The Education Practices Utilizing the "Framework Necessary to Design and Develop Learning Instruction Processes for Education for Sustainable Development (ESD)"

「ESDの学習指導過程を構想し展開するために必要な枠組み」を活用した教育実践

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要旨

国立教育政策研究所が提案した「ESDの学習指導過程を構想し展開するために必要な枠組み」を活用した教育実践の拡大や、その枠組みの有用性の検証を目指して、2 種類の実践研究を行った。その一つは、小学校における教育課程全体を通した ESD の実践である。年間指導計画として ESD カレンダーを作成し、その中に ESD 学習の枠組みを取り込んで実践を進めた結果、ESD の視点に立った教科等の単元の目標や、児童に身に付けさせたい力を明確化することができた。もう一方の実践は、複数の小・中・高等学校における総合的な学習の時間などでの ESD の実践である。各地域の特色・特徴を生かした地域学習の中に ESD 学習の枠組みを取り入れて実践を進めた結果、地域学習にグローバルな視点を加えることや、多様な学習を「持続可能な社会の構築」に関連付けることができた。これら２種類の実践研究から、「ESDの学習指導過程を構想し展開するために必要な枠組み」の活用が効果的であることが検証されるとともに、その枠組みを教育課程全体に織り込むことや、小・中・高等学校を通して体系的に取り入れることの重要性を指摘することができた。

Abstract

In order to expand practical utilization of the "Framework Necessary to Design and Develop Learning Instruction Processes for Education for Sustainable Development (ESD)" proposed by the National Institute for Educational Policy Research (NIER) and to verify applicability of the framework, we have implemented two types of practical studies. One of these studies was to practice ESD introducing the framework into entire curricula at an elementary school. The practice was promoted by creating ESD calendars as yearly teaching plans incorporating the ESD framework for learning. This practice resulted in clarifying study objectives of curriculum units and abilities children should acquire from ESD viewpoints. In the other study, ESD was practiced during "periods for integrated study" at multiple elementary, lower secondary, and upper secondary schools. This approach was implemented by introducing the ESD framework to regional studies of sample schools to learn special features of their regions, and they have succeeded in adding global perspectives in their regional studies and linking various studies to "development of a sustainable society." These two types of studies have proved that application of the

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"Framework necessary to design and develop learning instruction processes for ESD" is effective. Moreover, they pointed out the importance of incorporating the ESD framework into entire curricula at schools and adopting it systematically and consistently from elementary schools to upper secondary schools.

1. Introduction

"Education for Sustainable Development (ESD)" has been introduced and implemented in many countries in order to pursue development, which can bring high quality of life, from environmental, economic, and societal/cultural standpoints, to all members of the societies, including future generations as well.

At the World Summit on Sustainable Development held in 2002 (so-called Johannesburg Summit), a proposal was made to designate ten years from 2005 as the "United Nations (UN) Decade of Education for Sustainable Development," and this proposal was adopted in the UN General Assembly at the end of the same year. Subsequently, the "Implementation Plan of the UN Decade of Education for Sustainable Development in Japan" was formulated in 2006 by the liaison conference of members from relevant ministries and agencies under the Cabinet Office. The Basic Plan for Promoting Education, formulated in 2008, also specified "promotion of efforts on education for building a sustainable society" as one of the issues to be addressed comprehensively and systematically for the next five years. Regarding school education, the "Improvement of the Courses of Study for Kindergartens, Elementary Schools, Lower Secondary Schools, Upper Secondary Schools and Schools for Special Needs Education," the report of the Central Council announced in 2008, emphasized the importance of building a sustainable society in the section discussing matters that should be improved transversely in all subjects, in order to respond to the changing society. Following this report, the new Courses of Study for the elementary schools and lower secondary schools were publicly notified in 2008, and the one for upper secondary schools, in 2009. The concept of building a sustainable society was incorporated in many parts of these Courses of Study, and realization of learning instruction based on ESD concepts came to be regarded as necessary.

Against this backdrop, NIER has clarified how curricula, teaching materials, and instruction and evaluation methods should be, for the purpose of embedding and strengthening ESD at schools. In the 2009 academic year, NIER initiated "A Research of Education for Sustainable Development (ESD) at school," aiming to provide materials and sample data that could contribute to ESD instruction, and published the ESD interim report (NIER, 2010) and the final report (NIER, 2012) in 2012. In this research, it elaborated and proposed the "Framework necessary to design and develop learning instruction processes for ESD" (see Figure 1, table 1 & 2) based on the efforts on ESD, which have been made in Japan and abroad, and presented plenty of practical cases based on such a framework as well. This research ended in the 2011 academic year, but further practical studies on applicability of this framework and issues to be tackled were still necessary.

Therefore, the new research in this document aims to verify the applicability of the "Framework necessary to design and develop learning instruction processes for ESD" (the "ESD framework"), by further pro-

moting education practice based on it.

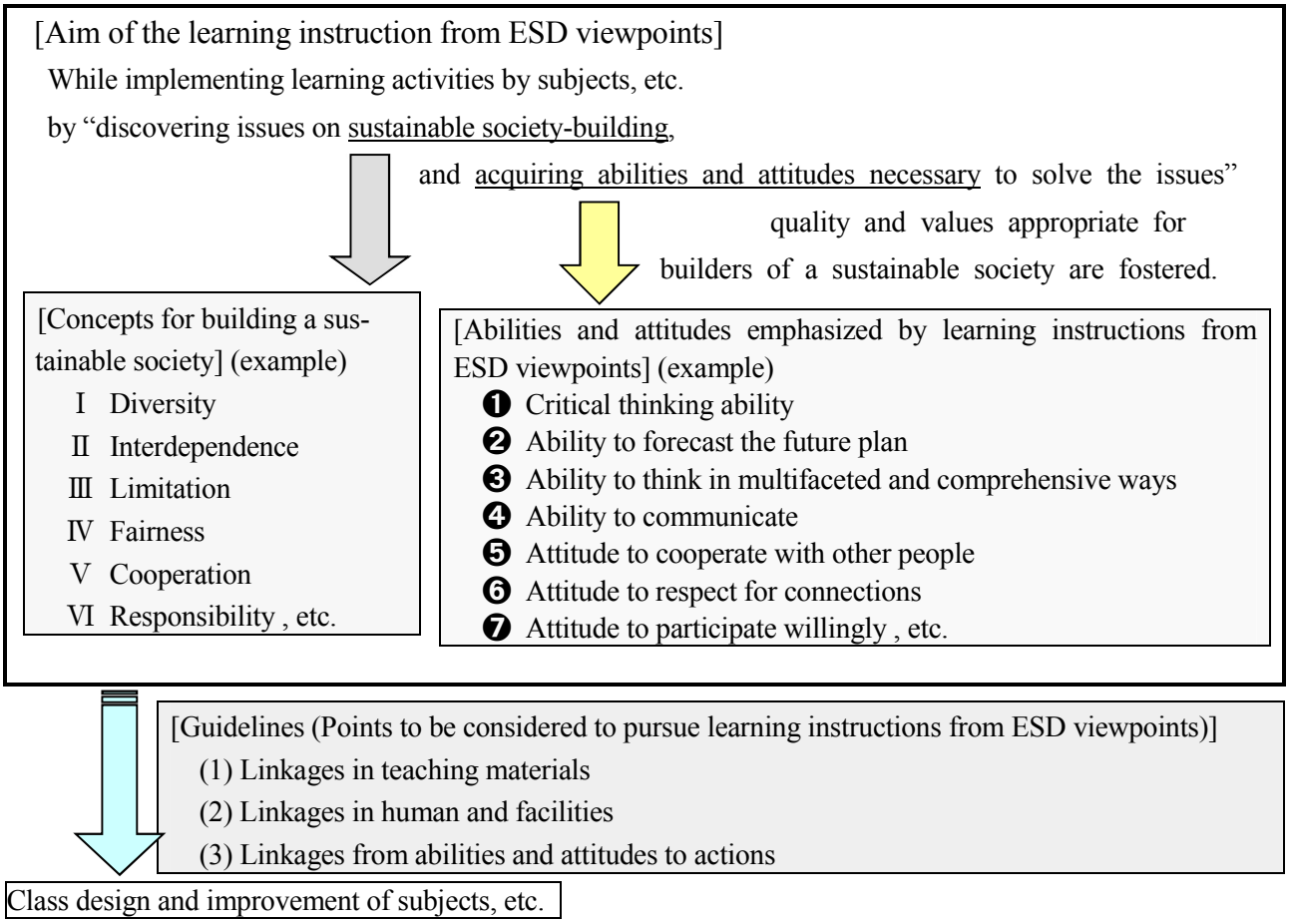


Figure 1. Framework necessary to design and develop learning instruction processes of ESD
(NIER, 2012)

Table 1. Concepts for building a sustainable society (NIER, 2012)

Ⅰ Diversity	Nature, culture, society and economy are comprised of a diversity of components whose origins, quality and status vary, and a diversity of phenomena (events) occur among them.
Ⅱ Interdependence	Nature, culture, society and economy work with each other, and material objects and energy move and circulate and information is transmitted and distributed among them.
Ⅲ Limitation	While nature, culture, society and economy are supported by limited environment factors and resources (material objects and energy), they irreversibly change.
Ⅳ Fairness	A sustainable society is based on equity, fairness and equality of the security of the basic rights and enjoyment of benefits from nature, etc. among regions and generations.
Ⅴ Cooperation	A sustainable society is built while various subjects adopt and harmonize in accordance with circumstances and interrelationship and the subjects cooperate and collaborate with each other.
Ⅵ Responsibility	A sustainable society is built by changes and improvement of various subjects toward future images while having a responsible vision of an ideal future.

Table 2. Abilities and attitudes emphasized in learning instructions from ESD viewpoints (NIER, 2012)

❶ Critical thinking ability	Ability to see the essence based on reasonable and objective information and fair judgment, and to think and judge things in constructive, cooperative and alternative ways.
❷ Ability to forecast the future plan	Ability to predict and expect ideal future images (visions) based on the past and future, and to plan things by sharing the ideal future.
❸ Ability to think in multifaceted and comprehensive ways	Ability to understand connections, involvement and systems of humans, things, events, society and nature, and think of them in multifaceted and comprehensive ways.
❹ Ability to communicate	Ability to communicate one's own feelings and thought as well as respect feelings and thoughts of others and proactively communicate with others.
❺ Attitude to cooperate with other people	Attitude to hold the same position as others and sympathize with ideas and actions of others as well as to do things in cooperation and in collaboration with others.
❻ Attitude to respect for connections	Attitude to have interest in own connections and involvement in humans, things, events, society and nature and to respect and value them.
❼ Attitude to participate willingly	Attitude to take responsibility for our words and deeds in groups and society and to participate in things voluntary and independently, based on understanding of one's own roles.

2. Study method

The following two types of practical studies were performed to accomplish the study objective above: Practical Study I, in which yearly teaching plans based on ESD framework were formulated and implemented at an elementary school, and Practical Study II, in which regional studies based on the ESD framework were implemented at selected elementary schools, lower secondary schools, and upper secondary schools. Practical study I was implemented at only one school but this ESD practice covered the whole curricula of the school. The theme of Practical Study II was limited to regional studies, but this

study was practiced at some schools. Through these two types of different practices, applicability of the ESD framework was examined in depth.

3. Details of the practical studies

<Practical Study I : "Implementation of curricula based on the ESD framework">

Practical Study I was the ESD practice over the whole curricula at an elementary school. The sample school is an elementary school that is located in the midtown area of Toyama City, with 390 children and 14 classes. "To make this school the place where children can realize fun to learn together" is advocated as one of major targets of their school management, and they designate ESD as one of their practical efforts for such a target. This elementary school was appointed as one of the UNESCO Schools for the 2009 academic year (for details, please see: http://www.unesco-school.jp/), and emphasizes providing children with ample opportunities and experiences to familiarize themselves with their region, nature, and the local community. In this environment, the ESD General Plan (the "ESD calendar") was formulated to introduce and promote ESD. In addition, the division of duties of ESD coordination was classified in school affairs for the purpose of school-wide promotion of ESD, in order to plan and manage ESD training sessions and to undertake coordination with external bodies. Furthermore, in the 2010 academic year, the "ESD campus promotion committee" was established as a scheme for all teachers and staff to share understanding. In the basic model for ESD calendars of this school, curriculum units are classified into three categories of "friendly to environment (respect for environment and life)," "friendly to people (human rights and welfare)," and friendly to earth (International understanding and regional culture)," and they were arranged in timeline according to their timing of implementation.

In this practical study, the ESD framework was introduced to this ESD calendar. The ESD calendar of the sixth grade is shown in Figure 2 as an example. Curriculum units of each subject associated with ESD are displayed in timeline, and the important part of the ESD framework for every unit is specified. In Figure 2, notes shown under the unit names are from "Concepts for building the sustainable society" (Table 1) and "Abilities and attitudes emphasized in learning instructions from ESD viewpoints" (Table 2). For example, "Diversity/Critical thinking" denotes "Diversity" from Table 1 and "Critical thinking" from Table 2. Furthermore, for "Abilities and attitudes emphasized in learning instructions from ESD viewpoints," abilities and attitudes for every curriculum unit of school subjects were additionally created. Table 3 describes such additionally formulated abilities and attitudes for each subject of the fifth grade as an example.

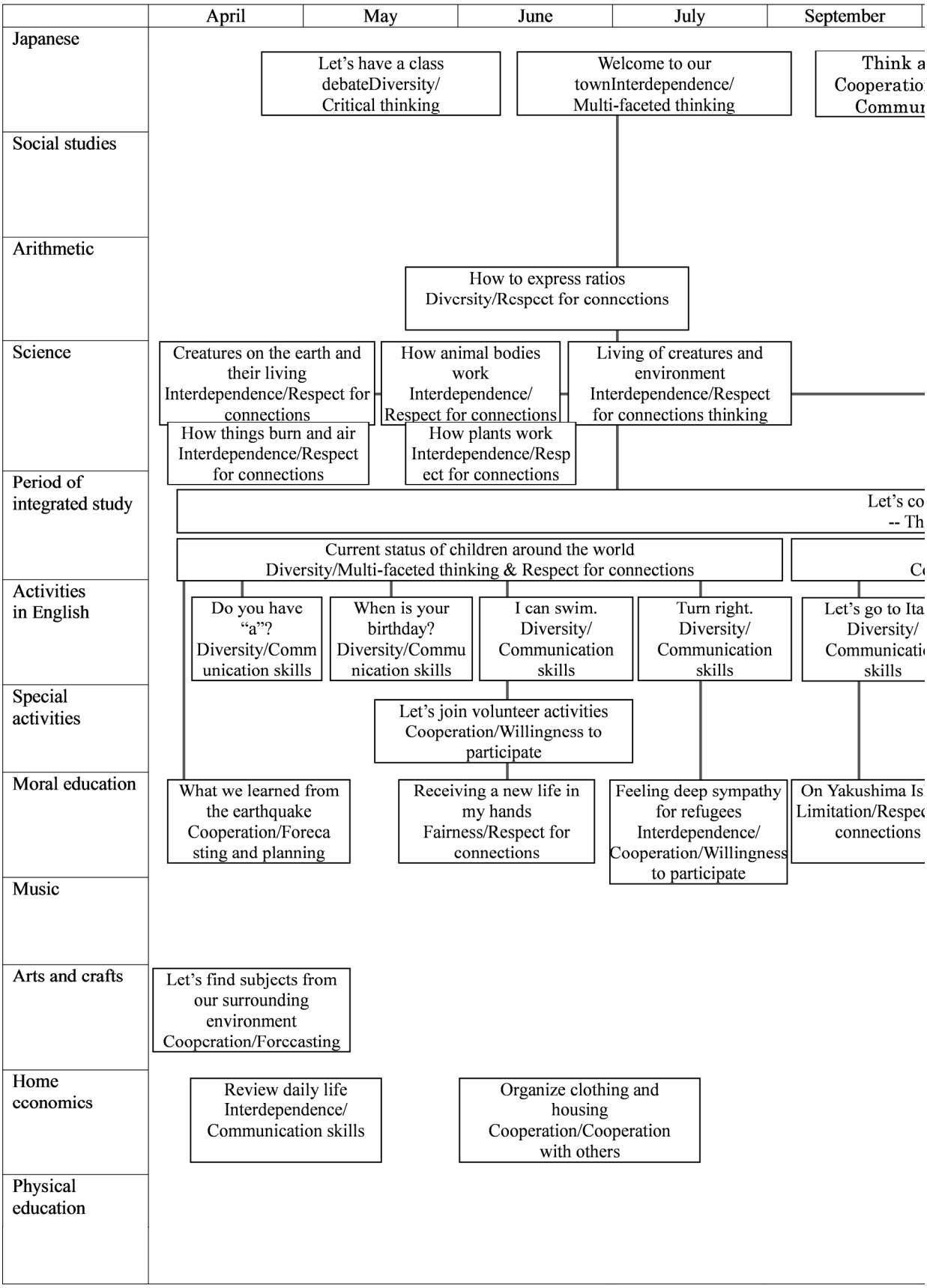
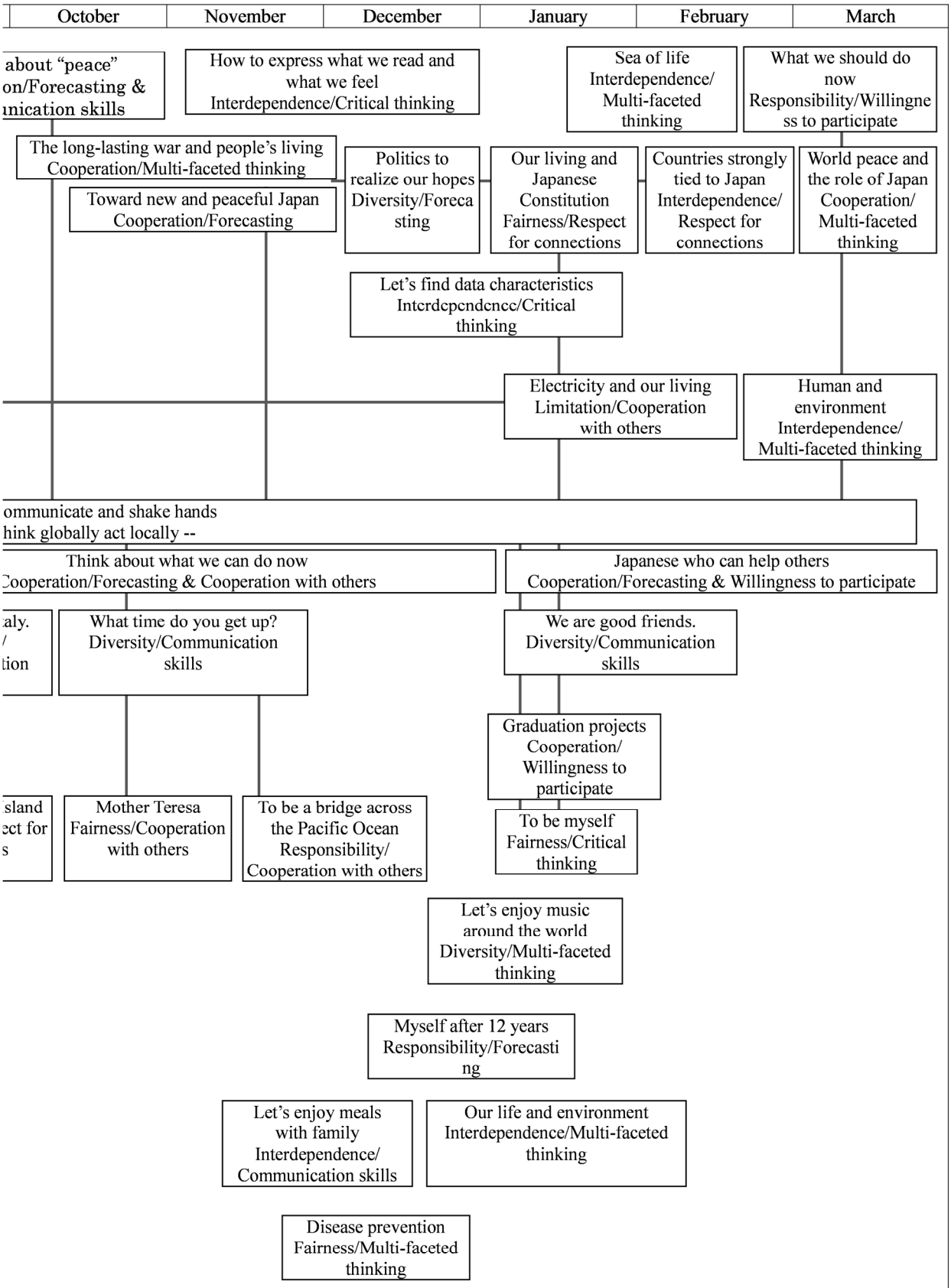


Figure 2. ESD calendar based on ESD

Note: the notes shown under unit



(for the sixth grade, partially abstracted)

names denote "concept/ability or attitude."

Table 3. "Abilities and attitudes emphasized in learning instructions from ESD viewpoints"
(for the fifth grade, partially abstracted)

	Japanese "Let's think about how to explain."	Social studies "Food production and our future"	Science "Germination and growth of plants"	Physical education "Mental health"
❶ Critical thinking ability	Children can talk about impressions on author's intention, logic, and attached tables/figures with each other, and expand or deepen their own thoughts.	Children can come up with better solutions for improving Japan's food self-sufficiency ratio.	Regarding germination of plant seeds, children can perform experiments, exchange the results with others, and review the exchanged opinions and information to adopt them.	Children can recognize that there are many ways to reduce anxiety and worries, such as consulting with adults and friends, playing with friends, and exercising, and can think of better solutions for them.
	Social studies "Shizuoka: the fishery prefecture"	Science "Birth of fish"	Home economics "Active life and foods"	Moral education "10 years for one letter"
❷ Ability to forecast the future plan	Children can understand that fishermen in the prefecture are suffering from decreasing fishery resources and other problems so that they estimate future figures on fish resources and increase imports and farming of fish.	Children can anticipate how to make killifish lay eggs and create adequate living environment for killifish.	Children can become interested in daily meals and ingredients used, understand the functions of nutrition inside body, and eat well-balanced foods.	Children can understand that destroying nature is easy but reviving it is difficult, and become motivated to save nature and environment.
	Japanese "Preserve our home town 100 years later"	Social studies Climate in Japan and people's living	Science "Change of weather"	Music "Let's listen to various sounds"
❸ Ability to think in multifaceted and comprehensive ways	Children can think from many directions and comprehensively on what is happening to characters in the story and author's viewpoints and thoughts and have impressions of them.	Children can think about the differences of landscapes and climates between regions of this country.	Children can think comprehensively about change of weather from shapes and movement of clouds.	Children can feel characteristics and differences of various sounds created by overlapping singing voices and instruments, and express the feelings with thoughts and intentions and listen to such music with imagination.
	Japanese "Old Daizo and cancer"	Science "The rule of pendulum	Arts and Crafts "I want to let you know what I feel."	Activities in foreign languages
❹ Ability to communicate	Children can read materials aloud and dramatically to express feelings and thoughts and summarize impressions on excellent parts.	After experiments of pendulum, children can exchange ideas with friends on how to change time for one swing of a pendulum.	In order to express the excellence of the scenes they felt, children can use materials and tools exploiting their features and elaborate expression methods.	Children can try to have good communication with foreigners by introducing themselves in English and asking about their conditions and feelings.
	Music "School block association concert"	Physical education "Tag Rugby"	Moral education "Hoshino and Sadakane: the story of Senichi Hoshino"	Homeroom activities "Let's create plans for expeditions with night stays"
❺ Attitude to cooperate with other people	Children can sing songs and play instruments with friends, caring for various sounds created by singing voices or instruments overlapping one another.	Children can discuss how to offend and defend with team mates and play games thinking about their roles.	Children can trust and strengthen friendship with each other, and become motivated to be nice, cooperative, and helpful to others.	Through expeditions with night stays, children can become motivated to organize daily activities by setting group targets on keeping time and helping friends.
	Japanese "I'm thirsty."	Social studies "Shonai Plain: the land of rice production"	Science "From flowers to fruits"	Moral education "Morning glory of life"
❻ Attitude to respect for connections	Children can find common and different points with friends, notice what cannot be found by him/herself, and think about interactions among people.	Children can find that rice production, which is associated with people's hopes and notions and is linked to nature and many lives, is the backbone of daily lives of Japanese people.	Children can understand that flowers transform themselves into fruits to preserve lives and insects and birds are also involved in pollination processes, and can be interested in such linkages and	Children come to value precious lives, get motivated to live their lives fully, and notice connections between lives.
	Social studies "Shonai Plain: the land of rice production"	Moral education "Creating the world's first dragonfly sanctuary"	Moral education "Memories in Singapore"	Homeroom activities "Posture for upper graders"
❼ Attitude to participate willingly	Children can think of what to do and act by themselves for the development of rice production.	Children can strengthen their willingness to be involved in what is happening to nature and protect nature.	Children can become motivated to keep laws and rules with the sense of public morality and have willingness to perform their duties.	Children can become motivated to work on committee activities starting from the fifth grade, with awareness and responsibility as upper graders in their minds.

<Practical Study II : "Development of region studies based on the ESD framework">

In Practical Study II, various regional studies combined with the ESD framework were implemented. This study was practiced in Wakayama Prefecture. In Wakayama, "Hometown Education (Furusato Kyoiku)," the program to study hometowns has been promoted in many elementary, lower secondary, and upper secondary schools, with their regional characteristics and features taken as subjects. This program aims to notify children how their hometowns are valuable and precious, regarding nature, history, culture and industries, and other features, and to nurture motivation and attitudes inside them to love and preserve such features.

In this study, the Prefectural Education Center appointed schools to join, and under instructions of the Center, the ESD framework was introduced to the content of regional studies that have been executed at such schools (as periods of integrated study or optional subjects in curricula). The ESD framework introduced at sample schools are indicated in Table 4, and the practices at such schools are summarized below.

Table 4. The ESD frameworks selected by participating schools

School	Concepts for building a sustainable society						Abilities and attitudes emphasized in study guidance from ESD viewpoint						
Main topic	I Diversity	II Interdependence	III Limitation	IV Fairness	V Cooperation	VI Responsibility	❶ Critical thinking ability	❷ Ability to forecast the future plan	❸ Ability to think in the multifaceted and	❹ Ability to communicate	❺ Attitude to cooperate with other people	❻ Attitude to respect for connections	❼ Attitude to participate willingly
A Elementary school Culture		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
B Elementary school Environment	Yes	Yes			Yes	Yes			Yes		Yes	Yes	Yes
C Elementary school Industry/ Food education	Yes	Yes			Yes	Yes		Yes			Yes	Yes	
D Elementary School International understanding	Yes			Yes	Yes	Yes		Yes			Yes	Yes	Yes
E Lower secondary school Tourism	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F Lower secondary school Disaster management	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
G Upper secondary school Culture	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes		
H Upper secondary school Culture	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
I Upper secondary school Tourism	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes			

School A: "Regional study -- Project to find Now and Past" project for first- to sixth-grade elementary school children

This elementary school rolled out this practice aiming to enhance knowledge on the region and cultivate regionalism, deploying "learn together, grow together, and create together" as their theme. Children carried out the regional study by communicating with local people, through making researches on history and cultural heritages of the region, interviewing local people, and making presentations on their learning achievements. Children recognized that they are also the members of the local society and were able to learn how to be involved in regional matters proactively. In addition, this project helped promotion of partnership between households, the region, and the school to protect and raise children as the whole region.

School B: "Truffle is the symbol of healthy pine woods" project for fourth-grade elementary school children

This practice was developed to deepen recognition on the role of "Pine Woods of Enjugahama beach," the symbol of the town, and significance of its preservation activities. With instruction and support from staff from the Forestry Experiment Station of Wakayama Research Center of Agriculture, Forestry and Fisheries and with the cooperation of the forestry department of the promotion bureau of the Prefecture, the industrial construction department of the town office and groups including the one working on preservation and cultivation of Enjugahama Beach Protection Forest, children worked on experiments on inducing infestation of truffle, by spraying fungus of the edible mushroom, which can grow only in healthy pine woods. Through on-site trainings, children were able to learn the attitude of pre-

serving the precious pine woods and think about what they can do for it.

School C: “My hand-made Soy Sauce” project for fifth-grade elementary school children

In this practice, children produced soy sauce, one of the special products of this region, by themselves using their hands. This practice aimed at cultivating a sense of gratitude for foods and regionalism through making them realize that many people from the local community are involved in manufacturing soy sauce and letting them understand the efforts and hardship the soy sauce manufacturers experience. The school expanded this “My hand-made Soy Sauce” activity that had been limited to inside of the school to be the one to exchange with the local people with supports from them. This expansion process owed so much to the approval and wide-ranging assistance from guardians and the local community. Attitudes to collaborate with others, such as ones of solving problems by cooperating with each other, being grateful to people involved and working proactively, have been nurtured steadily among children.

School D: “International understanding -- exchange with Turkish people” project for sixth-grade elementary school children

This practice is based on the intercourse with Turkey, which had started through the islanders’ rescue operation of survivors from the distress accident by Turkish warship that happened in the sea near Wakayama in 1890. In order for children to learn gentleness and consideration to people, connections between people and their way of living, and to develop feelings of being proud of being brought up in this region, it was thought as important in this practice to take over the activities of preserving the historical memorial monument that had been succeeded by predecessors and their spirit of mourning lost lives, and to hand them over to future generations. Through such learning, awareness and a sense of responsibility to succeed and continue the long-lasting preservation activity of the monument began to grow among children, and at the same time, they have acquired new relationships with the local community and Turkish people.

School E: “Let’s create sightseeing plans of our hometown” project for second-grade lower secondary school students

This practice is to learn how to set up sightseeing plans, aiming to let students recognize their hometown and appeal its good features externally. They created tour plans with one-night stay, learning how to design tours instructed by tour company staff and collecting materials related to the region following information acquired from town office staff in charge of tourism. In addition, they summarized their plans in posters and made presentations in a workshop meeting. Through these activities, students were able to attain competence in gathering information and communication skills, which resulted in enhancing their attachment to their hometown and uplifting their feeling of pride in it.

School F: “Shinjo seismology” project for third-grade lower secondary school students

This practice was to learn about important challenges of this region: disaster prevention in case of earthquakes and tsunami. Students studied mechanisms of natural disasters and their relationships with their own living environment. They thought of damage reduction measures for disasters that could hap-

pen in the future, disaster management schemes wanted by the regional communities, responses after the occurrence of disasters, and reconstruction for the future, which would help students becoming leaders of this region and work actively for the community in the future. They recognized that it is important to increase everyone's awareness of disaster prevention and to learn about efforts made by the local community, administrative bodies, and professional agencies for collaboration and cooperation with them, in order to minimize damages from earthquakes and tsunami. As well, they were able to increase their consciousness on what they can do to prepare for earthquakes and tsunami through group studies, which put emphasis on cooperation among students and importance of responsibility.

School G: "World Heritage Education" project for first- and second-grade upper secondary school students

In this practice, students studied the basic concept of UNESCO World Heritages and conducted some research concentrating on the "Sacred Sites and Pilgrimage Routes in the Kii Mountain Range," a world Heritage of the prefecture, as investigative learning. For fact-finding, they also carried out fieldwork 2–3 times in groups. In addition, volunteers were gathered from students to work on renovation and cleaning of the ancient roads, in order to deepen knowledge and to cultivate persons to be future leaders to take part in heritage preservations. Through this learning, students have enhanced their ability to listen to opinions of others and to express their thoughts on such opinions, and have acquired good postures and attitudes of recognizing existing problems from multiple viewpoints and of engaging voluntarily in activities in the local community.

School H: "Learn how to live independently in the 21st century through regional studies" project for third-grade upper secondary school students

This practice is to let students view their hometown comprehensively and from multiple dimensions to find that they should be proud of the world heritage that their predecessors have preserved, and make them deepen their understanding of the challenges that the local community will face in the future. By enhancing knowledge on historical and cultural values of people's belief in Koyasan and making researches on the region as investigative learning, students contemplated ideal futures of their region and community respectively and pondered to find out what they should do by themselves to realize such bright futures. This learning prompted them to be aware of the relationship between their hometown and themselves, and they could feel that they should be responsible for the future of the local society.

School I: "Participation in 'Kanko Koshien,' the sightseeing plan designing contest for upper secondary school students" project for third-grade upper secondary school students

This practice was implemented as part of the subject of "Tourism" designed by the high school. People who are working actively and successfully in the region were invited from outside of the school and students had on-site trainings, in order to create plans for development of their region in liaison with external organizations. In this learning process, their activities were divided to three steps: "notice charms of the region," "find how to attract people to the region," and "create plans and make presentations." One of achievements they made in this learning process was participation in the sightsee-

ing-plan-designing contest for upper secondary school students called “Kanko Koshien.” The students could win high evaluation for their plan in the contest at a national level and in the local community as well, and they are now regarded as a good workforce to support and promote recovery and reconstruction of the region.

4. Results of the practical studies and observation

As discussed above, the elementary school in Practical Study I could implement their teaching plans with the ESD framework introduced in all curricula. The elementary schools, lower secondary schools, and upper secondary schools in Practical Study II have also succeeded in incorporating the ESD framework into their teaching, by selecting subjects specific to such schools or their localities respectively under the common theme of “hometown education.” Figures 3 and 4 show aggregated numbers of times the concepts for building a sustainable society (“concepts”) and the abilities and attitudes emphasized in learning instructions from ESD viewpoints (“abilities and attitudes”) were adopted in curriculum units by the sample schools. In both studies, all of the concepts and abilities and attitudes were covered.

In practical study I, preparation of the ESD Calendars based on the ESD framework succeeded in making objectives of learning activities clear and allowed teachers to identify what kind of abilities children should acquire in which activity. The most notable achievement was that the sample school succeeded in implementing an overlapping and comprehensive teaching approach across subjects, while some challenges in each grade were also found out. In Practical Study II, the sample schools were able to identify the study goals and evaluation points for regional studies much more clearly, by streamlining the conventional “hometown education” they had implemented, from the ESD point of view. Furthermore, as a major achievement, it allowed the range of regional studies to be more broad and extensive, adding global perspectives to the local features.

As a consequence, these schools could adopt the ESD framework without difficulties into different types of ESD practices, and they could implement practices based on the ESD framework effectively. It is possible to say that applicability of the ESD framework is generally verified. At the same time, these studies once again stressed the importance of incorporating the ESD framework into the entire curricula and adopting it systematically throughout elementary schools and upper secondary schools. Furthermore, these schools succeeded in spreading the concept of ESD to whole the schools, because many teachers were involved in these ESD practices and taught various subjects in connection with “how to build the sustainable society” in classes.

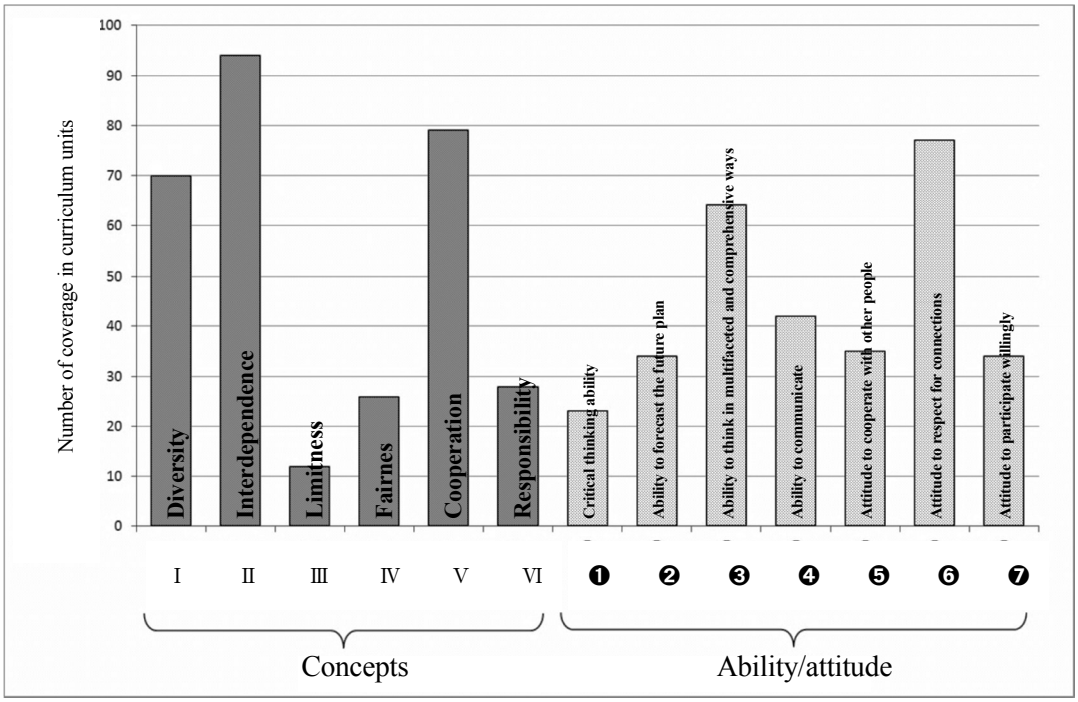


Figure 3. Concepts and abilities/attitudes selected in Practical Study I

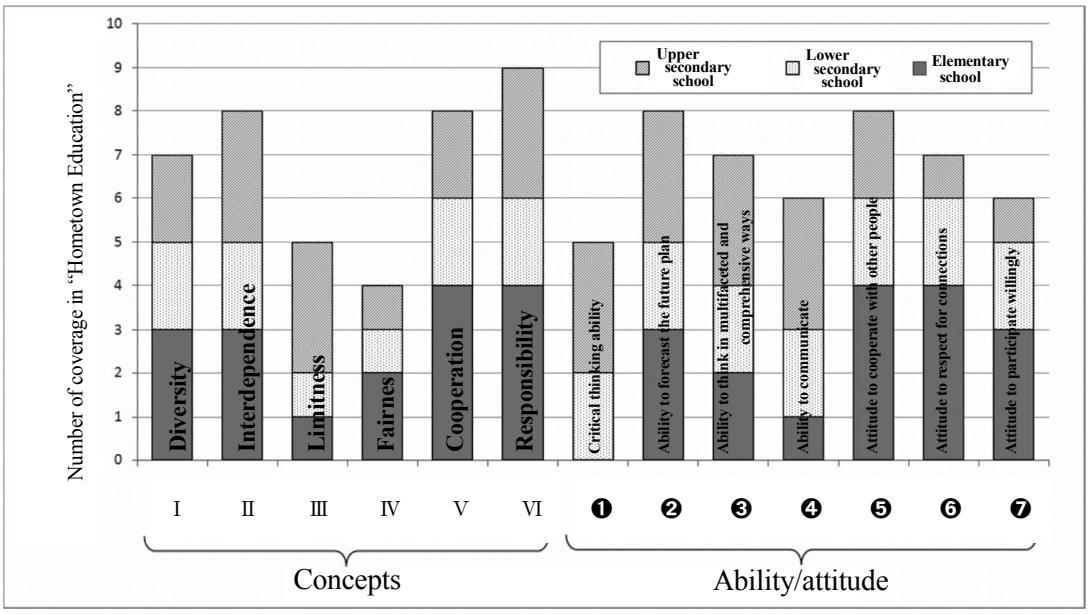


Figure 4. Concepts and abilities/attitudes selected for Practical Study II

However, as shown in Figure 3, "Limitation" from the concepts and "Critical thinking" from the abilities and attitudes turned out to be selected fewer times than other items in Practical Study I. In addition, as shown in Figure 4, selection of ESD items at elementary schools is less balanced than at lower secondary schools and upper secondary schools, because, as seen in Practical Study I, "Limitation" and "Critical thinking" were not selected just small number of times at elementary schools. From these data, we could say that it would be necessary to reclassify items of concepts and abilities and attitudes into smaller ones to accommodate the development stages of students and pupils, through measures such as

setting specific and separate examples of "Limitation" for early, middle, and upper grades of elementary schools and elaborating methods to teach "Critical thinking," and to consider how to ensure linkages between these items and subjects consistently from elementary schools to upper secondary schools.

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