cultures. Learning how to communicate with people from different cultural backgrounds, exchanging and understanding the customs of each one, by hanging out and working together, I have built a friendship. That is the best priceless thing.

- Because I got a lot of things in this program, not only the skill (soft-skills and hard-skills) that certainly will be useful for my study and work, but I think the best is that I can learn about Japanese culture that can improve myself, such as attitude and habit from Japanese culture.

Learning Motivation: When asked about "How would you incorporate this experience into your future?", because all of them were students who had been supporting the IT part of their university and AI3 and SOI Asia, they answered that they would contribute to their school. Besides, some said that it impacted their future career. :

- I still have time to contribute and improve the research at my university, utilizing what I learned in the program. If I work in a company or build my own company, I want to create a company culture based on my experience working at Yamaha.

- I have been supporting the IT system, such as AI3 and SOI Asia, and school information systems at my campus. I want to develop these systems in my university, utilizing the skills and ideas which I learned from the internship.

- This internship program gave me opportunities in the real world to try my skills that I have learned in school. It motivated me what I should do (what I need to study, and my career) after this.
- I found the big goal that I would like to achieve.

For the interviews, when asked about the motivation for joining the program. All had never been abroad, and all participants had never been to Japan. A participant said, " Because I had never been abroad, I was so much interested in attending this, honestly, moreover, it was held in Japan." Another said,"I thought it would be a benefit for my research career. Actually, things I got through the internship reflected in my dissertation as well, which encouraged my career." (At the moment, she got a career as a lecturer at University, Myanmar.)

Comments or Suggestions : When asked about the suggestion of the program, a participant said, " After participation, I did not have many opportunities to chat and talk with them. I want to keep in touch with SOI Asia members, not only the participants, but future participants, or staff, lecturers. "

Findings from Learners' Motivation The surveys answered by participants showed that learners acquired new knowledge or improved their skills (technology updates, teaching methods), and experience the host country's culture.

For the learner's motivation, visiting a different country, university and experiencing a new environment enabled them to continue to keep motivated for their career and study. Also, for the content, exposing participants to the actual environment enabled them to practice their skills that they had learned in school, which helped to keep motivated their learning after participation.

For the content of the face-to-face lecture, knowing the host country's culture and interacting/studying together with students from the host university would help the participants enjoy learning in a more fun and meaningful way. It developed their global mindset, such as understanding the diverse colleagues' or working environments' culture, habits, and the knowledge and communication skills to share their own culture and habits.

For the next step, it would be necessary to create a communication platform for alumni to keep motivated to participate in the project.

Elements of Educational Ecosystem

From the survey answered by partner members (No.3 of the Table4.3), the project overall and the elements of the educational ecosystem are investigated.

3. Partner Members This survey was conducted in August 2019, celebrating the 50th AI3/SOI Asia Joint Meeting (held in October 2019). 14 partner HEIs answered this (Table4.4). This questionnaire is in Appendix A.

Table 4.4 The Questionnaire Respondents from Partner Members(2019)

Country	Name of HEIs
Bangladesh	BUET
Nepal	TU
Myanmar	UCSM, UCSY
Cambodia	ITC
Malaysia	USM
Indonesia	UNSYIAH, ITB, UB, UNSRAT, UNHAS, UNESCO Jakarta
Philippines	DOST-ASTI
Timor-Leste	UNTL
Japan	Keio

Project Evaluation Firstly, the programs were evaluated. When asked, “How do you evaluate the experience in this project, such as network development experience, operators workshop, and internships, shared courses on AI3/SOI Asia community?”, they answered it contributed to developing IT human resources, as well as the development of campus IT infrastructure, including e-learning system. One of the most frequently used verbs obtained by word-frequency analysis showed “develop” (10 times). The followings are some answers.:

- UNSRAT: The time we joined the project was also when we developed our campus network for the first time, including connectivity to the internet. Many of our early operators were trained first as the project operators. [$\cdots$], it is very beneficial for us not only in developing its network but also to develop better ICT academic support until today.

- UNSYIAH: Our experience in the project is helped to develop our core human resources and current know-how in network management and maintenance. [$\cdots$], our core network teams are alumni of the project. The project produced several alumni that are now contributing at the regional and national level.

- UB: Experience gained in the program develop us to create an e-learning platform for our university and later collaborate in nation-wide activities.

- BUET: 4 technical staff are alumni of the project who help us manage our network efficiently and effectively. It helped the IICT personnel to establish a new network structure and maintain the day-to-day IT support to the BUET.[$\cdots$] participating in the project has inspired us to establish and develop our own ICT infrastructure within the university and hosting services outside of the university.

- TU: It has helped a lot to develop the ICT in our university. (But most of the operators who joined the programs have left our campus.)

Besides this, the most frequently used nouns obtained by word-frequency analysis showed "network" (18 times). It can break down as follows: campus network (7 times), computer network (3 times), human network (3 times), research network (3 times), network backbone (1 time), and project network (1 time). It showed the project contributed to developing the campus network as well as the human network.

Digital Infrastructure

The partner HEIs involved in the project activity have been developing the digital infrastructure suitable for their local characteristics since they joined the project. It indicates project could build an affordable digital infrastructure as well as develop human resources capable of maintaining/developing at the local sites. :

- UCSY: The project supported our campus network infrastructure development(equipment, technology, knowledge).

- BUET: Considering the internet's scope and accessibility at BUET back before joining the project (which was actually limited to emails and web browsing), it has greatly influenced BUET in developing the current ICT infrastructure, such as e-learning, online learning.

- ITC: The things (equipment, know-how) provided by the project are the best practice for us to implement our network infrastructure. Now, we can deploy our own IP and AS to connect the world.

As of 2019, as the following comments showed, two members can not be utilized it, because of natural disasters or political issues, the operator committee has created a working team to improve this.:

- TU: Because of the earthquakes, the main two buildings were damaged, and we cannot connect the project from campus.

- UNTL: The Government decided to liberalize the telecommunications sector. However, internet speed and cost is still a big concern.

- Keio: We have a plan to update the infrastructure based on the project decision.

The infrastructure and the know-how and human resources have been shared not only with the insides of the partner HEIs, such as e-learning or online learning but the local areas.:

- UB: We have shared the skills and expertise gained from the project with the local schools and the local community.

- USM: The experience with the project has been utilized to improve internet connection in the local community.

- ITB: The combination model using the satellite network and IT that we have done has been broad in Indonesia as a whole.

Moreover, UNESCO Jakarta said, " Without this project and partnership, and their broadcasting capacity, online courses or any other activities from UNESCO

Jakarta wouldn't have been possible." As of 2019, there are several content partners from outside of the project, which indicates the infrastructure utilized not only for the members but for other HEIs to share their knowledge.

Besides, the human resources developed in the project, capable of maintaining and developing the digital infrastructure, became indispensable assets. "The network and members are valuable resource persons for the UNESCO programme in ICT and online education. The members are also very valuable experts in the upcoming open science UNESCO activity" (UNESCO Jakarta).

Content

The program content was evaluated from the educators' perspective. The content creation and delivery were mainly done by Keio, and collaborating with partner members for understanding the LFS.

Educator's Motivation : It is investigated the factors that the educators' (partner members) kept motivated to work with the project.

The comments showed that fostering their students as their collaborators, who can contribute to the development in the IT environment on the campus or research, and contributing to developing the capacity of partner members and its HEI, could keep educators' motivated for working with the project.:

- UNSRAT: The programs are very advantageous to support the learning activities in our university.
- UB: The programs help our team and our institution's increased capacity in mastering new technology, especially in the IT fields, to cater to the need to move forward.
- UNHAS: The programs help us to improve the student's knowledge as well as campus development.
- UCSY: The programs related to ICT directly affect the human resources in UCSY, and we could upgrade the campus IT facility.
- Keio: Through the project, we also gain content creation/delivery skills targeting Southeast Asia learners.

Learning Experience :

Learning Habits: The project adopted the real-time lecture style , which was suitable for learners, based on partner member's opinions. The project delivered the content to the SOI Asia room using H.323, collaborating with partner members, to support communication among participants and lecturers during the class, while avoiding one-way from lecturers to learners.

Basic Knowledge of IT: Learners were from a different university/country, who had different basic knowledge of IT. Besides, content that they would like to learn were diverse. To meet their needs, additional face-to-face local workshops were conducted collaborating with partner members. UCSY said, " The workshop on the campus shared the actual way of operations of how to set up the e-learning systems on campus. " It showed that it was beneficial for partner universities.

Learning Strategy: The project has offered a place for practice after learning. Partner members evaluated it as an effective way for their students, as follows.:

- UCSY: The internship program gained knowledge of application areas and contributed to participant's research.
- ITB: The internship program provided the perspectives for working together among the AI3-SOI members with specific topics.
- UNSYIAH: Exposure to and interactions with non-Indonesian students significantly contributed to our own student's capacity and experience.

Learning Environment After building the digital infrastructure in partner HEIs, the project created a SOI Asia room for each one (especially universities) to take the class then equipment for taking the class was prepared. UNHAS said, " This was utilized not only for SOI Asia but for other project's online/remote learning. " Or, UB said, " Currently, the room is used for creating the digital learning content. "

For the online learning environment, there were suggestions that the project should create its own learning platform rather than the commercial one.:

- UB: To make learning at SOI Asia more meaningful, fun, students created an online communication platform that fit the project's characteristics. However, the development was stopped after the participant's graduation.

- Keio: The project adopted commercial SNS platforms to share the materials and communications between learners and educators. However, since it was not utilized actively, we need to find solutions for this.
- ITB: The project should develop the LMS for the courses.

People(Collaboration among Partner Members)

The relationships among partner members were evaluated from the partner members' perspective. From the survey, the collaboration among partner members was done by various aspects, which could roughly be divided into four different aspects as follows.:

Educational collaboration : We establish the relationships with international partners for programs and student exchange, understanding education and technology needs in the Asian region. (USM)

Expand the circle of the educational collaboration :In 2004, UNSYIAH was affected by serious damage to their education system (human resources, the collapse of school) by the tsunami. Under the situation, the project members collaborated and sent lectures to them, utilizing the digital infrastructure. (In 2006, UNSYIAH became a member of the project.) (Keio)

Research collaboration : The project provides us an opportunity to enable us to share our knowledge and achievements within the community. (BUET)

Region collaboration : The project inspired the initiatives to build REN (Research and Education Network) in Indonesia. (ITB)

Since various programs beyond IT were conducted among partner members (Table4.2) showed the relationships among partner members became a collaborative educational relationship.“The collaborations among partner members became the development of education in the project ” (UCSY). Some comments also showed that the collaboration among the partner members was done beyond the project.:

- UNSRAT: We can see the project not only as a platform for collaboration and a scientific community among itself but also as a place to cultivate

ideas and resources globally. In 2017 we got involved in the COMPETENSEA Project funded by the European Commission. The initiation of our involvement was born firstly among its community. This is one example of the role of this project in fostering more specific collaboration among its members and to broaden its network even beyond its circle.

- BUET: The project provides not only an opportunity for new research collaboration but also a scope of follow up on innovation outcomes. One specific example of this is that BUET has secured project funding. The project has created a scope of research collaboration between 4 institutions from AI3/SOI Asia, with Germany and France.

The activities of the project were contributed not only to the partner member's academic career but partner HEIs. UNHAS said,"We have benefited from this collaboration, such as sharing knowledge and best practices as well as research publications. Then, UNHAS encourages faculty members to collaborate with university partners in Asia" Especially in members of AI3 and SOI Asia, the collaboration between universities had widened to collaborate with countries/organizations beyond its, and each university could find overseas collaborators or secure funding.

Collaboration inside the Campus The project also brought collaboration inside their campus, such as with educators and students.:

Collaboration with educators : Interaction with the project also enabled to enhance internal collaboration in the university.(UCSM)

Collaboration with students : The culture of research has increased significantly as more and more lecturers, and students are involved in several international research collaborations.(UB)

4.3. Results and Analysis

The project successfully contributed to developing IT human resources in the partner HEIs and digital infrastructure on campus and the local area. The analysis and findings are discussed from the perspective of the elements of the educational

ecosystem.: digital infrastructure, content, and people (among partner members) and its transformation, and each actor's transformation, and designing of the educational ecosystem in EBA Consortium.

4.3.1 Elements of Educational Ecosystem

Digital Infrastructure The project was able to prepare, design, and build an affordable digital infrastructure for partner HEIs. After the building, they started to educate students, lecturers and staff of partner HEIs to train IT human resources capable of maintaining and developing it locally. Then, the developed human resources have been updating/upgrading this to fit the local features. At present, the digital infrastructure as well as its knowledge and human resources have been shared not only inside the campus but also in the local community to improve the internet connection. Fostering human resources who capable of maintaining/developing is equally essential as digital infrastructure. These precious assets should be utilized not only among the members but also with other HEIs to share their knowledge, which brings learning in the project enriched.

Content

The learner-centered content was created and delivered mainly from Keio to partner HEIs. In order to align with LFS for the participants and deliver the content, it is required to collaborate with partner members to understand their real needs and situation. The factors of LFS are followings.:

Motivation It is required to keep both learners and educators motivated. The followings are the factors.:

Learner's Motivation: Besides the online lectures, create opportunities for a face-to-face program that participants can meet each other, try their skills in the actual field, and know the host country's culture to keep them motivated.

Educator's Motivation: Fostering their students as their future collaborators in research and campus development keeps educators motivated.

Learning Experience In order to understand the learners' learning experience, especially in learning habits and basic knowledge, educators should col-

laborate with local partner members. If necessary, additional lectures should be conducted for each site, collaborating with them. As for the **Learning Strategy**, the project offers a place for practice, such as workshops, internships for participants. Through this, participants can practice their skills and knowledge learned in the class in the real environment, enabling participants to find their challenges and motivate them to achieve this, even after participation.

Learning Environment The project created the SOI Asia room in each university to be able to take the lectures remotely/online. Currently, the room is also utilized other projects' remote/online classes, as well as the creation of digital lecture content. As for the online learning environment, the project adopted LMS and communication platforms by the commercial SNS. To create a more suitable environment, some projects were started by students, however, it was stopped after their graduation. The project (including alumni) will be required to re-start to create these platforms.

Content: Summary Creating a **Face-to-face program in Overseas** can let participants keep their learning motivation during and after the participation. By trying their skills and knowledge that they learned at school in the real environment, together with new learning peers and colleagues, the participant can find their challenges, which also affect their motivation for learning after the participation. Especially the overseas program will give participants' motivation before participation. For its content, it should be designed that participants can gain not only the skill/knowledge of the subjects but the culture of the host country, university, or company. In adition, including participants from the students of the host university could achieve participants' learning more fun and meaningful. For the online learning environment, the project are required to create their own platform.

People (Partner Members)

The project was able to build collaborative relationships among partner members to develop IT human resources. At present, the field of collaboration is expanded beyond IT. Moreover, the collaboration was done beyond the project.

To build such collaborative relationships among partner members, firstly, the project develops human resources capable of maintaining/developing the digital infrastructure on-site while sharing the value. The developed human resources support the project using their skill and knowledge as partner members while raising their commitment to the project. Creating opportunities to meet among partner members (such as workshops, joint meetings) stimulated a research mindset, leading to research collaboration. Through participating in the project, they also understand the value of the project, have acted self-directed collaboration. However, some partner HEIs have become unable to communicate with each other due to the partner members leaving there. It is necessary to consider a way to build sustainable relationships with HEIs. It is also required to build collaborative relationships that include not only partner members but their students.

4.3.2 Transformation of Elements of Educational Ecosystem

Digital Infrastructure The digital infrastructure built by the project, most of active partner HEIs can utilize it freely on the campus. It is used not only by the project members but also by the whole of member universities. Also, it has been used not only within partner HEIs but other HEIs. In other words, this infrastructure has been transformed into a platform for HEIs in the region can share their knowledge. The developed human resources have updated/upgraded it to suit the characteristics of each area. Currently, the digital infrastructure and human resources have been shared in the local areas, as well.

Content Initially, the content was related to IT. It has been expanded a variety of fields, based on partner members' needs, collaborating with non-partner HEIs in the region.

People (Partner Members) The partner members became IT human resources who capable of supporting/customizing/developing the digital infrastructure on campus, local areas, and domestic, also lead the REN of each country. By participating in the project, they found the importance (value) of the project, the relationships among them have been transformed into peers who can learn and

practice together. They have played various roles as learners, lecturers, or operators to support the project's activities while raising the commitment. Therefore, the relationships among them have been transformed into collaborators in education, research not only for the AI3/SOI Asia but other any activities. It indicates the project has created a human resource network of HEIs in Asia.

4.3.3 Community Transformation

Through this project, the roles of the main actors have changed as follows.:

Learners They become research collaborators with partner members.

Partner Members They become human resources capable of tackling the IT issues in not only the campus but also local areas, country, and region, together with members.

Partner HEIs They become the HEIs that are able to train IT human resources who can contribute to the campus and lead in the local areas, countries, and region. Members' active involvement in the project has brought them to the global level. This process enabled them to broaden their network to global.

Program Designer (Keio) They who have led the program, became a university that have skills and experience to create and deliver content for learners in universities in Southeast Asia.

4.3.4 EBA Consortium Perspective

It analyzes from the perspective of the EBA field-oriented program that fosters students for addressing social issues in the region while learning and collaborating with peers from diverse students.(Figure:4.3) The project achieved the development of affordable “digital infrastructure” and human resources capable of maintaining and developing it. Thus, EBA Consortium should utilize these.

From the aspect of “people”, the project succeeded in building collaborative relationships among partner members. However, some HEIs have not been actively involved in the project after the partner members left the institution. Thus, it is required to create sustainable relationships among them.

Regarding the aspect of “content”, the project achieved to create and delivered various content based on LFS, collaborating with partner members. For creating the content fostering students for addressing social issues, as found in Chapter2, it is required to design learning of EBA Skill, based on the findings of LFS. The content of this project were mainly created and delivered by Keio. However, as also found in Chapter2, for sharing the local issues and its knowledge, each member university should create and deliver the field-oriented program, enabling participants to learn from each other.The lead university is required to assist the local universities in creating such programs while raising their commitment.

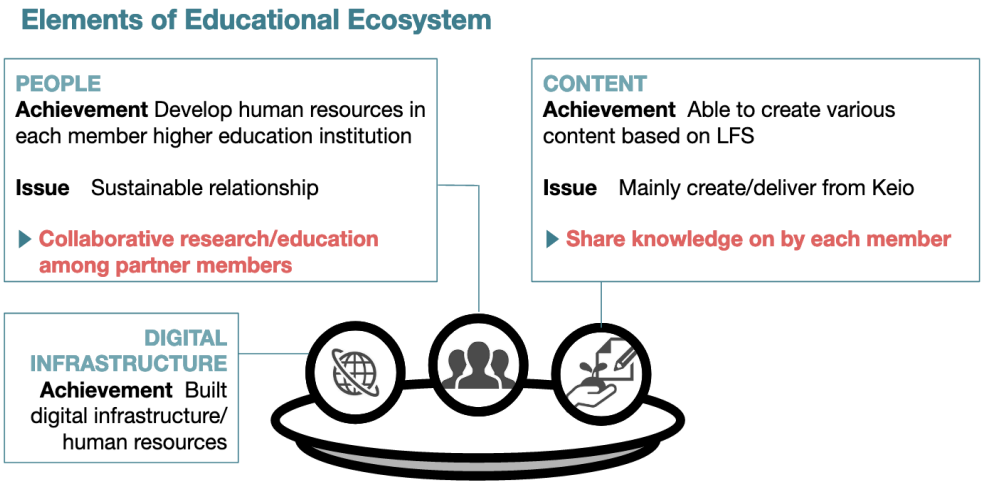

Figure 4.3 Analysis from EBA Consortium Perspective

Notes

1 WIDE Project :https://www.wide.ad.jp/

2 SKY Perfect JSAT Corporation :https://www.jsat.net/en/index.html

3 Registered Non- Profit Organization Asia SEED :https://www.asiaseed.org/

4 Yamaha Cooperation :https://www.yamaha.com/

5 Edmodo :https://new.edmodo.com/

6 Facebook :https://www.facebook.com/

Chapter 5

Phase 2: Actions (EBA Consortium)

In this chapter, phase 2, the creation of an educational ecosystem in the EBA Consortium is described. These practices were designed and structured for participants with diverse backgrounds in Southeast Asian countries and Japan to learn from each other and create human resources capable of addressing social issues. The section contains an investigation of EBA Consortium in 2012 and 2013, as well as activities from 2014 to 2017, in which the author joined this as a program designer and producer, also staff. The evaluations were carried on through the observation, questionnaires and interviews with participants and feedback from coordinators and educators.

5.1. About the Field

EBA Consortium aims to “develop human resources capable of identifying the social issues using the Evidence-Based Approach, in combination with big-data” (EBA Consortium 2020). The members consists of some partner universities of AI3 and SOI Asia and others in the region.(Table:1.2) The curriculum covers “Environment and Energy”, “Health and Public Health”, and “Disaster Prevention and Security” as its three major areas of concern. It has offered lectures, internship, and fieldwork activities. The **EBA Fieldwork** is the 10 days field-oriented program, which provides various experiences in the fields, where participants from member universities gather to visit the real place to find the issues through collecting data by themselves, analyze it, discuss the possible solutions by creating collaborations among group members, and share it with the public.

The author has been involved design and implementation of 25 EBA Fieldwork programs and organized coordinators' meetings together with other members. The Consortium was supported by the Re-inventing Japan Project of the Ministry of Education, Culture, Sports, Science and Technology of Japan.

Stakeholders

Five groups are considered as the main actors who impact this project.:

Participants are students from member universities.

Coordinators are faculty members selected from each member university. They share the program information, including the call for participation within their university, and selects participants. Also, they arrange the programs together with program coordinators. At every end of the academic year, the Partners' meeting is held face-to-face to review the past year's activities and discuss the next year's plans. Also, Coordinators' meetings are held online to share updates among them and program coordinators.

Program Coordinators Coordinators refer to the lecturers and staff from Keio. They take part in designing the program together with educators from the member university and implement the programs as well as evaluate the final results. The author has been involved in this project as a program designer and producer, and staff from 2014 to 2017.

Educators refer to lecturers, staff who design the field-oriented program in conjunction with the program coordinator. During the program, they teach participants, also observe the student behavior for the program evaluation.

Member Universities refer to 9 EBA Consortium member universities.They support conducting activities of the EBA program.(Table:1.2)

5.1.1 Legacies from Phase 1

Before setting the action goal to create an educational ecosystem in EBA Consortium that fosters participants capable of dealing with common issues by coop-

erating from multiple lenses, the summary of lessons learned through phase1 is described from the perspective of its elements.:(Figure:4.3)

Digital Infrastructure AI3 and SOI Asia successfully built digital infrastructure and human resources capable of handling various problems in IT. EBA Consortium will utilize it's digital infrastructure, human resources.

People AI3 and SOI Asia built collaborative relationships among partner members. To build such relationships, it is required to create opportunities that enable partner members to meet regularly and share the update with each other so that they come to understand the value of the project and are involved in activities planned in the programs while raising their commitment to the project. In the Consortium, it is required to consider the action to create relationships among coordinators utilizing this approach. Also, it is required to consider taking action to maintain the relationships sustainably.

Content Learning Design: AI3 and SOI Asia created a wide variety of content aligned with LFS. It is required to create it based on the following tips.:

Motivation:

- Design the content with local coordinators.
- Conduct both face-to-face and online learning.
- Conduct Field-oriented program (overseas).
- Share culture/language of host country.
- Develop participants as future collaborators for local coordinators.

Learning Experience:

- Create the content on a basic level for the participants, for those who came from various departments, collaborating with educators.
- Create a place to practice the knowledge/skill that learned in the lectures.

Learning Environment: Create an online learning environment and communication platform.

Field-oriented Program Design: Each member university should create a field-oriented program to foster participants' ability to address social issues, also building capacity in the program host university. It is a program that the member university can share the local issues and its knowledge, and diverse participants can visit the actual place and understand the issues from diverse perspectives. AI3 and SOI Asia, programs were mainly created and conducted by Keio. However, in the Consortium, also the members are required to create and conduct such programs. In order to achieve this, in this phase, the lead university (Keio) is expected to support them to create such programs while raising their commitment.

5.1.2 EBA Consortium Activities in 2012 and 2013

Firstly, EBA Consortium activities conducted in 2012 and 2013 before the author joined were investigated to understand the situation. During that period, several meetings (online and face-to-face) among coordinators and a EBA Fieldwork were carried out, as follows.:

Meetings for Coordinators

Total 8 meetings among coordinators were organized to discuss the details of the project.: 2 Partners' meetings (face-to-face) were held at the end of each academic year in Japan (Keio), since 2013.Also, 6 Coordinators' meetings held online.

Pilot EBA Fieldwork in 2013

One pilot fieldwork was carried out in 2013 hosted by Keio. It was carried out right after the establishment of EBA Consortium.

Program Details 23 students, and educators from Keio participated in this program. Firstly, all gathered in Tokyo, Keio campus, then conducted a half-day orientation, before heading to 4 days field trip in Minamata city, which was the field of this program. Minamata city is located at Kumamoto prefecture, Japan, where the Minamata disease was first reported. This is a neurological disease

caused by mercury poisoning from a chemical factory in the 1950'. After the orientation in Tokyo, participants visited the actual place in Minamata, including the chemical factory, workplace of the victims, a medical research institution, and other facilities. They also interacted with locals to collect data.(Figure:5.1)

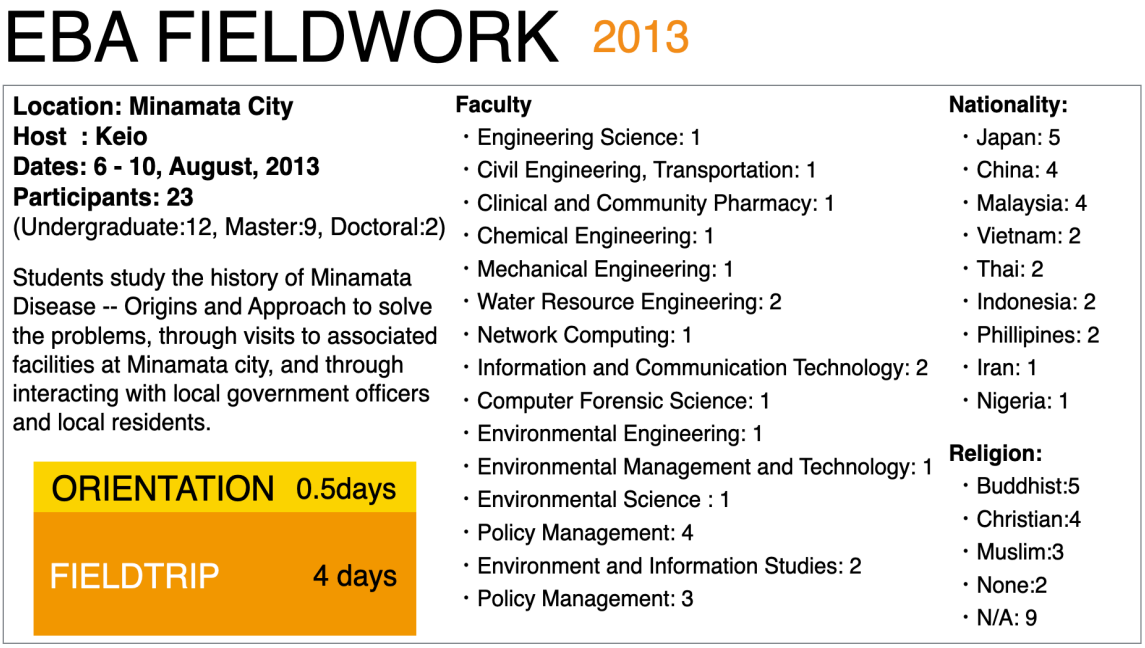

Figure 5.1 EBA Pilot Fieldwork 2013

Interview survey The two interview surveys were conducted.: Initial one was in August 2013, for participants, program coordinator, educators of this fieldwork. The second was conducted with some participants, educators, in July 2014.

From the initial survey with participants from Keio, When asked about "What are your thoughts on the fieldwork on the second and third days (in Minamata)?" Participant A answered: "今回のツアーは外国人向けに組み立てられている。もっとコアの部分を知りたかった。なので、日本人と外国人で行動を分けた方がよいと思った。" (This tour was designed for overseas participants. I wanted to know more about the core part. So I thought it would be better to divide the behavior between Japanese and foreigners.)

When asked about "Do you want to introduce this fieldwork to your friends?" Participant B answered: "今回の参加者は理系・文系が混在していた。講義や

体験内容に求める物がそれぞれ異なるので、分類しても良かったのではないか(例、理系向け講義・文系向け講義等に分類)。難しいのであれば、自由研究の時間を増やしてもらい、それぞれが独自に調査活動できるようにして欲しい。”(The participant's educational backgrounds were different, a mixture of science and humanities backgrounds. Since the requirements that each participant wants to learn through the fieldwork should be different, it would be better to separate them (for example, give the lectures for science and humanities, separately). If it is difficult, it would be better to have free research time individually, so that each person could conduct their own research activities.)

In this survey, some participants wanted to join fieldwork that separates nationality: Japanese and overseas, or educational backgrounds: science and humanities.

The second survey was conducted about a year after this program, with the program coordinator, educators of this program, and participants. When asked about the overall impression of this fieldwork, comments are as follows:

- Because of time limitation, it could not conduct a lecture about what is “EBA” and EBA Consortium. (Program Coordinator)
- It was the first time conducting the program for such diverse students, also many difficulties in administrative procedures, it was chaos.(Educator)
- I cannot remember participants' names. (Participant 1)
- There were many classroom lecture styles, I wanted to have more outside activity. (Participant 2)

The results showed that participants could not understand the characteristics of EBA Consortium and its importance. Besides, this fieldwork mainly contained lecture-style classes, in which participants did not have any chance to do collaboration nor even create any special bonds. Also, the field trip itself was led by a faculty member who had a connection with the field who were not familiar with EBA Consortium nor the EBA Skill. Thus, lectures related to EBA were skipped. As a result, the pilot fieldwork was done as normal fieldwork.

Findings and Results of Activities in 2012 and 2013

From the perspective of the elements of the educational ecosystem, the results and findings were in “Content” and “People” as follows.:

People It had conducted meetings to discuss educational collaboration of the project. Action is required to maintain the relationships sustainably.

Content In the fieldwork program, **learning design** was done as a regular program.: Participants could not be exposed to the EBA Skills nor collaboration among diverse members. Also, the **program design** was done by Keio.

5.1.3 Action Design

In order to create the educational ecosystem in EBA Consortium, based on Phase1, and its activities in 2012 and 2013, the action was designed and conducted in “People” and “Content” into three aspects: consortium design, learning design, and program design.(Figure:5.2), (Figure:5.3)

Digital Infrastructure	Utilizing AI3-SOI Asia's Digital infrastructure, Human resources, and expertise	
People	**Consortium design**	(Coordinators) Create Collaborative relationships among coordinators from each member university + Sustainable Relationship
Content	**Learning design**	(Learners) **Motivation:** Conduct online + face to face, culture/language peer-learning **Learning experience:** Practice skills learned in the class in a real environment **Learning environment:** Create Online learning environment EBA Basic Skill (Peer-learning + Skill of identifying issues based on evidence and analysis)
	Program design	Share knowledge on problem-solving of social issues by each member

Figure 5.2 Action Design

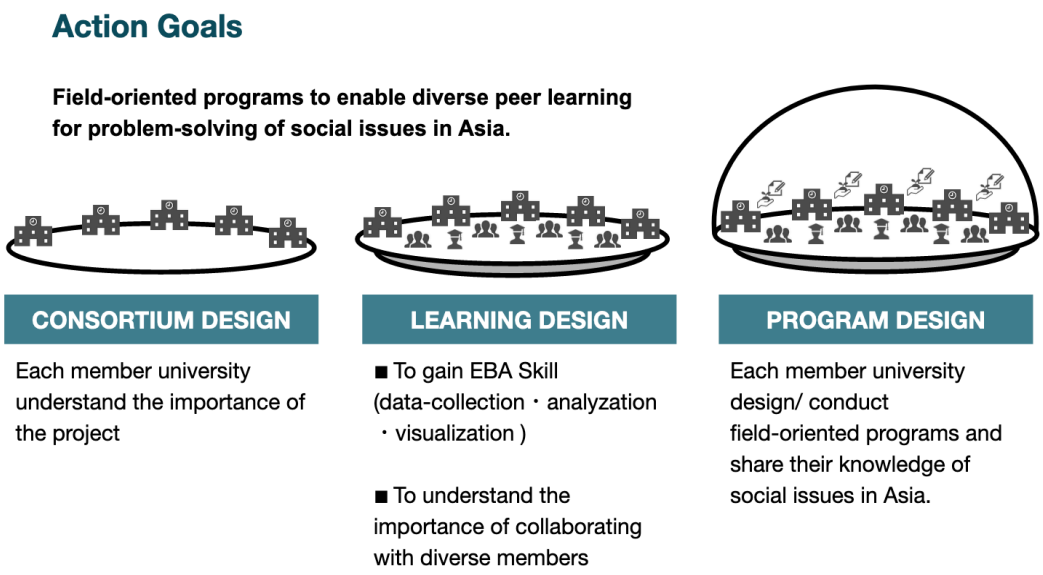

Figure 5.3 Action Goals

People

Consortium Design The goal is to build relationships in which member universities maintain equally collaborated sustainably.

This action will be designed for coordinators to build collaborative relationships among them and also be designed for the member universities' involvement to continue the Consortium relationships sustainably. It will be described from the author's perspective, a staff who planned, proposed agendas, and managed both Coordinators' and Partners' meetings.

People and Content

Learning Design As clarified in the literature review, EBA Consortium should develop human resources capable of identifying current or potential social issues with evidence, seeking solutions with diverse members, and sharing it with the public. Thus, the goal is to design learning that participants acquire the basic EBA Skill, and participants understand the importance of collaboration among diverse members from member universities (peer learning/working with diverse members). Hence, this action will be designed learning for participants to acquire

the EBA Skill and understand the importance of peer learning/working with diverse members.:

EBA Skill: As clarified in the literature review, it is designed as: 1.collect data 2.analyze data 3.tell the story to the public. (Figure:2.4)

Peer Learning/Working with Diverse Members: It is important to create learning content that the diverse members who have different points of view, work together for addressing common social issues in the region that have complex and multifaceted aspects.

It will be described from the author's perspective, a program designer who was involved in designing and implementing the content in 25 EBA Fieldwork programs together with educators, coordinators from the program host university (host), and program coordinators.

Content

Program Design The goal is that each member university creates and conducts field-oriented programs to share their issues and their knowledge.

This action will be designed for coordinators and educators from each member university to host (create and conduct) the field-oriented program (FW) to share their issues and its knowledge. It will be described from the author's perspective, a program producer who was involved in designing and implementing 25 FWs together with educators, coordinators from the host, and program coordinators.

Action Plan

Through the four years, EBA FW design passed by two improvements to find the best way to design the program. It is approached by a Cycle of plan, act, observe, and reflect on making this action research. An overview of three cycles is shown as follows: (Figure:5.4)

For organizational purposes, each action described in the following sections will be evaluated from three perspectives: Consortium design, Learning design, and Program design. Each evaluation point will be set in each cycle. The evaluation method is as follows:

- Observation during the FWs

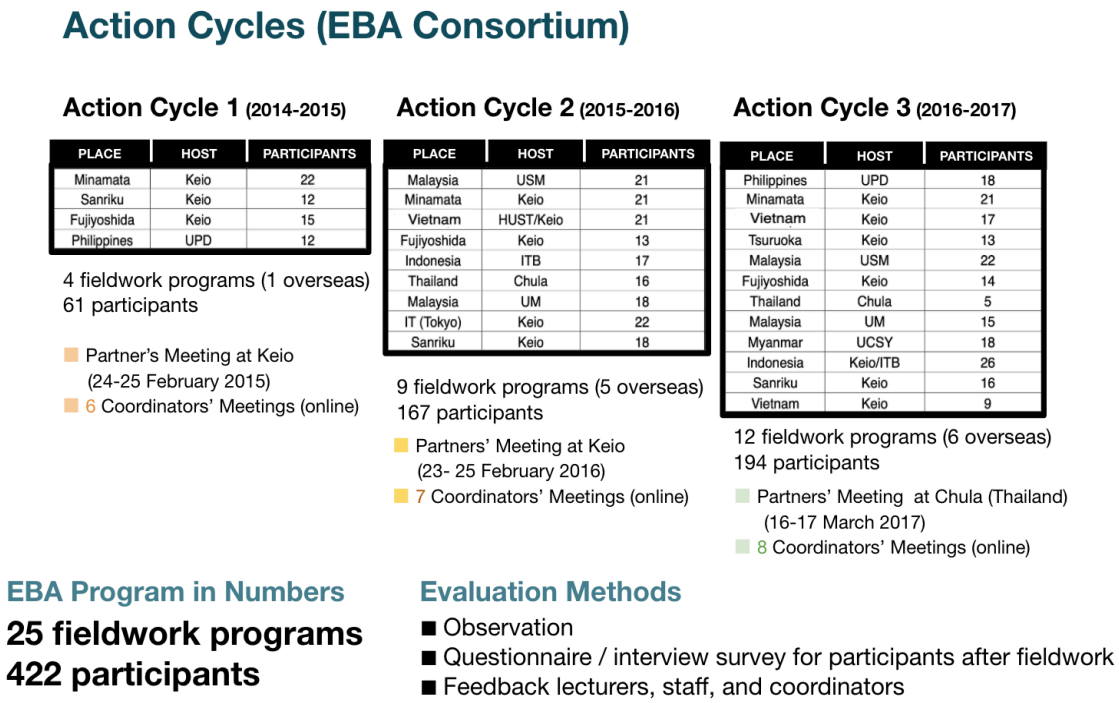

Figure 5.4 3 Action Cycles in EBA

- Questionnaire and interview surveys for participants after FW (after returning to home country)
- Feedback from educators, coordinators, and program coordinators

Then, through three action cycles, the analysis and results, as well as the elements of the educational ecosystem and its transformation, and each actor's transformation, will be discussed.

5.2. Cycle1

Overview

In the first cycle, 4 FWs were conducted, including one overseas FW hosted by UPD. A total of 61 students participated. For the coordinators, a face-to-face meeting was held in Japan (Keio) on 24-25 February 2015. 6 meetings were held online. Each of those actions described in the following three perspectives:

consortium design,learning design, program design. The action goal of each one in cycle1 is as following. : (Figure:5.5)

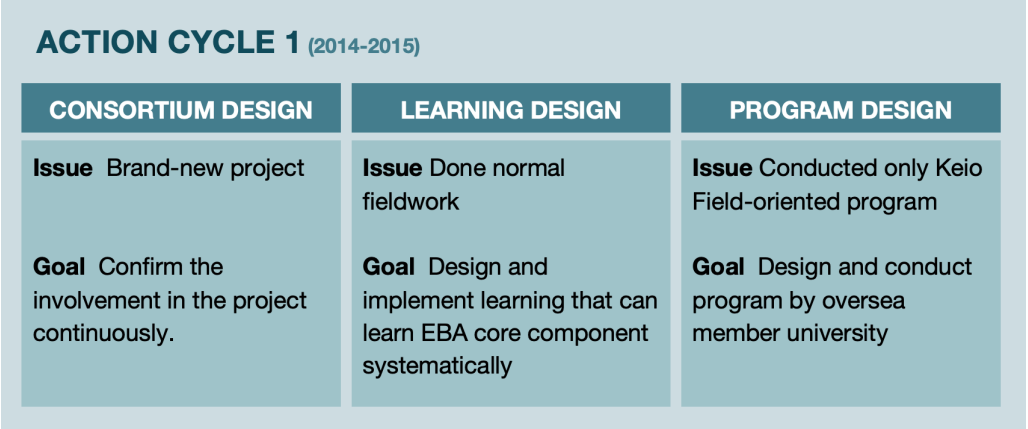

Figure 5.5 Cycle 1 -Action Goals-

5.2.1 Consortium Design

Action

Firstly, in order to build collaborative relationships among coordinators, they should meet regularly. The project continued to conduct an annual face-to-face meeting and invited all coordinators.

Although Keio led the project activities in 2012 and 2013, as it has found in Phase1 it is required to create opportunities that the coordinators can be involved in to recognize its value. To improve the commitment gap among them, create opportunities that each one can get involved in the project, the host of Coordinators' meetings (online) were assigned to coordinators from each university to conduct a webinar for sharing their knowledge.

Evaluation - Cycle1: Consortium Design -

From the observation, at the Partners' meeting, various discussions were discussed, such as the program's date, duration, the number of participants, and the content. On the other hand, although there was a summary report from UPD, which

conducted the first overseas FW, there were no such reports or seminar sessions from other members. Besides, Keio led during the whole meeting and took the initiative. It was considered that the coordinators' relationships were still one way from Keio. In Cycle2, it is required to share the value of the project and create opportunities that the overseas coordinators can share their ideas.

5.2.2 Learning Design

Action

To design learning that participants get EBA Skill and peer learning/working with diverse members, the schedule of the program was designed as follows.:

Introducing Pre/Post Workshop For the schedule of EBA FW, 10days, since the field trip itself was conducted by field specialists from a host who know well about the field but may not familiar with this project, positioning the EBA field trip as the main body before and after that "Pre-workshop" for an introduction of the FW and a lesson on EBA Skill, then "Post-workshop" as a summary of the program, was set each for about 1 to 2 days. Participants practiced their skills and knowledge learned in Pre-workshop, in the real environment (field trip) and Post-workshop.(Figure:5.6) The reason the workshop-style was adopted is participants to learn and discuss as a team with diverse values and opinions. Through this, participants understand different ways of thinking and methods and work with other participants to come up with effective solutions.

Figure 5.6 EBA Fieldwork 10 days Schedule

Pre-Workshop

Based on the findings of components of LFS in Phase1, the content was created, collaborating with educators and coordinator from a host and the program coordinators.:

- Introduction of EBA Fieldwork program: by program coordinator
- Local language/culture lecture: by host
- EBA Skill lecture (data collection and analysis): by field specialist from host
- EBA Skill lecture (data visualization): by program coordinator
- Collaboration workshop: by program coordinator

The EBA Skill lecture (data collection and analysis) was conducted by specialists from the host. Because the data that participants collect in the field trip was different such as qualitative or quantitative, also the analysis method differs depending on the type of data. After the EBA Skill lecture, participants were divided into each university group and conducted a “collaboration workshop” to practice what they learned. Its theme was to collect data among EBA member universities, countries, or cities, analyze comparatively, create a poster, and share it with all participants. This was aimed at practicing their EBA Skill and understanding the participants' diversity. (Figure:5.7)

Figure 5.7 EBA Pre-Workshop

Post-Workshop

The final assignments were made in the same group as in the Pre-Workshop. It were set by each one to create a research poster including field information, data and its analysis, and conclusions, plus a video that shares what they learned in the FW with the public after returning to their country. (Hereinafter, the final assignments (poster and video) are called final outcomes.) (Figure:5.8)

For the communication among participants, educators before, during, and after the program participation, EBA FW Facebook group page for each was created.

Figure 5.8 Cycle1: EBA Fieldwork Schedule

Evaluation - Cycle1: Learning Design -

In this Cycle, the evaluation framework has two main questions to be analyzed:
1. Did participants learn EBA Skill?
2. Did participants experience peer learning/working with diverse members?

1 EBA Skill From the open-ended questionnaire survey to participants for programs in Cycle1(except Minamata FW), conducted after the participation (n=39), there was feedback that they leaned EBA Skill, as follows.:

- I have never done such kind of workshop. I learned a lot of new knowledge about EBA. (Sanriku)

- I learned that observing evidence is one thing, but collecting them is another. So now, I will ensure to capture evidence through proper documentation (data visualization) that I have learned from the workshop. (Fujiyoshida)

Also, when asked about “What are the useful skills and knowledge that you learned from the Pre-Workshop?” (open-ended answer), keyword extraction was used for summarizing the answers. There were several answers saying learned the EBA Skill. (Figure:5.9)

2 Peer Learning/Working with Diverse Members On the other hand, only one response mentioned “collaboration” in Pre-Workshop. (Figure:5.9) Through observation during all Pre-Workshops, especially in the collaboration workshop that was divided into university groups, after this, participants spent (worked) with the same university participants during the field trip and Post-Workshop. Thus, it is considered that participants could not experience diversity. For Cycle2, it is required to design learning that participants expose themselves to diverse members.

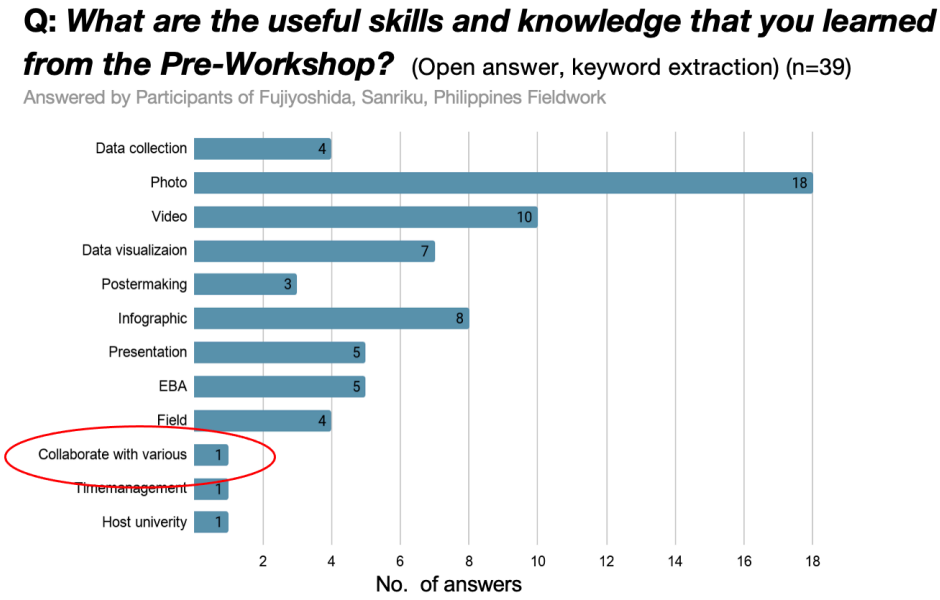

Figure 5.9 Cycle1:The skills/knowledge that participants gained in the Pre-Workshop.(n=39)(keyword extraction) Answered by participants except Minamata FW

5.2.3 Program Design

For member universities from overseas to create and conduct EBA FW, firstly, the EBA FW organization guideline was created to share the know-how for designing and conducting well-organized and productive EBA field-oriented programs by each university.

The guideline contained the following information.:

- Overall Schedule
- Explanation of the role of the steering committee (coordinators and arrangement team from the host university, program coordinators)
- Steering Committee member's contact information (includes emergency contact person, responsible person in the field trip)
- Meeting schedule among steering committee members
- Program: purpose, schedule, content
- Logistics: program arrangement, accommodation, daily meals, domestic transportation methods
- Invitation letter from the host for travel approval and visa application
- Cost burden for the Fieldwork
- Creation of the Web pages for the announcements

Evaluation - Cycle1: Program Design -

The first overseas program was created and conducted at UPD. The feedback from the host's coordinator, educators, were as follows.:

- We did follow the guideline.
- I did not see a clear understanding of what kind of EBA program we should make. Especially what kinds of social issues and their details, and the purpose of the program.

- For designing the program, I was unsure what accommodation level or what kinds of food should be prepared.
- It took much time to make adjustments on campus.

Although the member overseas university could create and conduct the FW, it can be evaluated as done as a normal FW following the manual.

5.2.4 Improvement from Action 1 to 2

Based on the feedback from the Cycle1, the details of each design will improve in the following points in the Figure:5.10.

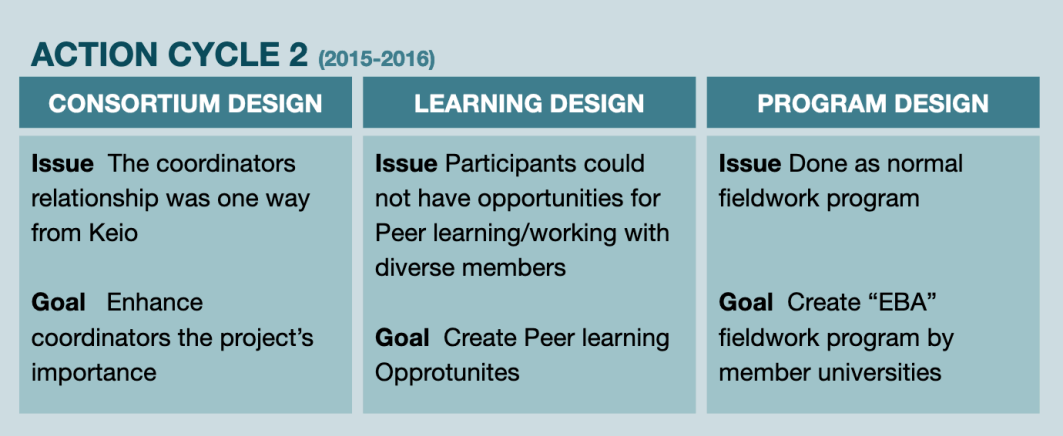

Figure 5.10 Improvements from Cycle 1 to Cycle 2

5.3. Cycle2

Overview

In the second cycle, 9 FWs were conducted, including 5 overseas. A total of 167 students participated. For the coordinators, a face-to-face meeting was held in Japan (Keio) on 23-25 February 2016. 7 online meetings were held.

5.3.1 Consortium Design

In order to share the value of the project with each coordinator as well as to create the slot that overseas coordinators could share ideas, the following sessions were added in the Partners' meeting.:

- Share the project results from its beginning in 2012, such as the total numbers of the project participants, evaluation results (including feedback and comments)for each FW from participants, educators, coordinators, and program coordinators.
- Share ideas of future project collaboration from all coordinators.

Evaluation - Cycle2: Consortium Design -

In the meeting, each coordinator gave various opinions about programs (content, style of the program) as well as the ways future collaboration (possibility of credit exchange). Following were the comments from coordinators during the meeting:

- There are lots of results. EBA is the most active network. (CHULA)
- This collaboration is quite unique, and it is the most active involvement. (ITB)
- We would like to create an EBA field-oriented program. (UCSY)

It showed that each coordinator had gradually understood the importance of the project. On the other hand, there were several comments that the project was still little known within member universities.:

- The name recognition of EBA within each university is low and only a small number of students applied to the program.
- It is difficult to share the project information (including a call for participation) with students throughout the university (other departments).

In Cycle3, it is required that the member universities recognize the value of the project, as well as build more substantial collaborative relationships among them.

5.3.2 Learning Design

Based on Cycle1, several adjustments and changes in the workshop design were made, which are explained in each of the categories below.:

Pre-Workshop

EBA Skill Lecture Since participants' learning backgrounds were diverse in fields of study such as from literature to medical, or undergraduate to the doctoral course, in this Cycle, each skill lecture was designed/requested to learn the minimum EBA Skill, which starts from what is the data?

Peer Learning/Working with Diverse Members To create the opportunity that participants understand the importance of collaborating among diverse members,**Collaborative Learning** was adopted. " (It) is the educational approach of using groups to enhance learning through working together. Groups of two or more learners work together to solve problems, complete tasks, or learn new concepts " (Hietala 2020). Or Laal claims, " (It) requires a challenge that opens the door for the learner to actively engage his/her peers, and to process and synthesize information rather than simply memorize and regurgitate it. Learners benefit when exposed to diverse viewpoints from people with varied backgrounds" (Marjan Laal 2011). Smith and MacGregor point out, " [$\cdots$] it lives alongside other processes that are based in students' discussion and active work with the course material " (Smith and MacGregor 1992). Through this, " Students learn how to work with various types of learners and develop their leadership skills " (Gates 2018). To achieve this, participants were divided into diverse members in the slot of collaborative workshop. The theme was the same as Cycle1. Also, " Open Seminar: Fieldwork Report " was held after the FW (after returning to their country), remotely. Participants of each FW shared their final outcomes with educators, coordinators, program coordinators, and EBA alumni. Also, this was broadcasted on Youtube[1].

Post-Workshop

The final assignments were made with the same members as in the Pre-Workshop. The final outcomes were set to create a poster and a video by each group, same as Cycle1. The following content was implemented in the Post-Workshop:

- Skill Lectures: design/editing/expression skills required for final assignment (poster/video) production
- Preparation for final presentation (poster/video/presentation)
- Final Presentation

Figure 5.11 Cycle2: EBA Fieldwork Schedule

Evaluation - Cycle2: Learning Design -

In this Cycle, the evaluation framework has three main points to be analyzed: Pre-Workshop:

1. Did Participants acquire a part of EBA Skill (data collection-analysis)?
2. Did Participants understand the importance of peer learning/working with diverse members?

Post-Workshop:

- Did participants acquire the data visualization skills for creating the final outcomes?

Table 5.1 Cycle 2: Survey Result

Participants	No.of Responses	Response Percent
133 (7 programs,except Thailand, Sanriku)	124	93.2%

Results indicated that the Pre and Post-Workshops achieved some of the main goals but need improvements, as described below.

Pre-Workshop: 1 EBA Skill (Data Collection-Analysis) According to the survey result, when asked about "What is the useful skills and knowledge you learned from the Pre-Workshop? (open-ended answer)". Keyword extraction was used for summarizing the answers. The most common responses were FW skills/information, followed by specific EBA Skill lectures. (Figure:5.12)

Figure 5.12 Cycle2:The skills/knowledge that participants gained in the Pre-Workshop.(n=124)(keyword extraction)

Table 5.2 Cycle2: Feedback for Pre-Workshop (open-ended answer, pick up answers which more than two participants commented)

Advice, Feedback	No. of Comments
I would like to learn the EBA Skill or FW, more deeply.	15
Better to have more hands-on time.	5
Better to have more time on the presentation.	2
The lectures or/and workshop time was too short.	8
The lectures or/and workshop time was too long.	6
Better to inform about FW, preparation things, in advance.	12

Through the observation, some participants were lack concentration during the EBA Skill lecture in each program. When the author asked the reason, participants answered as follows.:

- I already know such things.
- It was difficult for me to understand data science, which I had never learned, and the lecture was in English so, I could not keep up with it.

Because the lectures were requested/designed the minimum EBA Skill, some participants found it easy, or some yet unable to keep up with it. Therefore, in Cycle3, it needs to create a learning environment where participants prepare basic knowledge or information. It will also benefit students who want to learn more about lectures (15 students of Table:5.2) would be able to learn deeply in advance.

Pre-Workshop: 2 Peer learning/Working with Diverse Members After the EBA Skill lecture, a collaboration workshop was conducted to let participants understand the importance of peer learning/working with diverse members. From the questionnaire results on knowledge and skills that participants found useful (Figure:5.9), only 7 out of 124 answered related to the collaboration, such as teamwork, working/communicating with different backgrounds.

Through the observation, the participants who could not be concentrated on the EBA lectures because the lecture was too easy for the person did join the workshop, using only their own knowledge and performed group work unilaterally.

Or, the participants who had not kept up with the lectures, could not join the workshop. It indicates that because of this, participants could not experience the collaborative workshops. In Cycle3, it is necessary to create the opportunity for participants to understand other participants' backgrounds, skills and knowledge, and create an environment where each one can freely express their opinions.

Post-Workshop: EBA Skill (Data visualization) To understand whether the participants were able to acquire the skills.: According to the observation at the final presentation, educators, coordinators offered feedback to presenters (groups), which were mainly about spelling mistakes, data entry mistakes, and neglected to identify the source of data and or copyright issues. There were few suggestions or requests to modify it.

On the other hand, according to the feedback from educators, an educator who taught poster data visualization said, " There were some teams creating a poster that contained many letters, figures that appear in an academic paper, or comic fonts, that I taught it should not be used in. Thus, the tips I shared in the lecture were perhaps, not reflected in some groups'. "

Another educator who taught data collection said, " Although it was completed as a poster, it might not be able shared with the public after returning to their country because there were a lot of terminologies. "

This can be inferred that some participants who have specialized knowledge in each group produced and directed the production of final outcomes independently when it should have been a group work. Since there was only one person doing all the work, it reflected poor time management. The participants' feedback also showed that 27 participants answered there was not enough time. (Table:5.3)

Table 5.3 Cycle2: Feedback for Post-Workshop (open-ended answer, pick up answers which more than two participants commented)

Advice, Feedback	No. of Comments
Not enough time	27
Better to have more lectures for final assignments creation.	20
I would like to see the past outcomes of final assignments.	2

Therefore, at the post-workshop in Cycle3, it is necessary to carry out peer learning/working in collaboration with diverse members, rather than only specialized knowledge participants creating the final outcomes. Also, it is required to provide enough time for the Post-Workshop.

5.3.3 Program Design

In order to create and conduct “EBA” FW by the host, this time, alumni of EBA FW from each university who experienced the program were involved in the FW creation together with the local coordinator and educators.(Figure:5.13)

Figure 5.13 Collaboration with EBA Alumni in Pre-Workshop

Evaluation - Cycle2: Program Design -

The feedback from coordinators and EBA alumni of the FW host were followings:
Coordinators:

- It was easy to ask students who experienced the program when there was some confusion in terms of minor questions about program creation.

- Since we designed the program with students, we were able to create a student-centered program.

EBA Alumni who supported the program:

- I felt more like a member of EBA by creating a program and teaching what I actually learned in the program.
- I could develop a human network inside the university during the program creation process.

Each host could create and conduct the “EBA” FW. For the next step, it is necessary to create a distinctive program by each university to share the local issues and share its knowledge from the host.

5.3.4 Improvement from Action 2 to 3

Based on the feedback from the Cycle1, the details of each design will improve in the following points in the Figure:5.14.

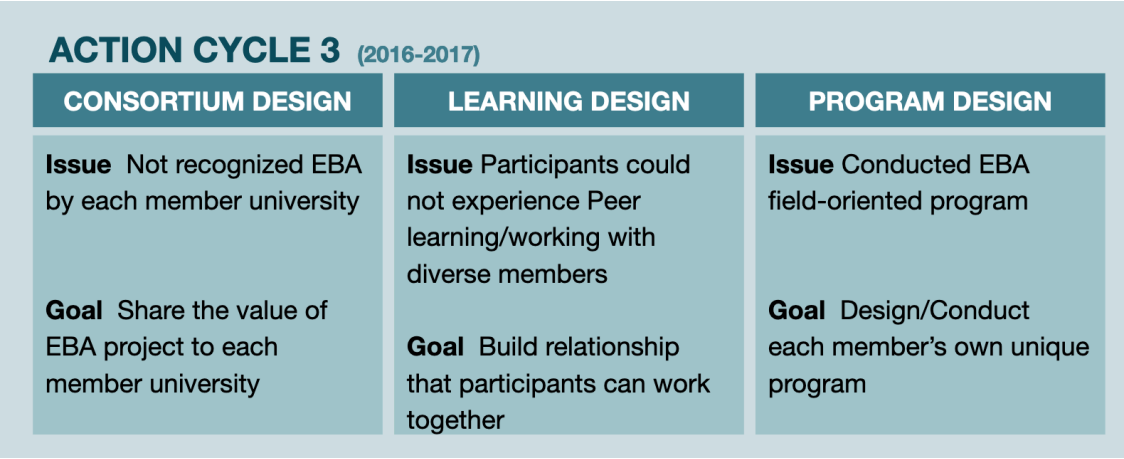

Figure 5.14 Improvements from Cycle 2 to Cycle 3

5.4. Cycle3

Overview

In Cycle3, 12 FWs were conducted including 6 overseas. A total of 194 students participated. For the coordinators, a face-to-face meeting was held in Thailand (CHULA) on 16-17 March 2017. 8 online meetings were held.

5.4.1 Consortium Design

The project entrusted each coordinator with spreading the EBA activities on their campus. As a part of it, the Partner's meeting was hosted by CHULA.

Evaluation - Cycle3: Consortium Design -

Coordinators from UPD, CHULA, and Keio voluntarily operated booths in collaborating with EBA alumni at fairs, events in each university and shared the activities with member universities.(Figure:5.15)

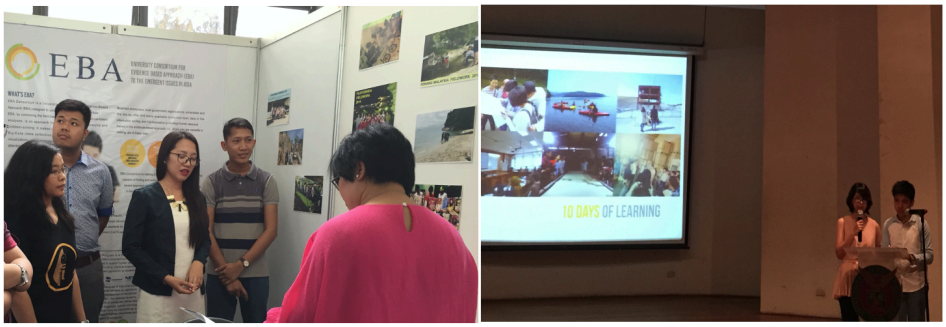

Figure 5.15 Participants and Alumni Attended the Fair on Campus

Throughout these actions in each member university, EBA Consortium had gradually become recognized by universities. Each university started to identify the EBA activities, such as university credits and incorporating the program into member universities' coursework/curriculum.

By conducting the Partners' meeting outside of Japan, at a member university, cooperative management of the project with coordinators had become normalized. For the next step, it is required to stimulate collaboration among coordinators to build a collaborative relationship.

5.4.2 Learning Design

Pre-Workshop

EBA Skill Lecture At EBA Skill lectures in Pre-Workshop, the following changes were made:

- To prepare the minimum knowledge and the FW information before the program starts, “Open Seminar: Introduction” was conducted. All participants, including educators and coordinator of the host, remotely joined and shared introductory knowledge about the program.
- After specialists taught EBA Skill lectures, a hands-on practice (individually) session was conducted so that participants could implement the knowledge they learned from those lectures to practice.
- Data Visualization workshop which was conducted at the post-workshop in previous Cycles, was moved to the Pre-Workshop to provide participants with enough time to create final outcomes.

Peer Learning/Working with Diverse Members To stop participants from heavily relying on certain team members who already possess specialized knowledge of the field, a **Learning Community** that learners can learn independently (Goshima 2014) was created in each FW. Tinto claims it has three things in common.: **shared knowledge**: Participants to take courses together. **shared knowing**: Taking the same lecture, and constructing knowledge together. **shared responsibility**: Participants are mutually dependent on one another(Tinto 2000).

In the workshop, to achieve “Sharing knowledge” and “Sharing knowing”, in the latter half of the EBA Skill lecture, a hands-on practice (individually) and short sharing workshop session was designed. To achieve “Shared responsibility”, at the final presentation of the diversity workshop in Pre-Workshop, a task was set which was that each group member needs to explain the outcomes, instead of one person doing the presentation alone.

The following changes were made:

- EBA Skill lectures: After hands-on practice (individually) session, a short sharing workshop was designed to offer a chance for each participant using

skills they had learned in the lecture.

- Collaboration workshop: Team division and theme was the same as Cycle2. However, in the presentation, each member was expected to do presentations, including the question and answer session.

Post-Workshop

All the lectures were moved to the Pre-Workshop to give enough time for final assignment production. Thus preparation or the final outcomes and the final presentation became the main and only content of the post-workshop. The group members were the same as the collaboration workshop (Pre-Workshop). It was also expected that participants would be able to prepare for the final presentation during the field trip. In addition, " Open Seminar: Fieldwork Report " was conducted as same as Cycle2.

Figure 5.16 Cycle3: EBA Fieldwork Schedule

Evaluation - Cycle3: Learning Design -

In this Cycle, the evaluation framework is analysed from three main aspects.:
Pre-Workshop:

1. Did Participants acquire the EBA Skill?

2. Did Participants understand the importance of peer learning/working with diverse members?

Post-Workshop:

- Did the participants collaborate for create final outcomes?

Table 5.4 Cycle 3: Survey Result

Participants	Number of Responses	Response Percent
194 (12 programs)	116	59.8%

Results indicated that the workshop achieved some of the main goals.

Pre-Workshop: 1 EBA Skill The analysis is carried on by the following two points that we implemented in Cycle3.

A : Created an environment (Open Seminar: Introduction) in which participants can attain the basic knowledge and obtain information before the FW starts.

B : Hands-on practice (individually) and short sharing workshop was conducted after each lecture.

Regarding A, according to the survey results answered by participants, it worked well for the preparation and for keeping participants motivated for the program.:

- Preparation (Open Seminar) helped me to think about what I should study in advance. (Minamata 2016)
- The Open Seminar: Introduction helped me a lot, to know how to prepare to go abroad, which was very useful. (Thailand 2017)
- (After) attending the open seminar, I was looking forward to meeting all of them. Also, it encouraged me to study data-science and English before the fieldwork starts. (Malaysia (USM) 2017)

According to the advice/feedback from participants(Table5.5), the number of comments concerning the length of lecture and/or workshop time, were decreased compared to Cycle2 (Table5.2). However, since most of it (about 70%), 17 mentioned about they would like like to learn about the EBA Skill/FW. It indicates the program should create an environment where participants can dig deeper into the topics they would like to learn.

Regarding B, the educator who taught data visualization said, "Hands-on practice and a short sharing session after the skill lecture, I could understand the level of each participant. Also, I could see where participants did not understand in my lecture, which was pretty useful for my future lecture activities." Which mean, conduct hands-on and sharing session was beneficial for the educators as well.

From the observation, after the hands-on and sharing workshops, participants went to ask the person who had the skills when questions arose.

According to the open-ended questionnaire survey answered by participants, when asked about "What is the useful skills and knowledge you learned from the Pre-Workshop?" (Figure:5.17) Keyword extraction was used for summarizing the answers. The number of those who answered EBA method and/or each EBA Skill was increased, compared with Cycle2 (Figure:5.12). Therefore, participants could prepare the minimum knowledge for the program in advance, and practicing during the hands-on workshops and sharing sessions enabled them to understand their own learning (EBA Skill). Also, it promoted the understanding that the levels of knowledge of each participant process was different. This lecture-style enabled participants to understand their own skills, as well as other participant's skills, such as who and what kind of skills the person has. Thus, it was useful for sharing knowledge among participants.

Pre-Workshop: 2 Peer learning/Working with Diverse Members From the survey answered by participants, there were several comments that they learned the importance of collaboration among diverse members.:

- It was a nice opportunity to understand others from different backgrounds. I could understand what they thought in Pre-Workshop. (Vietnam 2017)
- I think that during the Pre-Workshop, everyone's personality and skills showed up, which enabled us to bond together, which was essential as we

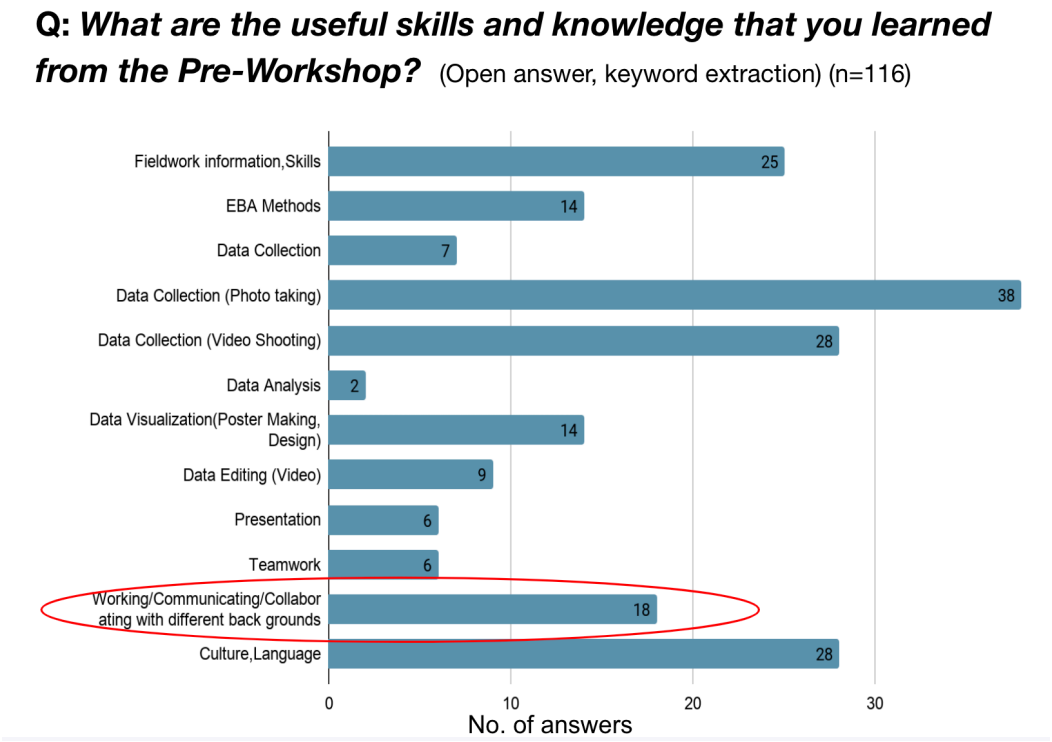

Figure 5.17 Cycle3:The skills/knowledge that participants gained in the Pre-Workshop.(n=116)(keyword extraction)

Table 5.5 Cycle3:Feedback for Pre-Workshop (open-ended answer, pick up answers which more than two participants commented)

Advice, Feedback	No. of Comments
I would like to learn the EBA Skill or FW, more deeply.	17 Fieldwork information: 5 Data analysis: 2 Video editing: 7 Language: 2 Ice breaking: 1
The lectures or/and workshop time was too short.	3
The lectures or/and workshop time was too long.	2
Better to improve Keio participants' presentation/communication skills.	2

went through the fieldwork. (Malaysia (USM) 2017)

Also, when asked about “What is the useful skills and knowledge you learned from the Pre-Workshop?” (open-ended answer) Keyword extraction was used for summarizing the answers.(Figure:5.17) The number of respondents who answered Working/Communicating/Collaborating with different backgrounds, was 18 out of 116 answers(15.5%), which was much higher than Cycle2 ((5.7%)(Figure:5.12)).

From the observation of the FWs (9 out of 12 FW) in which I participated, at the collaboration workshop in Cycle2, participants who have specialized knowledge, produced and directed posters design using only his/her personal skill or experience. However, in Cycle3, it did not appear. Also, some participants could not be involved in the workshop in Cycle2 because the participants could not keep up with the EBA Skill lecture. However, each group conducted discussions with all members several times.: at the beginning of the group work for deciding the work division, during the work time for sharing updates or concerns, before the presentation to prepare it and discussing unclear points of the poster. It indicates all participants did join the group work.

Post-Workshop: Collaboration among Team Members From the observation, all groups had already decided who was in charge of creating final outcomes inside the team and started working on it. Because all EBA Skill lectures were conducted in Pre-Workshop, participants were able to prepare the final outcomes at the beginning of the field trip.

Even though the advice and feedback from participants at the Post-Workshop, 11 mentioned about “the Post-Workshop time was too short”(Table:5.6), all teams were finished the creation of the final outcomes in time. It indicates that the group members could share the work, depending on each other, and collaborate.

From the observation at the final presentation, questions or comments from educators to each group pointed out spelling mistakes and data entry mistakes as in previous Cycles. However, in this Cycle, more in-depth questions, comments, and opinions were asked, such as “How do you evaluate the field yourself?”, “It might not be realistic, but I like this solution.” Or, beneficial information was shared, such as research institutes or websites that useful for the group, which were not seen in previous Cycles.

Table 5.6 Cycle3:Feedback for Post-Workshop (open-ended answer, pick up answers which more than two participants commented)

Advice, Feedback	No. of Comments
The Post-Workshop time was too short.	11
I would like to share what I found or thought during the EBA Fieldwork with participants.	4
I would like to get more feedback/comments from lectures.	2

The educator who taught data visualization said, “There were moving videos, it touch my heart.”, or from a field specialist said, “I would like to share the outcomes in my regular lecture.” On the other hand, the participants in charge of creating the video production in the group were devoted to this, then did work without talking in Post-Workshop. Next time, it would be required to find tools that each group can easily produce/edit the video. Or, It would be necessary to find software or visualization methods that can replace the video.

The advice/feedback from participants (Table:5.6), 4 participants mentioned that they would like to share their thoughts. Next time, in the final presentation, it should create a “summary” time slot that each one share their experiences and what they have learned in FW as “Sharing Knowing”. This will also provide the time that participants can think together about how to contribute to the field after the FW or how to utilize the understanding of the FW in the future.

The Open Seminar: Fieldwork Report was broadcasted on Youtube for sharing the final outcomes with the public. Thus, it is required to make it widely understandable to people who did not participate in the program. All final outcomes requested to modify based on corrections or advice at the final presentation led to an improvement in its quality. This means the open seminar also helped achieve “Shared Responsibility” of final outcomes for all program participants, including educators, coordinators, and program coordinators. On the other hand, some groups were difficult to modify the outcomes after the FW. Because there were members who had difficulty contacting after returning to their country, which made it difficult to communicate with the group members, or it was unclear who should modify the data or where the data was located. It indicates the Consortium

should create an environment in which participants can access the data acquired in the FW, manage their final outcomes, and communicate among them.

5.4.3 Program Design

Since almost each member university created and conducted the FW more than once, program coordinators (Keio) were mainly involved only in Pre and Post-Workshops, to create and conduct each member's own unique program, while raising coordinators' commitment.

Evaluation - Cycle3: Program Design -

The Feedback from coordinators were followings.:

- We had not experienced creating programs for overseas. We will improve the program based on this program's findings in EBA and conduct such a program for overseas students. (ITB)
- We made a program in collaboration with various faculties on campus. (UPD)
- Built on the EBA experience, we will collaborate with other faculties to create a global program. (UM)
- Based on the guideline, we did create “our program”. (USM)

From the feedback, each member university was able to create and conduct the EBA FW to share issues in the local and its knowledge of each university, collaborating with inside the campus (other faculties and students).

5.5. Summary

Through three action cycles, the overall evaluation was done in the following three aspects: consortium design, learning design, and program design

The evaluation points of each action goal that the author set in “Action Design”.

5.5.1 Consortium Design

The goal was to build relationships in which member universities maintain equally collaborated sustainably.

Throughout the four years of actions, cooperative management of the project with coordinators had become more substantial. By the actions designed for coordinators, the member universities gradually recognized the value of the project, and the attitude against the Consortium became more cooperative. Because the coordinators have been working on realizing credits exchange among member universities or incorporating the program into member universities' coursework/curriculum. It means the program's content became a level that was recognized by each university. It is a step forward with smoother cooperation among member universities. It indicates more expansion of EBA Consortium's academic exchange and cooperation. This will bring the Consortium to build stronger collaborative relationships among coordinators for further project activities.

5.5.2 Learning Design

The goal was to design learning that participants acquire the basic EBA Skill, and participants understand the importance of peer learning/working with diverse members.

The evaluation of the three actions are analyzed in two aspects.:

1. Did participants acquire the EBA Skill?
2. Did participants Understand the importance of peer learning/working with diverse members?

Program Schedule of Learning Design

In order to achieve the action goal, the learning schedule has been improved. (Figure:5.16) Each content is as follows.:

Open Seminar:Introduction: Since the EBA Fieldwork is only 10 days, an online program was designed to prepare the minimum knowledge and obtain

information before the FW while keeping motivation for participation.

Pre-Workshop: Each EBA FW conducted the EBA Skill workshop to be exposed to the diverse members while acquiring the minimum EBA Skill before visiting the actual field. Also, it was aimed to create a Learning Community.

Because the theme and method of data collection and analysis in each FW was different, the lecture content was designed for each one, together with educators from the host and program coordinators.

Since participants had diverse backgrounds of knowledge, the level of the lectures was set to gain minimum EBA Skill. Designing a hands-on practice (individually) session after each lecture enabled participants to see how much they acquired the skill. Also, conducting a sharing session among participants after the hands-on practice was key to letting them understand other participants' knowledge and skills were diverse. (Shared Knowledge and Shared Knowing.) This session also helped educators evaluate how much participants understood the lecture they gave, which improved their teaching methods.

After the EBA Skill lectures, Collaboration Workshop was conducted to practice their skills and knowledge with diverse members. The teams consisted of diverse members, the theme was to collect data among EBA member universities, countries, or cities and analyze comparatively, create a poster, then each member gave a presentation. (Shared Responsibility)

Fieldtrip: Participants visited the field where the data was generated and collected it by themselves under the guidance of the host educators and coordinators.

Post-Workshop: Prepared for the final presentation (Video/ Poster/ Presentation) together with the same members of the collaboration workshop in the Pre-Workshop. All participants were required to do a presentation and answer the questions asked by others during the final presentation.

Open Seminar: Designed the online program after the FW finished (after returning to their country), participants shared their final outcomes (poster and video) with all EBA members who had participated in the program or who will

participate in it. This was broadcasted via the Internet, as well.

1: EBA Skill

Firstly, educators who had taught data visualization skills evaluated how the quality of the final outcomes (video/ poster) changed from Cycle1 to Cycle3.

Posters: This time, final outcome(posters) of Minamata FW in 2014(Cycle1), 2016(Cycle3) were chosen. The evaluation was done by an educator who had taught data visualization (poster) for participants of all EBA Minamata Fieldwork programs since 2014. 6 posters were created in Cycle1, and 3 posters were in Cycle3. Some posters of Cycle1 are shown in Figure:5.18. Some posters of Cycle3 are shown in Figure:5.19. It was analyzed with the educator that how much the posters reflected the content he taught.

In Cycle1,

- All posters used photos from the Internet and did not mention the copyright.
- 2 posters used comic fonts that the lecturer taught not to use in the lecture.
- All posters using several different fonts.
- 3 Posters created by color schemes are difficult to see.

In Cycle3,

- All photo data used in the posters were participants' collection. (Some were shared among participants.)
- Fonts matched the atmosphere in the poster and not comic fonts.
- All posters could read the title away from 3 meters.
- All posters were difficult to read the description away from 2 meters.
- All posters did not use technical terminology.
- All posters could tell an understandable story.
- 1 poster was utilized with gaze guidance effectively.

It showed that several posters did not reflect the lecturer's advice in Cycle1. In Cycle3, the font size of the description was smaller, other than this, the advice was reflected. Also, according to feedback from the educator, the quality of the posters was developed to be able to share with the public than previous Cycles.

Figure 5.18 Some Final Outcomes -Posters of Cycle1-

Videos: Regarding final outcome(video), this time the evaluation was done by an educator who had taught data visualization (shooting video and its editing) to participants, since 2014.

When asked about the overall evaluation for the videos, the educator said, " In Cycle1, almost all videos were memorial of the FW, highlighting their travel journey in EBA Fieldwork. Besides, the thing that I was most concerned about was some videos ended with " Thank you, EBA. " " From the comments, the outcomes had the character of the just travel memory, although the purpose is to share with the public what learned from the FW.

For Cycle3, " There were some videos that showed what they did in this FW, how the data was collected in the field, and show the credibility of the data they collected. Or there were groups interviewed with local people just for video production. Some videos made me think about things of the local issues. " Other staff said, " The content of Cycle3 was very diverse. I did enjoy watching each group video. " (Figure:5.20)

The final outcomes were shared with stakeholders, included those who will par-

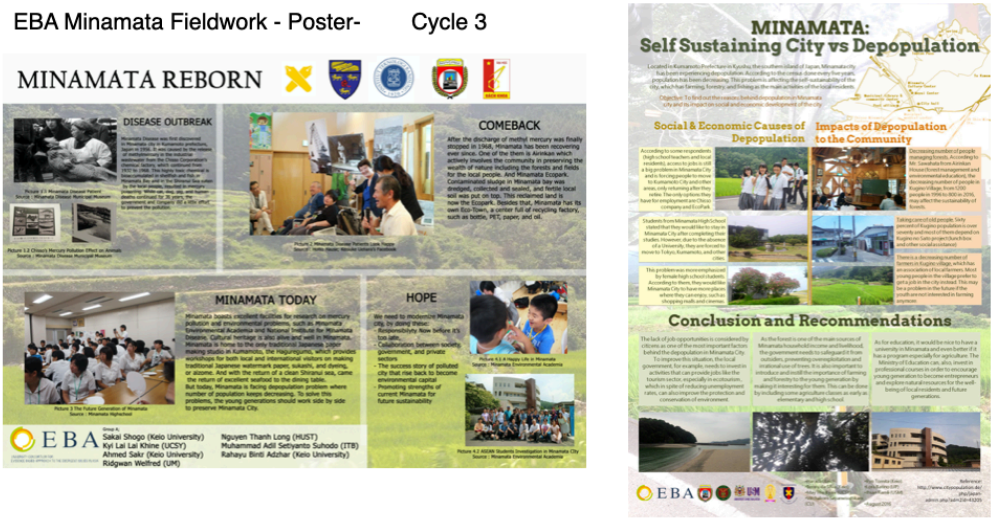

Figure 5.19 Some Final Outcomes -Posters of Cycle3-

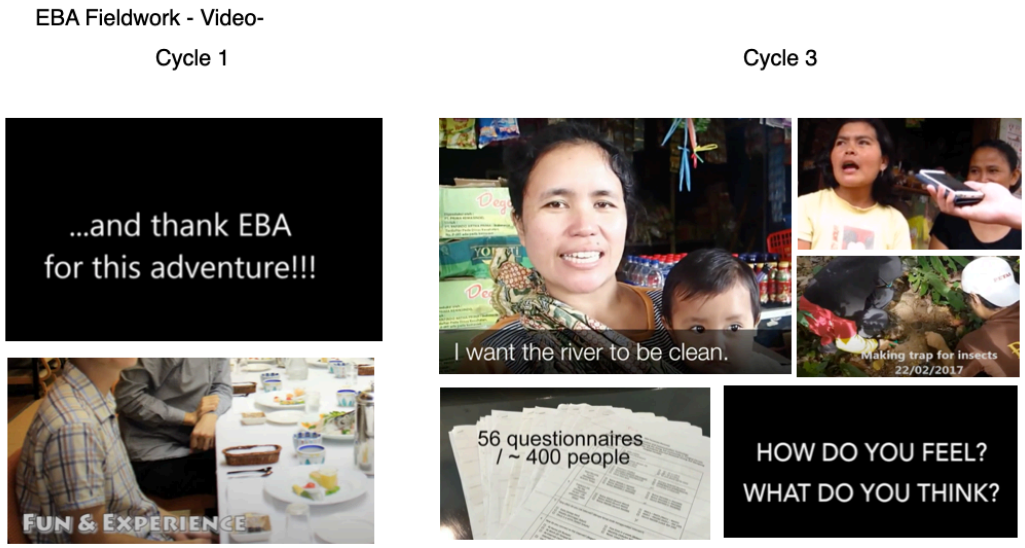

Figure 5.20 Some Final Outcomes -Video- From Cycle 1 to Cycle3

ticipate in future EBA programs in Open Seminar: Fieldwork Report, as well as the public (Youtube). Additionally, these were uploaded to EBA official homepage[2]. Through these, the circle of “Shared Responsibility” among participants was broader to all FW participants, including educators, coordinators of the host, and program coordinators. In fact, in Minamata FWs (2014, 2015, 2016, and 2017), the final outcomes created by the participants were posted in the Minamata City Hall and became available to the public. (Figure:5.21) Also, at UPD in 2016, CHULA in 2016, and Keio in 2015, 2016, the final outcomes were exhibited at the fairs and open research forum. Thus, the number of opportunities to share it with the public has been increasing. It indicates that the final outcomes were reached to the level that could share with the public. Therefore, according to these results, it is considered that participants acquired EBA Skill.

Figure 5.21 Final Outcomes in the Minamata City Hall

2: The Importance of Peer learning/working with Diverse Members

As a result, 445 from 94 different departments participated in EBA FW(includes 2013).(Figure:5.22)

Designing a hands-on practice (individually) and short sharing workshop after each lecture enabled participants to realize other participants had different skills and backgrounds. From the open-ended questionnaire survey to participants, when asked about “What is the useful skills and knowledge you learned

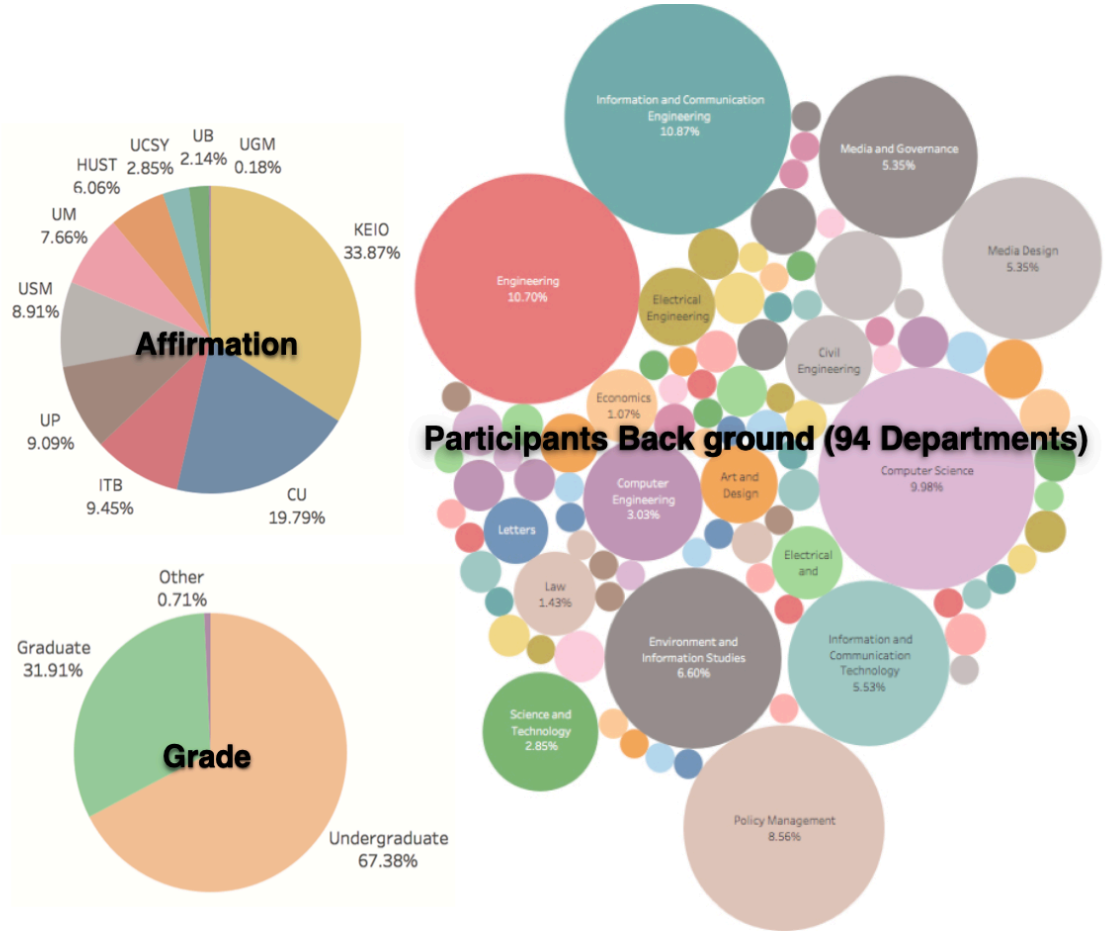

Figure 5.22 participants' Diversity

from the Pre-Workshop? ” The number of respondents who answered collaboration, which includes **Working/Communicating/Collaborating with different backgrounds** was gradually increased. As Cycle1 was 1 out of 39, Cycle2 was 7 out of 124, and Cycle3 was 18 out of 116 answers.(Figure:5.9, 5.12 and 5.17)

Besides this, there were several comments that mentioned it, in a overall program evaluation, as follows.: (Participated Fieldwork Name, Year)

- Diversity allowed us to collaborate instead of competing to produce better output. I started to understand where their ideas are coming from and in return, they respected my opinions, perspective as well. (Philippines, 2016)
- It was a nice opportunity to understand issues with others from different backgrounds. (Vietnam, 2017)
- I have widened my horizon as we get to exchange opinions from each other through interacting with group members who come from different countries to complete the task given. (Malaysia(UM), 2017)
- EBA fieldwork triggered for us to continue the collaboration. (Minamata Fieldwork 2016)
- I learned how to work with people with different cultural and religious backgrounds. (Fujiyoshida, 2017)
- Making a good poster is not easy, especially when it comes to making a poster that can be understood by people from different educational backgrounds. But our team had made a good one. Our group's excellent teamwork led to better outcomes. (Tsuruoka, 2017)

These comments showed that participants could experience and understand the importance of collaborating with diverse members.

5.5.3 Program Design

The goal was that each member university creates and conducts field-oriented programs to share their issues and their knowledge.

As the cycles went on, each member university created and conducted a unique field-oriented program for sharing issues and knowledge. For example:

- Targeting the Orang Asli, the indigenous minority people of Malaysia, and their Socio-Economics.
- Co-creation of the new FW with EBA participants about green eco-tourism targeting overseas students.
- Preservation of cultural heritage from the impacts of surrounding living environments (human, animals, and plants) and natural disasters (earthquake).
- Exploring biodiversity through experimental & computational analysis of DNA sequences.

Even the fields were the same as previous, the content was changed into much localized, collaborating within the campus (other faculties, EBA alumni).

Therefore, each member university became to create and conduct unique programs that share local issues and its knowledge.

5.5.4 Elements of Educational Ecosystem

Actions were conducted in People, Content, and its between, the elements of the educational ecosystem. The following are relevant findings and factors.

People

Consortium Design The approach was mainly targeted coordinators from member universities. To have collaborative relationships with the coordinators from each university that creates the program, firstly creating the opportunity to meet regularly and recognize the value of the project, raising the commitment gradually. Through these processes, they have been working on changing the member universities' policy, scheme, or curricula to be able to cooperate with the project. It will able to build equal collaboration relationships among member universities, which is vital to maintain it sustainably.

People and Content

Learning Design Findings are described for learning design that participants acquire EBA Skill, and understand the importance of peer learning /working with

diverse members.

The combination of online and face-to-face is a key component of EBA FW. Online communication before participation is essential for the preparation of not only participants' learning or traveling but also their motivation that meets peers in the region. Meeting face-to-face, learning, staying, and practicing together with other participants can understand the members' diverse backgrounds. The experience ignites collaboration among them.

Regarding the EBA Skill lectures, since the theme, methods of data collection and analysis of each FW are different, the lecture content should be designed for each FW independently, together with educators, coordinators from the host, and program coordinators. By adding a hands-on practice (individually) and short sharing workshop after each skill lecture, participants can understand their own learning from those activities as well as other participants' knowledge and skill.

Creating a Learning Community in each EBA FW, which consists of " three shares " (Tinto 2000) enable them to understand the importance of peer learning/working with diverse members. To achieve this, a workshop should be designed that participants share their skills and knowledge that they learned in each lecture and that had been learning in school, and shared responsibility for the outcomes with group members. In this workshop, participants witness other participants' skills and knowledge are diverse, and the ways of thinking are different. Then, diverse participants recognize others as peers, encounter and overcome differences and conflicts, respect each other's positions and values, using each other's skills and knowledge, and work together to achieve common goals. Through this learning, they can understand the importance of collaboration with diverse members. Sharing the final outcomes with the public achieve for improving participants' EBA Skill, as well as shared its responsibility among not only participants but the program educators, coordinators, and program coordinators.

Content

Program Design To create and conduct field-oriented programs to share local issues and its knowledge of universities by each member university, it is necessary to raise the local coordinators' commitment gradually. If the local university do not have much know-how of the creation, the lead university should support

them. Adding the local alumni who experienced the EBA FW to the creation and conduct process can bring the each program more like “EBA”. Collaborating with other faculties inside the school enables them to create their own unique field-oriented program.

5.5.5 Transformation of Elements of Educational Ecosystem

It is described how each element of the educational ecosystem has been transformed through the project. (Figure:5.23)

Digital Infrastructure The project utilizes the digital infrastructure and its human resources created by AI3 and SOI Asia. The SOI Asia rooms are used for real-time communication before and after the FW (in Open Seminars). These are a necessary essence for EBA Consortium as well.

People The actions were for building collaborative relationships among coordinators. They have been sharing the value of the Consortium with their university and improving the quality of the program that to appropriate each university requirements while changing the member universities' policy, scheme, or curricula to be able to cooperate with the project. It will be able to build equal collaboration relationships among member universities, which is vital to maintain the Consortium sustainably. Through the process, The relationships among coordinators have been transformed into that can be co-managed the project.

People and Content In the beginning, the learning program was done as normal FW. It has transformed into the learning program that participants learn the minimum EBA Skill (data collection-analysis-visualization (video/ poster/ presentation) while understanding the importance of collaborating (peer learning/working) with diverse members. In the creation and conduct of such a learning program, collaboration has been done inside the campus (students, educators) and program coordinators.

Content In the beginning, it was only a field-oriented program offered by Keio. It has transformed into various unique local field-oriented programs from member universities to share the local issues and its knowledge. Each member university could become to create and conduct unique EBA field-oriented programs. In the beginning, it was done by collaborating with a university that had the know-how on it. At present, each one can create such programs collaborating inside the university (other facilities and students).

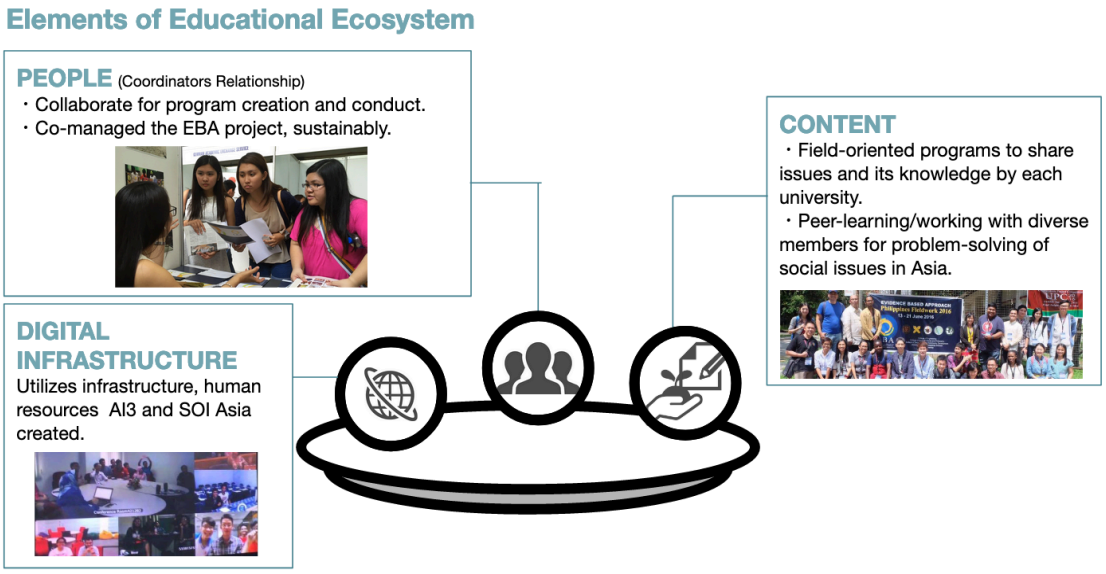

Figure 5.23 Elements of Educational Ecosystem in EBA

5.5.6 Community Transformation

The main actors of this study were participants, coordinators, program coordinators, educators, and member universities. It is investigated how each of the actors transformed through participating in the project.

Participants For analysis of the participants' transformation, how and what changed by participating in the FW, an additional online questionnaire was conducted to participants of all 26 EBA FWs (including participants of the 2013 EBA Minamata FW) in 2-13 August 2017. The questionnaire is in Appendix B.

Table 5.7 Number of Responses

Total No.of Participants	No.of Responses	Response Percent
445 (26 FWs)	98 Includes participated in multiple times	22.0%

Table 5.8 Answers of Q5.Have your participation in the EBA Fieldwork(s) changed your career plans in someways? (N=98)

	Number of Answers
Yes	44
No	31
Do not Know	23
Total	98

When asked about the impact of EBA FW on their career plans, 44 responds (44.9%) thought that it has changed by participating in this FW.(Table:5.8)

Participants who answered “no” 31 responds(31.6%) said, “participating in the EBA fieldwork as part of my career”(USM). Another participant said, “(The participation) was for CV”(HUST). It indicated some participants already had a global mindset before the participation and joined the program as part of their career. Participants who answered “do not know”(23 responds), 13 out of 23 were still enrolled in the university, and at least 5 just graduated, which indicated that certain participants who just started to think about their future.

The following are some answers that mentioned that the program **changed their careers**.: (Respondent's affiliation)

- The most influential idea (of the program) is that we can't change a society easily but that we can change the way of thinking. From this perspective, I tried to make a story to make others understand.This encouraged me to continue my study career. Before I participated in fieldworks, I didn't think I would go to the master's course. (Keio)

- I only considered working in the service industry before the fieldwork, but

it occurred to me the potential in pursuing the research field. (UPD)

- Noticing how important policy-planning is and the follow through of these for disaster mitigation has helped me look towards policy-oriented courses rather than just pure engineering courses.(UPD)
- Participating in this, I realized what was really happening in society. I understood that a researcher without social responsibility is nonsense, and I decided to continue my study to become a researcher with this.(ITB)
- EBA is an interesting method to research, participating in the fieldwork makes me more interested in research. Then I turn to be a lecturer rather than an office worker. (ITB)
- It made me realize that I wanted to work in the government of my country to improve some aspects that are lacking. (Keio)
- EBA is giving me another sense of working in an ASIAN team. (ITB)

The following are some answers that mentioned that the program was **broadened their mindset**.:

- EBA fieldwork has opened my eyes to different possibilities and has broadened my understanding of the world. It made me appreciate the value of learning on a wider scope and it made me consider trying to apply to study abroad in the future. It also made me understand different cultures during my interaction with my fellow participants. (UPD)
- I would like to work with other people around the globe. (UM)
- Considering the field of study I am in right now, I still have vague plans for my future but, my participation in EBA fieldwork did open my eyes, which will influence my future. (UM)
- In the fieldwork, I get to be in the same group with 5 members from 5 different countries, and 5 different majors. It was beautifully chaotic. There were disagreements and friendship. It was the time I realized how much I love being a liaison, especially with different, unexpected individuals.(CHULA)

- While doing teamwork, I get to know some potential in me that is waiting to be developed. I feel the challenges are not that hard, and so I have the courage to choose a bigger career plan I used to be afraid of. (CHULA)

- It has helped me a lot and opens new friendships with other foreigners and has contributed to my experience working with international team members. It was really fun and challenging work! (ITB)

The followings are some answers that mentioned that the **importance of collaboration, peer learning/working with diverse members**.:

- This fieldwork had created a good experience for me in brainstorming some ideas by looking at different angles since all of my teammates were from a different background of knowledge. (We are from different countries, cultural, universities and different departments.) (USM)

- EBA is a great program to integrate people from different countries. We learned about the culture and to work together as a team to solve problems. At the same time, we enjoy spending time together. The knowledge learned may not be fully applicable to the current job scope but the experience and challenges undergone are useful to prepare us to face the real world. (USM)

- Participating in the EBA fieldwork gave me confidence in communicating and collaborating with friends from overseas, and I learned how exciting it is to work globally.(UPD)

- I developed a global mindset wherein I believe that it is not enough to stay and work exclusively for few in the world today when we want to innovate continuously. There should be sharing and exchanging of different ideas and information from different cultures. I became very much motivated to look for opportunities to study and work in different places in the world.(UPD)

- EBA fieldwork has opened my eyes to different possibilities and has broadened my understanding of the world. It made me appreciate the value of learning on a wider scope and it made me consider trying to apply to study abroad in the future. It also made me understand different cultures during my interaction with my fellow participants. (UPD)

There was answers that it **expanded the participant's interest in Asia**.:

- I always chosen western countries when I travel, study abroad. However, after joining EBA, I somehow decided on Asia as my research field. (Keio)
- I decide to go to Japan to study abroad instead of Europe.(HUST)

Moreover, there were answers that they found learning colleagues in Asia, who participants could **continue to collaborate after participation**.:

- One thing that makes EBA different is the participants get to work in a team with different people. That makes everyone closer and get to know each other in many aspects other than just traveling friends. The time frame is not too tight, gives us time to have fun, which creates a good combination of friends and colleagues. The experiences are priceless. (CHULA)
- After the participation, I continued the research at the place I visited in EBA fieldwork with local lecturers that I met in the EBA. (UPD)

In the beginning, the participants thought that the EBA FW should divide the participants into nationality or study backgrounds. From the survey, it showed that they developed as human resources who have a global mindset, collaborating with diverse members.

Coordinators In the beginning, coordinators from overseas were receivers of the program. Through involvement in the project, they became a person who can create and conduct a unique field-oriented program collaboration with various people (students, educators) on campus to share the local issues and its knowledge. Also, became a person who can design learning content that acquires EBA Skill while sharing the importance of collaborating with peer learning/working with diverse members, collaboration with program coordinators.

Program Coordinators They got the know-how for creating and conducting programs that can share with students from different backgrounds in the region. They were able to build a relationship with universities in Southeast Asia that enables sustainable educational collaboration.

Educators In the beginning, some of them were passive about the openness of each their knowledge widely and reluctant to give lectures on the program. However, the openness of their knowledge through this platform provided them the opportunities to speak in English, communicate with learners from Asia, develop teaching skill, or expand their research network, impacting lecturers' globalization and their educational/research scope. Through the education experience in the program, educators gain teaching methods for diverse global members, as well as expand their research network.

Member Universities They have grown into universities that share their own unique programs for university students globally, Japan, and Southeast Asia.

Notes

1 Youtube: `https://www.youtube.com/`

2 Fieldwork Reports, EBA Consortium: `http://www.eba-consortium.asia/?cat=6`

Chapter 6
Analysis and Discussion

Through three action cycles, the results and findings are discussed in this chapter to answer the following research questions, and analyzed the achievement of this study objectively.:

1. What are the impacts of this ecosystem on their local and regional communities?

2. What are the required components to build a sustainable educational ecosystem for the development of human resources to address social issues?

3. In which way university consortium should take action to build the educational ecosystem?

6.1. Impact of the Educational Ecosystem

As found in Chapter5, this impacted the learners, educators, and coordinators. This time, for answering the research question1, the analysis goes through to determine what impact was made in member universities and local areas, communities through the interaction with EBA FW.

6.1.1 Member University

As mentioned, member universities became able to create and conduct unique programs to share the local issues and its knowledge for diverse students in the region. This time, the analysis was conducted from the perspective of Keio and member universities, and summarized its impact on all members universities.

Keio University Keio has been leading the project since its start up. In AI3 and SOI Asia, they gained experiences, expertise, and human resources by building digital infrastructure and delivering learning content to partner HEIs in Southeast Asia. Also, they gained the know-how for the content creation and conduct based on the LFS for audiences in the region. Utilizing these in EBA Consortium, they created an educational ecosystem in which universities in the region can cooperate equally, share knowledge on solving social problems, and learn from each other. It indicates that they became a university that provides such a learning environment for their students, broadening the scope of peer learning/working with students not only from developed countries but also from Southeast Asian countries. In other words, they became able to expand their students' learning opportunities.

Member Universities in Southeast Asia The EBA program impacted the member overseas university's globalization. The unique local field-oriented programs encouraged them to share their knowledge with the globe. Also, in the process of creating and conducting the program, they could break down the barriers inside the campus among other faculties, students, which will be able to stimulate their further collaboration inside the campus.

Project's Impact on All Member Universities The diverse students' mobility for participating in the program brought each member of universities to **build capacity** for collaborating equally within one region, overcoming obstacles, such as economic disparities, political differences, socio-cultural contrasts, including religions and languages. Moreover, coordinators have currently worked on realizing credits exchange or incorporating the program into the member university's coursework/curriculum to keep the program sustainable, which impacted the university policy, scheme, or curricula. Keio already recognized the program as credits, besides, in SFC, the program was adopted in new course work, "Perspective" system[1]. It indicates a step toward smoother cooperation among universities in EBA Consortium, showing more expansion of its academic exchange and cooperation project sustainably. Also, it will be able to develop in progress this educational ecosystem sustainably and effectively foster more innovative talents.

In summary, they have moved forward to create a real sense of diversity, which is vital to foster individuals in addressing social issues that have no simple solutions,

through which they understand diversity, have a sense of global mindset, see a situation from multiple perspectives, and think creatively for answering it.

6.1.2 Local Communities

The project also impacted the local communities. The investigation was conducted in the two FW fields, at Minamata city hosted by Keio, and for Orang Asli people hosted by USM.

Case 1: Minamata Fieldwork, Keio EBA FW impacted on the local area in Japan. This program was started in Minamata city in 2013, since then, it was conducted every summer. The city is known for Minamata disease which was caused by mercury pollution from a chemical factory in the 1950s. It was caused by the food chain due to environmental pollution. Participants visited actual places and learned the overview of issues, through collecting data.

Local hotel in Minamata city, in the pilot EBA FW 2013, there was feedback from participants and staff that some participants who do not eat pork or beef, alcoholic ingredients for religious or cultural reasons, could not eat enough food in the hotel. In 2014, the hotel (the same one as the previous year) prepared the halal meat and vegetarian menus for the participants. Besides, the hotel created new recipes for those with special needs. For the hotel's public bath facility, because some were unfamiliar with the Japanese style, which removes all of the clothes before entering the water, the hotel decided to open the facility for EBA participants at midnight. Besides this, EBA FW pushed to the improvement of the Wi-Fi connection, English notation. According to the hotel staff: “ In the beginning, we did not have opportunities from the overseas guest. Thus our hotel facility and staff were mainly for Japanese customers. Thus, In 2013 the first time EBA stayed at our hotel, we felt sorry that all guests might not be satisfied. Since then, we have tried to upgrade ourselves to satisfy our overseas guests as well. Now our hotel is becoming popular for overseas as well. ” It indicates that participants had an impact on the local area's globalization.

According to local citizens in Minamata city, there are locals who are looking forward to seeing the participants.:

- 毎年孫たちが帰ってくるみたいな気持ちだ。また会えるのが楽しみだ。
  (When I meet EBA Fieldwork participants every summer, I feel my grandkids come back home. I look forward to meeting them again.)

- 経済成長期のアジアで、水俣のような出来事が発生しないように、自分たちの知っていることはできるだけ EBA の学生に伝えている。
  (We are telling EBA participants as much as possible what we experienced, learned so that events like Minamata do not occur in the Asian region, where it is entering a period of economic growth.)

- 暑いのに、勉強を頑張っていて、市民に質問したり、自転車で散策したりする様子をみて、水俣を楽しんでくれていて嬉しい。水俣で楽しく、おいしい食べ物の思い出を沢山作ってもらいたい。
  (Even though it was hot, I was happy to see that they were studying hard, interviewing local people in the town by riding a bicycle, and enjoying Minamata. I want them to make lots of fun and delicious memories in Minamata.)

- 参加者は、母語以外に英語を話して、それに加えて日本語で挨拶をしてくれて、すごいなと思った。自分も次回は、英語で話せるように勉強する。
  (Participants spoke English in addition to their mother tongue, also they greeted me in Japanese, which I thought was amazing. I want to communicate a little in English the next time they come.)

Through the continuous interaction with the local area and people, the project have impacted the locals to motivate them to share their experience, knowledge with the next generation (participants) or prepare for the following year's program. It means locals and the program have started to build good relationships. It will be able to promote future collaboration among them.

From the surveys, it has found a participant from an overseas member university has been continuing the research in this field (Minamata), after the program participation, together with educators, students from the host (Keio). Also, some participants from Keio decided the area as the research field after the participation. It means this field-oriented program has impacted participants' learning. Besides, these studies will be able to bring sustainable development for the locals.

Case2: Orang Asli Fieldwork, Malaysia (USM) This FW was conducted from August 25–September 3, 2016, by USM. The Orang Asli are the indigenous minority people of Malaysia. According to USM, as of 2015, they numbered close to 200,000 and represented a mere 0.6 percent of the national population (30 million). Being a minority group, their well-being and social-economics status are among the lowest in the country. During the FW, participants visited the village of Orang Asli. They were divided into 4 groups and collected data on, education, entrepreneurship, sustainable environment, preservation of local knowledge and heritage, and ICT communication info-structure of the community. The sharing presentation was conducted at the hall in the village with a large audience.

Figure 6.1 Final Presentation at a Hall in the Village

Comments from the audience who came in the presentation are followings.:

- I was surprised that lecturers and students from the famous university and students from overseas came to our village and studied our culture and reminded us of our culture's unique points. I understand the importance of the preservation of our culture.
- I would like to keep in touch with them to get some advice about my kids' education and Internet things.
- I taught them how to create the craft. It was fun to teach new people, the younger generation about our traditional things. And participants told us these are cute and of good quality. [$\cdots$], I would like to sell it by ourselves or share our culture outside of Malaysia in the near future.

- Students, lecturers from university often came to our village and did work, but it was the first time that students asked us many questions, especially about our cultures, traditional things that we respect. For me, teaching anew generation is fun. I think next time I can teach it more in a fun way.

- My friends and I answered questionnaires that students conducted for the experiment. It was fun to talk with them, and I was impressed that they worked hard even though some could not understand the language, tried to listen to my talk. Actually, I was looking forward to listening to today's presentation. It was fun to see the result, that includes people's opinion.

These comments showed the EBA methods and its process impacted the locals. Actively listening to locals (data collection), and sharing the results (data-visualization) based on finding evidence-based, brought them to understand themselves from a new perspective. Also, the process of meeting and interacting with participants empowered locals, which increased their self-awareness. Moreover, a network with participants and the university was formed, which will be able to expand the possibilities of the village.

Findings -Local Area, Community-

The EBA FWs have impacted the local communities. The program could build relationships with locals. It indicates that conducting the field-oriented programs continuously enables to foster a new generation collaboratively with locals.

In addition, practicing EBA Skill in the local place can offer locals the opportunities to understand themselves from new perspectives and gain empowerment through the interaction with participants, which able to increase locals' self-awareness.

6.1.3 An Emerging Social Issue -COVID-19-

The Coronavirus disease 2019 (COVID-19) pandemic, since the beginning of 2020, a world in rapid change. Under such situation, it was investigated in the following two aspects.: What members/participants of the projects took action in the local area. Also, what collaboration was made among them.

Evaluation Methods

AI3 and SOI Asia: Questionnaire Survey to Partner Members The author conducted the open-ended questionnaire answered by partner members in September 2020. 8 partner members were answered. (Table:6.1) The questionnaire is in Appendix C.

Table 6.1 The Questionnaire Respondents from Partner Members (2020)

Country	Name of HEIs
Bangladesh	BUET
Myanmar	UCSM, UCSY
Malaysia	USM
Indonesia	ITB,UB,UNSRAT
Timor-Leste	UNTL

EBA Consortium: Action through the Online Communication Platform Under the social distancing situation that people required to avoid close contact with others, it was investigated the real actions of EBA FW alumni who have a global mindset.

As mentioned, each EBA FW created a Facebook group page for communication before/during/after the FW among participants, educators, coordinators. Besides, a group page for each member university, except Keio, was created to stimulate communication inside the campus. This time the observation was done in August 2020, at 25 EBA FWs and 6 member universities group pages.

Local Areas, Communities

Partner members of AI3 and SOI Asia, all said that they were shifting to digital forms of learning in their universities. The human resources developed in the project were able to contribute to their university as IT experts. In particular, they were able to lead to change their university's policy, or practice for online education, quickly, based on the experience of remote/online learning in the project. The followings are some comments.:

- BUET: During the pandemic, our experience in the project helped the university to adopt distance learning more easily, also it helped us to change the policies regarding distance learning via an online platform.
- USM: Experience in the project with distance education and videoconferencing tools helped to formulate appropriate policies and best practices to support initial switch-over to online learning.
- UNSRAT: All project members in UNSRAT are actively involved in our campus IT support unit, and the experience of doing distance learning in the project is very useful because all lectures need to be done remotely.

Also, they were working on supporting IT in local areas. For example, UCSM started to share the internet operation experiences gained in the project with operators, staff from other universities in Myanmar. Also, UB contributed to support online learning in local schools.

COVID-19 had been accompanied by a wave of rumors, and false claims were fueling confusion. The EBA FW alumni shared information related to COVID-19 with their local language on their own Facebook page. It was found 43 posts that related to this (including multiple posts by one person). It covered a wide range of topics, however, it can be divided into three categories. Most posts (33 posts) were about the virus, and how it spreads, or symptoms, such as ways to protect themselves from the virus (social distancing, masks, sanitization). Some shared information from world organizations or overseas universities, translating it from English to their local language. The second-largest (10 posts) were the local information, such as hospitals, shops, public transportation, or schools. Also, some (3 posts) posted comments that let them act calmly for the information that was not evidence-based. Besides, an alumnus from Vietnam who lived in Japan shared her activity to volunteer to Vietnamese living in Japan, such as translating the information to the local language.

Collaborate among Members

For AI3 and SOI Asia, at the Joint meeting in September 2020, committee members shared updates of each HEIs and local situation of IT, educational things.

Also, they started research collaboration to share their knowledge at REN meetings or international conferences. For EBA Consortium, there were several types of activities were shared in the EBA FW group pages, as follows.:

Encourage Members On two group pages, alumni shared their thoughts with others to be positive about the future. An alumnus posted to encourage others and suggest the reunion after the COVID-19. 15 out of 19 participants reacted positively to the comments. Another also shared a local and personal situation under this and confirmed other participants' circumstances. 16 out of 22 participants reacted positively, and 5 replied to the comments with details. As mentioned in Chapter5, EBA alumni who developed a global mindset had worked/studied globally. It means some had to be isolated alone in another country due to quarantine. Or some had to cancel their plan to study/work overseas. Members encouraged each other and kept motivated for their future global career and members' reunion.

Research Collaboration 4 alumni utilized the group page to collect data about COVID-19, such as follows.:

- Questionnaire for university's class/lecture situation
- Questionnaire for lifestyle and behavior changes
- Questionnaire for the perception of mask face recognition technology
- Questionnaire for people's information access and use during health crises and emergencies

Also, an alumnus called for research collaborators/supporters to members for collecting and analyzing the data for the COVID-19 Pandemic, domestic and regional.

Findings

For AI3 and SOI Asia, partner members became a person who capable of guiding, supporting the local school, and society to keep up with a digital shift in the form of sharing knowledge experience gained from the project. For participants of EBA Consortium, as of August 2020, the research collaboration just started or the beginning stage, such as seeking collaborators and sharing information, which

indicates the continuous observation is needed. However, the research outcomes that they about to start will further benefit the region.

It showed that the students developed in the educational ecosystem, or partner members who supported to create it, have been taking actions as a project member and a citizen, self-directly, or collaborating with other members, under the emerging social issues. Therefore, EBA Consortium could foster a new generation of human resources capable of dealing with common issues by self-directly, and cooperating from multiple lenses. It means the educational ecosystems were successfully created.

The brand-new research collaborations among the EBA alumni who can act based on the evidence-based and work with diverse members will be able to contribute to the region. It indicates this is an effective method for universities in the region to collaborate and foster human resources capable of addressing social issues.

6.2. Components of Educational Ecosystem

Elements for an Educational Ecosystem

In order to tackle issues in the region which has multiple aspects, individuals are demanded to understand diversity, have a sense of global mindset, be capable of seeing a situation from multiple perspectives, and think creatively for answering issues that have no simple solutions. In order to foster students capable of addressing social issues in the region, EBA Consortium created such a diverse learning environment. According to the results of actions for creating an educational ecosystem in EBA Consortium, we could affirm that participation in EBA FWs triggered and raised awareness of addressing social issues collaborating with diverse members in the region. After-session comments and feedback from main actors as well as local communities showed it impacted the development of not only students but also the in member universities, local communities.

To answer the research question2, the required components to build a sustainable educational ecosystem for the development of human resources to address social issues, are explained from the perspective of the elements of the educational ecosystem. Besides, the key elements that bring the project to success are

described.

Digital Infrastructure

Since EBA Consortium utilized digital infrastructure and human resources of AI3 and SOI Asia, it is described the elements which found in the AI3 and SOI Asia. Although they set the digital infrastructure at each local area first, the project was focused on human development instead of technology-based. The following three steps are factors for developing digital infrastructure at the local campus.

1.Access : In order to build affordable ICT infrastructure at the local campus, the lead university should see and understand the local situation and opinions, and design infrastructure that fits the area.

2.Usage : Second, educate lecturers, staff, or students of partner HEIs to be able to operate (maintain/develop) digital technology locally. Besides, create opportunities for using this for project activities such as lectures, meetings, or even other occasions.

3.Empowerment : By attending/supporting project activities, partner members understand the project's benefit and value and keep involved in this. Through the process, digital technology will be customized by their hands, impacting the ICT in the local area, also.

The digital infrastructure and human resources should be utilized by HEIs other than members of the project to share their knowledge, as EBA Consortium used. It brings the project broader academic collaboration and develops the digital infrastructure and human resources.

People -Consortium Design-

In order to build sustainable collaborative relationships among member universities in EBA Consortium, the followings are the key elements.:

Approach to the Coordinators : Firstly, in order to create collaborative relationships among coordinators of member universities, it is required to create

the opportunity to meet, discuss, and learn from each other, face-to-face and online, raising each coordinator's commitment gradually. In this process, they recognize the project's necessity and value, which is the key that coordinators to continue support and cooperate in the frame of the project.

Share Project Values in Member University : They educate students of the project, by collaborating with the students who have experienced the project (EBA alumni) or educators in their school for creating a unique program while sharing the project's value. Sharing such programs from each member also stimulates equal collaborative relationships among coordinators, which will improve the quality of the content to meet each university's requirements. Then each coordinator works to realize more expansion of academic exchange and cooperation in the project, such as credits exchange or curriculum creation, which is the essence of conducting the activities in the project sustainably.
Through this process, coordinators bring separate universities into a new framework to commit to a common mission that builds the EBA educational ecosystem. By transforming the university policy, scheme, or curricula, the relationships would be more sustainable. Also, the relationships among coordinators have transformed into those that can be co-managed the project.

Content

In order to create and conduct learning content that fosters students capable of addressing social issues in the region, and program content that shares the local issues and its knowledge from each member university, the following components are necessary.:

LFS : Firstly, the content should be aligned with and delivered based on LFS (motivation, learning experience, and learning environment), collaborating with local educators to understand the needs and situation of the learners. In this study, the components of LFS are targeting university students in the region were investigated in AI3 and SOI Asia. Based on the findings, in EBA Consortium, it is designed and conducted a learning program to develop human resources capable of addressing social issues. The key elements are the followings.:

Learning Motivation: In order to create learner-centered learning content, it is required to keep learners and content creators (educators) motivated. In AI3 and SOI Asia, combining online and face-to-face lecture is the key to learner's motivation. Besides the subjects, learning the culture/language of program host HEIs, learners can learn in a more fun and meaningful way. Meeting new peers or colleagues through activities can create opportunities for learners to find their challenges and motivation, which is useful for their own research and career. Fostering their students as future collaborators can keep educators motivated.

Learning Experience: Since the learners have different learning habits, educators should design learning methods of lecture style or delivery ways that fits them. Also, their learning backgrounds are diverse, if necessary, additional lectures should be conducted at local sites, collaborating with local educators. AI3 and SOI Asia's learning strategy is to provide opportunities for learners to practice their skills learned in the class in a real environment that makes learning more effective and self-directed transferable to new situations. It enabled them to find their challenges and motivated them to achieve their goals even after participation.

Learning Environment: A learning room that takes remote/online classes in each university (SOI Asia room) was beneficial not only for the project but also for member universities because it can be utilized in other such classes, as well as the creation of such lecture content. As for the online learning environment, the project was adopted as a commercial SNS platform. However, it would be better to create an online communication system that fits the project.

Peer-Learning Community

Based on LFS, the content to foster students capable of addressing social issues in the region is required to include the followings:

- Identifying the social issues with the evidence-based. (EBA Skill)
- Understanding diversity, having a sense of global mindset and thinking creatively for answering complex issues. (Peer learning/working with diverse members)

Regarding the lectures of the EBA minimum Skill (data collection-analysis-visualization(Video/Poster/Presentation), since the theme, methods of data col-

lection, and analysis of each FW is different, the lecture should be custom designed for each FW, together with educators from the program host university.

For diverse participants with different levels of skills and knowledge, a pre-online seminar helps them prepare the minimum knowledge and obtain information. For face-to-face learning, creating a Learning Community enables participants to understand the importance of peer learning/working with diverse members. A program should be designed to achieve this, that they can share their skills and knowledge acquired in each lecture, share knowledge which a person had learned in school, and shared responsibility for the outcomes with group members.

In this process, participants witness that others' skills and knowledge are diverse, and the ways of thinking are different. Then, recognize others as peers, encounter and overcome differences and conflicts, respect each other's opinions, using each other's skills and knowledge, and work together to achieve common goals. Through this learning, they will be able to understand the importance of collaboration with diverse members.

Besides, sharing the outcomes with the public will improve participants' EBA Skill. For the next step, the program should provide an online environment where they can freely access the learning content, data, and members.

Field-oriented Programs

In order to create each own unique field-oriented program from all members, it is necessary to increase the commitment of the program host university. The project took the approach that adding students who participated in the program (alumni) or other faculties on campus for the program creation process, gradually increased the commitment inside member university. Then, finally, each one can create its own unique field-oriented program.

Notes

1 The purpose of “Perspective” is the coursework “to expand students' academic knowledge beyond the specific issue or field.” SFC Perspective, Keio University:`https://www.students.keio.ac.jp/en/sfc/pmei/class/registration/perspective.html`

Chapter 7
Conclusion and Future Plan

7.1. Conclusion

This dissertation described the process of designing and creating an educational ecosystem that comprises universities collaborating to foster students capable of addressing social issues by conducting three main actions.: consortium design, peer-learning community, and field-oriented programs.

We built collaborative relationships among coordinators from each university to enhance the commitment of all nine member universities of the Consortium. We designed learning for the minimum EBA Skill, and peer learning/working with diverse members, based on diverse participants' LFS. Each member university created and conducted unique field-oriented programs, where they could share social issues and stimulate knowledge-sharing of local expertise, collaborating with educators and EBA alumni in member universities. Students developed in the educational ecosystem, or partner members who supported to create it, became human resources capable of acting self-directed to address social issues, cooperating from multiple perspectives. Therefore, the educational ecosystem that comprises universities collaborating to foster students capable of addressing social issues in the region was successfully created in EBA Consortium. Through the process, participants, educators, and coordinators from EBA Consortium brought separate diverse universities into a new framework with a commitment to a common mission in Asia. Thus, this approach has broken down barriers/gaps inside/outside of it and strengthens project members' networks to aggregate their knowledge, and play in tackling common issues in Asia.

It indicates that this is proven as one of the effective ways of the university educational collaboration for fostering a new generation capable of addressing social issues in the region collaborating with diverse members. Also, by developing this

educational ecosystem, it will be able to foster more innovative talents sustainably and effectively, while achieving the university's three core functions. Therefore, the answer to the research question 3 is, the author proposes that the university consortium in Southeast Asia and Japan, create an educational ecosystem for fostering a new generation addressing social issues, consisting of three factors.: Each member university of the project is equal and collaborative relationships. Participants from member universities develop human resources capable of identifying the issues by evidence-based and cooperating from multiple perspectives to think creatively for answering issues that have no simple solutions. All member universities create and conduct unique field-oriented programs to share knowledge on problem-solving of social issues.

7.2. Contribution

I have worked closely with all of the main stakeholders. The relationships among coordinators(consortium design), that they from member universities build collaborative relationships among them sustainably, after several actions, it results in changing university policy, scheme and curricula. Also, it transformed enough to co-manage the project. The author was involved as program staff to organize, support meetings (face-to-face, online). Besides this, I visited each member university to meet the coordinator, and mediated between the consortium and coordinators, which contributed to stimulating the collaboration.

For the content (learning design and program design), after several trials and errors, results in the final design that could fit the formal education curriculum in university. The learning design that participants can acquire the minimum EBA Skill and understanding the importance of peer learning/working with diverse members, was designed on the learner-based, followed the action research method that planning, implementation, evaluation, and improvements with several iterations.

The design of the field-oriented program that each member university shares their issues and its knowledge, after several actions, it results that each one could design and conduct unique programs. I have participated in 25 FWs as a program producer and designer, have interacted with the participants, and fostered

them as future EBA collaborators. By adding EBA alumni in the designing and conducting a field-oriented program process, they played a role in breaking down barriers within the host university and gradually expanding the circle of collaboration. Also, it was achieved to create a student-based program that not only learns about local issues but experiences the daily life and culture of peers of the same generation in Asia. Through the process, I built relationships with the EBA Alumni to mediate between the Consortium and them, which contributed to creating the programs more learner-based.

Building collaborative relationships among the main stakeholders in Asia took a long time and effort to break down various obstacles such as economic disparities, political differences, socio-cultural contrasts, or educational policy or curricula in universities. Besides, understanding the culture, habit, language, and member's hiding true feelings. Visiting universities and meeting the person, learning/teaching from each other, and building credibility enabled them to understand the values and build trust. The educational ecosystem created by carrying it through such laboriousness benefited not only learners, educators, or coordinators but also citizens in Asia. Then, it gradually changed citizens' attitudes, which are the crucial factors to change society. It is required to continue developing a new generation with the members continuously and expanding the harmony of collaboration in the region.

It is required to keep developing the educational ecosystem with main actors continuously to sustain it. There are many comments, ideas, or feedback from participants, educators, coordinators, alumni as well as local communities to develop this suitable for the members and local characteristics. It indicates further collaboration among them will be vital to improve the educational ecosystem. As for the next step, especially adding the alumni, who were developed there and play an active part in various fields in society globally, to this educational ecosystem is essential to make it more enriched.

I hope this dissertation inspires schools and others who want to contribute to universities' global educational collaboration.

7.3. Limitation

There is ample scope for future research into developing human resources to address social issues by collaboration among universities, or the potential of the educational ecosystem to address social issues. However, it is noted that there are several limitations in this study that have to be considered in future research. The following is a summary of these limitations:

- This dissertation was conducted in educational collaboration projects among universities in Southeast Asia and Japan. However, since the concept of itself is widely adaptable, it is expected to be applied to other continent collaborative projects in the future.

- This dissertation adopted the approach that universities collaborated, educated students, lecturers, and consortium staff, for fostering human resources capable of addressing social issues. For universities, there are many approaches aimed at solving social issues, also many methods aimed at fostering human resources capable of this. This time, it has not conducted a comparative verification of the effects on this approach and others. Thus it is necessary to verify this in the future.

- This dissertation was not verified from the perspective of fundraising. University also has a funding problem. In fact, to get funds, some universities prioritize preparing workers for the labor market or emphasizing academic fields that are popular around the globe, which is widening the gap between them and citizens. However, pursuing positive social impact by action utilizing the knowledge and experience of them (students, educators) can turn around university value, then fill the gap between society and university. As found in the dissertation, taking initiative actions among main actors of Consortium reorient the university policy, strategy, and incentives and the role of it in society. Through these changes, the funding trends will be changed.

- The margin of error made it challenging to quantify some of the numerical statistics, particularly those designed to measure changes in attitude and career. Besides, an observation conducted over a more lengthy period of

time might have been better able to judge the effect of the educational ecosystem present in the participants' mindset. Collaborating with members of consortiums enables them to achieve goals that they will not achieve alone. Thus, conducting over a longer period of what impact is on alleviating societal issues in the region would be the next stage of this research. Long-term research is also needed to clarify how the human resources educated in these consortiums specifically, addressing social issues in the region.

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Appendices

A. SOI Asia Survey Form, Conducted on August 2019

6. Values of this project/community (AI3/ SOI Asia specific)

Please describe your own opinion about the values of our community with some evidence.

1. Value of this community to your ICT (including network) development in your university

How do you evaluate the experience in this project such as network development experience, operators workshop and internships, shared courses on SOI Asia/AI3 community?

Write your answer here:

2. Value of this community to your quality education in your university
How do you evaluate the program such as internships, shared courses offered by SOI Asia/AI3 community?

Write your answer here:

3. What are the most significant changes that this community brought to your team/university?

Write your answer here:

4. Any additional comments about the value/changes that this community brought to your university.

Write your answer here:

END

B. EBA Fieldwork Survey Form, Conducted on August 2017

EBA Fieldwork — After EBA— (2013-2017)

This should only take 5-10 minutes to complete.

———NOTES———
- Please complete all section by 9th August , 23:59 (UTC+9).
- The report results will be used only for research purposes, related public relations, and educational activities..
——————————

*必須

1。 Which Fieldwork(s) did you attend? If you joined more than 2 Fieldworks, please select all Fieldworks you've joined. *

当てはまるものをすべて選択してください。

- [ ] Minamata FIeldwork 2013
- [ ] Minamata Fieldwork 2014
- [ ] Fujiyoshida Fieldwork 2014
- [ ] Sanriku FIeldwork 2014
- [ ] Philippines(UPD) Fieldwork 2014
- [ ] Malaysia (USM) FIeldwork 2015
- [ ] Minamata Fieldwork 2015
- [ ] Fujiyoshida FIeldwork 2015
- [ ] Vietnam FIeldwork 2015
- [ ] Indonesia (ITB) FIeldwork 2015
- [ ] Individual Fieldwork 2015 & 2016
- [ ] Thailand Fieldwork 2016
- [ ] Malayasia (UM) Fieldwork 2016
- [ ] Sanriku Fieldwork 2016
- [ ] IT Fieldwork 2016
- [ ] Philippines(UPD) Fieldwork 2016
- [ ] Minamata Fieldwork 2016
- [ ] Fujiyoshida Fieldwork 2016
- [ ] Malaysia(USM) Fieldwork 2016
- [ ] Tsuruoka Fieldwork 2016
- [ ] Vietnam Fieldwork 2016
- [ ] Malaysia(UM) Fieldwork 2017
- [ ] Myanmar(UCSY) Fieldwork 2017
- [ ] Vietnam Fieldwork 2017

その他: ☐ _____

2。 Your Nationality *

_____

3。 Your Gender *

1 つだけマークしてください。

- ◯ Female
- ◯ Male
- ◯ その他: _____

4。 If you don't mind, please share us your Full Name (please write in full, and not abbreviated)

_____

Section: 1/2

5。 1. Select your current position. *

当てはまるものをすべて選択してください。

- ☐ Working in Academia (graduate school, teaching, education, etc.)
- ☐ Working at a Public sector (governments, public institutions, etc.)
- ☐ Working as a Researcher (universities, research institutions, etc.)
- ☐ Working in Enterprises (manufacturing, retail, technology, etc.)
- ☐ Working in Financial (bank, investments, etc.)
- ☐ Working at a Third sector (international organization, NGO, NPO, etc.)
- ☐ Studying at Universities (under/graduate school)
- その他: ☐ _____

6。 2. Continue from Question 1, describe your company/organization name and job/major (e.g. Working as a senior engineer at Yamada, Inc.)

_____

_____

_____

_____

_____

7。 3. After joining EBA Fieldwork(s), have you studied/worked—or currently studying/working— or planning to work/study overseas? *

1 つだけマークしてください。

- ◯ Yes, I Worked/studied abroad.
- ◯ Yes, Currently I am working/studing aboard.
- ◯ Yes, I am Planning to work/study abroard.
- ◯ No
- ◯ その他: _____

8。 4. Continue from Question 3, if "yes" describe the reason—you were/are abroad—in detail. Such as, Country Name, Objectives, Length, etc.

_____

_____

_____

_____

_____

9。 5. Have your participation in the EBA Fieldwork(s) changed your career plans in someways? *

1 つだけマークしてください。

- ◯ YES
- ◯ NO
- ◯ Do not know
- ◯ その他: _____

10。 6. if "yes" at Question5, describe the reason in detail.

11。 7. Was EBA Certificate(s)—provided by the EBA committee— useful for you? *

1 つだけマークしてください。

- ◯ Yes
- ◯ No
- ◯ その他: _____

12。 7-1. If you choose "yes" at Question7, tell us more details. Such as, the situation you used, the organization(s) you submitted, and the people(s) you showed it, etc.

Section: 2/2

13。 1.In which way did the collaboration work among diverse participants in EBA influenced you? Please describe in detail. *

14。 2. In which way did EBA program helped raising your awareness of the importance of evidence and data in communication? *

15。 2. Are you still in touch with your EBA Fieldwork colleagues? *

1 つだけマークしてください。

- ◯ Yes
- ◯ No

16。 2-1- a) If you choose "yes" at Question2, How often do you in touch with colleagues? (frequency)

1 つだけマークしてください。

- ◯ Once a year.
- ◯ Once a month
- ◯ Once a week
- ◯ Often

17。 2-1-b) If you choose "yes" at Question2, What communication tool(s) do you use?

当てはまるものをすべて選択してください。

- [ ] Facebook
- [ ] Twitter
- [ ] Instagram
- [ ] LINE
- [ ] WhatsApp
- [ ] E-mail

その他: [ ] _____

18。 4. Share us your thoughts about EBA from your current perspectives. *

_____

_____

_____

_____

_____

C. SOI Asia Survey Form, Conducted on September 2020

SITE UPDATE OF - (Name of University/Institution)

by *.your name*

We would like to know your organization in the time of COVID-19.
1) Under the COVID-19 pandemic, in which way your university changed at the following points?

- Your University Policy
  Write here. (example: shut down school facilities.
  : students are required to buy a laptop. etc.)

- Class lectures
  Write here.(example: all lectures are online. no change at all! etc.)

- Other (example: Library, Laboratory, Lecture's mindset, etc.)
  Write here.

2)What has been the hardest part under this situation?
Write here:

3)Does the knowledge or experience of AI3/SOI-ASIA help you or your organization anyway under this situation?
please describe your answer and the reason:

4)Have you or your team shared the knowledge or experience of AI3/SOI-ASIA with other universities, organizations, or local communities?
If yes, please describe the details:

5) Is there any advantage of a member of this community, under this situation?
please describe your answer and the reason:

6)Do you think your students have adapted remote learning?
please describe your answer and the reason:

7) Please share with us, if you have any thoughts, comments, suggestions:
Write here: