The Effect of Cross-Curriculum of L1 and L2 on Elementary School Students' Linguistic Proficiency: To Sympathize with Others

Reiko Yamamoto

Abstract—This paper reports on a project to integrate Japanese (as a first language) and English (as a second language) education. This study focuses on the mutual effects of the two languages on the linguistic proficiency of elementary school students. The research team consisted of elementary school teachers and researchers at a university. The participants of the experiment were students between 3rd and 6th grades at an elementary school. The research process consisted of seven steps: 1) specifying linguistic proficiency; 2) developing the cross-curriculum of L1 and L2; 3) forming can-do statements; 4) creating a self-evaluation questionnaire; 5) executing the self-evaluation questionnaire at the beginning of the school year; 6) instructing L1 and L2 based on the curriculum; and 7) executing the self-evaluation questionnaire at the beginning of the next school year. In Step 1, the members of the research team brainstormed ways to specify elementary school students' linguistic proficiency that can be observed in various scenes. It was revealed that the teachers evaluate their students' linguistic proficiency on the basis of the students' utterances, but also informed by their non-verbal communication abilities. This led to the idea that competency for understanding others' minds through the use of physical movement or bodily senses in communication in L1 – to sympathize with others – can be transferred to that same competency in communication in L2. Based on the specification of linguistic proficiency that L1 and L2 have in common, a cross-curriculum of L1 and L2 was developed in Step 2. In Step 3, can-do statements based on the curriculum were also formed, building off of the action-oriented approach from the Common European Framework of Reference for Languages (CEFR) used in Europe. A self-evaluation questionnaire consisting of the main can-do statements was given to the students between 3rd grade and 6th grade at the beginning of the school year (Step 4 and Step 5), and all teachers gave L1 and L2 instruction based on the curriculum to the students for one year (Step 6). The same questionnaire was given to the students at the beginning of the next school year (Step 7). The results of statistical analysis proved the enhancement of the students' linguistic proficiency. This verified the validity of developing the cross-curriculum of L1 and L2 and adapting it in elementary school. It was concluded that elementary school students do not distinguish between L1 and L2, and that they just try to understand others' minds through physical movement or senses in any language.

Keywords—Cross-curriculum of L1 and L2, elementary school education, language proficiency, sympathy with others.

I. INTRODUCTION

ELEMENTARY school students are still immature in their L1 (1st language). As the concept of plurilingualism has never been common in Japan, improving L1 proficiency has

Reiko Yamamoto is with the Department of English Studies for Careers, Kyoto Junior College of Foreign Languages, 6 Kasamecho, Ukyoku, Kyoto, 6158558 Japan (e-mail: re_yamam@kufs.ac.jp).

been a priority in primary education. Therefore, Japan has fallen behind amid the global trend wherein many non-English-speaking countries had assigned English as a subject in elementary school in the 1990s. In 2011, the Ministry of Education, Culture, Sports, Science, and Technology in Japan finally introduced English activities into elementary school. This is an opportunity to prove that L2 learning does not hinder L1 acquisition, but rather helps students realize that the essence of communication is the same in any language. The research team consisted of elementary school teachers and researchers at a university who started a project to integrate Japanese (L1) and English (L2) education.

II. LITERATURE REVIEW

Plurilingualism is different from multilingualism. The Council of Europe defines multilingualism as a term to express the situation of societies, and plurilingualism as a term to express the competency and worth of each person [1]. To be more specific, multilingualism describes a situation, wherein several languages are used in a society. On the other hand, plurilingualism describes a situation, wherein one person has integral competence in using more than two languages, and his/her values are not limited to only using his/her L1 for communication. Plurilingualism is a useful term when developing language education goals. Education for plurilingualism is described as a way to develop a learner's language repertoire which covers his/her lifelong learning [2]. Language education is not limited to schools. Nevertheless, schools have a central function without an alternative to realize plurilingualism [3].

Japan, an isolated country, has had no chance to develop the concept of plurilingualism. No previous studies have tried to prove the effect of L2 education in elementary school, and now Japan is at the center of waves of globalization that press forward with L2 education reform. Junior high school students are expected to acquire English language skills, and English activities have been introduced in elementary schools. Such impetuous reform brings with it the danger that students' focus is on no other languages except Japanese and English, nor is it on intercultural communication. These attitudes, which might be called *exclusive bilingualism,* are easily shared in Japan [4]. It is high time to clarify what the aim of language education is.

Unlike in Japan, plurilingualism is a common concept in Europe. Can-do statements are used to show standards of linguistic proficiency in any language, which can be attributed to the action-oriented approach in the Common European

Framework of Reference for Languages (CEFR). A base of language education in CEFR is growing communicative competence [5].

When students communicate with their teacher, they move their bodies in the same way as the teacher with the same rhythm [6]. According to [6], synchrony in a classroom is necessary for activities to connect with others. There is evidence that synchrony is an innate and fundamentally necessary part of the human ability to engage in social interaction with other people. People complete some shared communication tasks in the presence of one another [7], [8]. Synchrony can more generally facilitate the performance of cognitive or linguistic tasks [9]. The author, however, noticed that junior high school students neither move their bodies nor synchronize with their teachers in English as much as in Japanese. This might be because they have been expected to acquire English language skills without a communicative mind. When it comes to elementary school students, the author observed their extensive body movements and synchrony with teachers and other students during English activities. Communicative activities require a kind of movement imitation, which can offer much assistance in explaining interpersonal synchrony. Elementary school students are steeped in communicative activities irrespective of L1 or L2. Elementary school students are surely at the appropriate stage to experience such tasks in both L1 and L2. Primary education might have the chance to solve the problem that language education in Japan is facing.

III. Research Questions

This study focuses on the mutual effects of two languages on the linguistic proficiency of elementary school students. Is it possible to integrate Japanese (L1) and English (L2) education? The research questions of this study are:

1) What kind of curriculum is effective for integrating L1 and L2 education?
2) How do elementary school students acquire linguistic proficiency through one-year instruction using the curriculum?

The goal of this study is to answer these research questions.

IV. Methodology

A. Participants

One elementary school in Japan took part in this experiment. The participants were 40 third-grade students, 40 fourth-grade students, 40 fifth-grade students, and 40 sixth-grade students. First and second graders, who had just started to learn how to read, were judged to be incapable of understanding the items and appropriately choosing responses in the questionnaire. Thus, they were excluded from the participants.

B. Procedure

The process of the research had seven steps:

1) Specifying Linguistic proficiency,
2) Developing the cross-curriculum of L1 and L2,
3) Forming can-do statements,
4) Creating a self-evaluation questionnaire,
5) Executing the self-evaluation questionnaire at the beginning of the school year,
6) Instructing L1 and L2 based on the curriculum, and
7) Executing the self-evaluation questionnaire at the beginning of the next school year.

First, the researchers directed a question to all the teachers: What is the linguistic proficiency that you expect your students to acquire in school? This question was too difficult for the teachers to answer on the spot. Almost none of the elementary school teachers had majored in linguistics at university. Moreover, they had no idea how to integrate L1 and L2. Therefore, they brainstormed using the KJ method. KJ is the initials of the method's developer, Prof. Kawakita Jiro [10]. The KJ method is a technique used to integrate ambiguous ideas of group members by writing ideas on tiny paper sheets and adhering p them on a big sheet. This led to concrete descriptions of linguistic proficiency. Interestingly, many of the teachers defined linguistic proficiency as synchronizing with others.

Second, after analyzing L1 curriculum and L2 curriculum, which had already been developed and used in this school, the teachers found the items that the L1 curriculum and L2 curriculum had in common, such as recitation or discussion. They categorized and arranged each item in one integrated curriculum.

Third, forming can-do statements is an easier task than curriculum development. This is because can-do statements overlapped with what the teachers expected their students to be capable of doing: for example, "Can greet in an appropriate manner: or "Can make a presentation showing some charts or pictures." All items in the teachers' definition of linguistic proficiency, however, did not overlap with can-do statements. The teachers also determined a kind of metaphysical item that can hardly be judged as *can* or *cannot*. Examples of this are as follows: using onomatopoeia with physical senses, knowing the importance of using a pause, or noticing one's friend's sadness even when they smile. Such items referred to synchrony with others not by using words, but with the mind. It is interesting to note that the teachers judged non-verbal physical or mental movement as linguistic proficiency.

Such metaphysical items were, therefore, in Step 4, added to the self-evaluation questionnaire. The questionnaire consisted of 26 items in total (Table I).

Answers were rated by means of a 4-point Likert scale (1: I never think so. 2: I do not really think so. 3: I think so a little. 4: I think so.).

In Step 5, the questionnaire was given to the students from the 3rd grade to the 6th grade at the beginning of the school year, and in Step 6 all the teachers gave L1 and L2 instruction based on the cross-curriculum of L1 and L2 to all the students from 1st to 6th grade for one year. In Step 7, the same questionnaire was given to students from the 3rd grade to the 6th grade at the beginning of the next school year.

C. Results

Each scale was converted into points (1: point 1, 2: point 2,

3: point 3, 4: point 4). In Table II, the average of each grade was compared item by item.

TABLE I
ITEMS IN THE QUESTIONNAIRE

1	I prefer sentences to short words when I talk.
2	I do not want teachers to use simple and easy words.
3	I am good at expressing my feelings in words.
4	I am good at expressing my experiences.
5	I want to try out various words or expressions.
6	I want to speak accurately using sentences.
7	I speak in different ways depending on whom I speak with.
8	I am sure I can make myself understood with words.
9	Spoken language is different from written language.
10	I am a person who has a large vocabulary.
11	I obey teachers who don't scold sharply but admonish.
12	I am sure to understand the speaker when he/she speaks precisely and sincerely.
13	I speak in a loud voice when I speak in front of an audience.
14	I am good at speaking in front of an audience.
15	I am good at expressing my feelings in writing.
16	I sometimes change my mind after listening to others' opinions.
17	There are many things that I can express not with words but with gestures or facial expressions.
18	I easily notice others' gestures or habitual practices.
19	I easily believe in others.
20	I am conscious of the rhythm of others' breathing.
21	I always watch others' gestures or movement.
22	My heart easily beats fast because of pleasure or fear.
23	When something happens to my friend, I feel as if I am in his/her position.
24	I pay attention to others' behavior.
25	I often use onomatopoeia.
26	I easily open my mind to others.

TABLE II
AVERAGE SCORES OF THE PRE-QUESTIONNAIRE

	3rd	4th	5th	6th	M
1	2.49	2.10	2.26	2.40	2.31
2	2.52	2.39	2.84	2.70	2.61
3	2.54	2.43	2.44	2.58	2.50
4	2.56	2.47	2.60	2.64	2.57
5	3.28	3.09	2.98	3.26	3.15
6	3.13	2.99	3.06	3.13	3.08
7	3.03	3.02	3.21	3.04	3.08
8	3.11	3.17	3.26	3.20	3.19
9	2.77	2.88	3.29	3.67	3.15
10	2.45	2.36	2.39	2.38	2.39
11	2.91	2.69	3.12	3.06	2.94
12	2.57	2.95	2.86	2.97	2.84
13	2.46	2.65	2.46	2.52	2.52
14	2.35	2.58	2.50	2.41	2.46
15	2.59	2.41	2.43	2.42	2.46
16	2.94	2.66	3.05	2.82	2.87
17	2.11	2.46	2.69	2.60	2.47
18	2.40	2.57	2.62	2.99	2.65
19	2.58	2.69	2.58	2.59	2.61
20	2.58	2.59	1.97	2.00	2.29
21	2.51	2.72	2.47	2.83	2.63
22	2.47	2.43	2.48	2.44	2.46
23	2.50	2.82	2.67	2.64	2.66
24	2.26	2.56	2.27	2.46	2.39
25	2.16	2.65	2.51	2.58	2.47
26	2.56	2.54	2.37	2.59	2.51
M	2.61	2.65	2.67	2.73	

Scores of Item 9, Item 12, and Item 18 increased in higher grades (See Fig. 1). Item 9 is "Spoken language is different from written language." Item 12 is "I am sure to understand the speaker when he/she speaks precisely and sincerely." Item 18 is "I easily notice others' gestures or habitual practices."
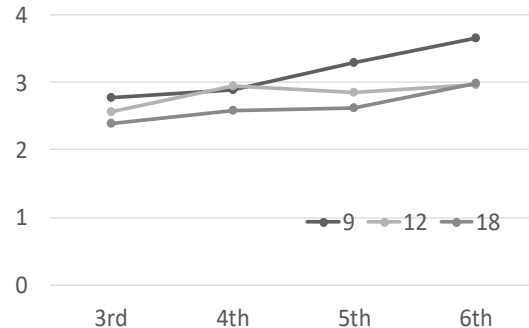

Fig. 1 Scores of the three items that increased in higher grades

The average scores of the questionnaire after a year are shown in Table III. In the second year, all students were moved up to the higher grade.

TABLE III
AVERAGE SCORES OF THE POST-QUESTIONNAIRE

	3rd	4th	5th	6th	M
1	2.21	2.13	2.26	2.21	2.20
2	2.53	2.47	2.39	2.59	2.50
3	2.60	2.75	2.24	2.53	2.53
4	2.62	2.74	2.45	2.73	2.63
5	3.59	3.19	3.08	3.12	3.24
6	3.20	2.89	2.98	3.07	3.04
7	3.37	3.40	2.95	3.42	3.29
8	3.61	3.32	3.21	3.14	3.32
9	3.23	3.39	2.82	3.42	3.22
10	2.81	2.35	2.29	2.14	2.40
11	3.18	2.99	3.12	3.13	3.11
12	3.28	2.93	3.02	2.89	3.03
13	2.45	2.43	2.38	2.34	2.40
14	2.49	2.35	2.21	2.40	2.36
15	2.78	2.62	2.55	2.34	2.57
16	2.93	3.25	2.95	2.95	3.02
17	2.63	2.38	2.47	2.85	2.58
18	2.59	2.62	2.61	2.88	2.67
19	2.83	2.52	2.58	2.64	2.64
20	2.39	2.10	1.95	2.15	2.15
21	2.68	2.64	2.56	2.86	2.69
22	2.31	2.47	2.53	2.47	2.45
23	2.60	2.70	2.56	2.56	2.61
24	2.68	2.53	2.55	2.58	2.58
25	2.40	2.49	2.61	2.78	2.57
26	2.69	2.49	2.41	2.52	2.53
M	2.79	2.70	2.60	2.72	

Fig. 2 shows the average scores of the questionnaire given in the first and the second year.

In order to analyze the same students' transformations before and after the experiment, the scores of the 3rd graders in the first

year was set against that of the 4th graders in the second year, and the same thereafter. In Fig. 3, the 4th graders' black bar shows their score from when they were 3rd graders, the 5th graders' one shows their score from when they were 4th graders, and the 6th graders' one shows their score from when they were 5th graders.
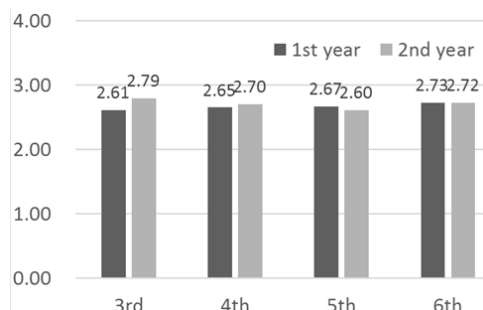

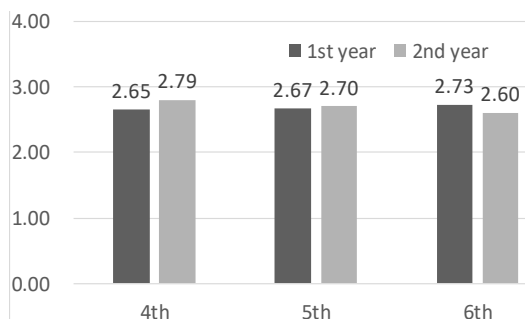Fig. 2 Averages of each grade in the pre- and post-questionnaire

Fig. 3 Comparison of the same students before and after the experiment

V. FINDINGS

Although no significant differences were proved in the statistical analysis, it is noticeable that the youngest students' scores increased. As Fig. 1 shows, the elementary school students acquired linguistic competence in higher grades. This means that younger students are still linguistically, immature even in L1. In Fig. 2, the average of the 3rd graders in the first year (2.61) exceeded that of the 3rd graders in the second year (2.79). In Fig. 3, the average of the 3rd graders in the first year (2.65) was 2.65. When they were moved up to the 4th grade, their average increased to 2.79. The cross-curriculum of L1 and L2 might have affected the 3rd graders.

VI. CONCLUSION

This study had two research questions. The first one was: What kind of curriculum effectively integrates L1 and L2 education? Specifying linguistic proficiency has been proven to be effective in integrating L1 and L2 education. That led to the idea that competency in understand others' minds through physical movement or senses as part of communication in L1 can be transferred to competency in communication in L2. Thanks to the development of a cross-curriculum of L1 and L2, and forming can-do statements based on the integrated curriculum, all the teachers of the school could come to a common consensus that linguistic proficiency incorporates the ability to sympathize with others.

The second research question was: How do elementary school students acquire linguistic proficiency through one-year instruction using the curriculum? The results of the questionnaire proved that the 3rd graders, the youngest of the participants, were conscious of their improvement in linguistic proficiency.

It was not clarified whether the older students improved, or why there was a difference between younger and older students, which is a limitation of this study. This study focuses on the mutual effects of two languages on the linguistic proficiency of elementary school students. There is a possibility that the younger students do not distinguish between L1 and L2, as they are still immature in L1. Given the instruction based on the cross-curriculum of L1 and L2, they might have been steeped in synchronizing with others by using languages, physical movement, and senses.

In the final analysis, the question is what kind of language class is desirable in elementary school. Elementary school students just try to understand others' minds through physical movement and senses in any language, and their values do not limit communication only to their L1. That is what language education should aim for.

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