

# Improving Teaching Methods, Student Learning Outcomes, and Curricula through Cross-Phase Teaching in Primary and Junior High School

Nozomi NAGASAWA Hirotake TOMIOKA Kazunaga OKUGAWA Mayuko SUEHIRO  
Ayaka YAMAKI Mayumi MIMURA Seiichiro KIHARA Kazuhiko SAITO

**Abstract:** In order to obtain a certain hint of forming a good cooperation between primary and junior high schools through Cross-Phase Teaching (CPT), it is necessary to verify the effect of CPT. We analyzed our CPT, surveyed the teachers and students by questionnaire, and interviewed the teachers, so that we might verify the effect of the CPT. While verifying, we not only recognized the change of the teachers' mind but also found the concrete way of improving their teaching.

## 1. Introduction

The transition between school stages has become a topic of discussion in recent years, as Japan's 2017 academic guidelines indicates in its contents. In December 2016, the Central Education Council also stated the importance of the transitions between early childhood education, primary education, junior high school (JHS) education, and high school education in its report "Improvement and Necessary Measures in the Guidelines for Kindergartens, Primary Schools, JHS, High Schools, and Special Support Schools." The report emphasized the transition from primary school to JHS and the need to "enhance the collaboration between primary and JHS with the aim of giving the necessary attributes and abilities to the children through nine years of compulsory education and enlarge the specialized subjects teaching in upper primary school to reinforce the guidance system focused on JHS transition." The Mihara schools, which are attached to Hiroshima University, have been reinforcing not only the interaction of children across the different educational phases, but also the coordination of teachers to enhance the connections among kindergarten, primary school, and JHS.

In the 2017 academic year, we experimented with CPT among different educational phases in music and physical education (PE), by placing JHS teachers in primary school classes and vice versa. We have been carrying out the CPT over the past two years in these subjects. In previous experiments with CPT, each teacher strived to understand the students in each class they taught. They also improved their teaching methods in their original phases based on the new understanding acquired

through CPT. We believe that CPT leads each teacher to an improvement in their teaching abilities and understanding of different school phases. However, it has not yet been clarified how CPT transformed the teachers' awareness of their own teaching subjects and teaching methods in different school phases.

Therefore, the objective of this study is to make suggestions for future school transition curricula through clarifying learning outcomes and tasks. We will use the following methodologies to clarify the specific form of collaboration between primary school and JHSs teachers requested by the new curriculum guideline: analyzing cross-phase classrooms, conducting focus-group interviews with faculty members, and both student and teacher questionnaires.

## 2. Research Methodology

The present study was conducted using the following four methodologies:

### 2.1 Teacher questionnaire

A questionnaire for kindergarten, primary, and JHS teachers in Minhara school was carried out. The questionnaire consisted of items based on a 5-point Likert scale and free description fields. Twenty-six teachers in total responded to the questionnaire. Three were kindergarten teachers, 14 were primary school teachers, and nine were JHS teachers. The questionnaire was conducted in October 2017.

### 2.2 Student questionnaire

A questionnaire was conducted with first-year JHS students, who attended the music and PE classes taught by the primary school teachers. The questionnaire consisted of items using a 5-point Likert scale and free description fields, as in the teacher questionnaire. Seventy-five first-grade JHS students at Mihara school participated in the questionnaire, which was conducted in October 2017.

### 2.3 Class observations

We video recorded the cross-phase music and PE classes of five teachers. Then, we classified and sorted the recorded images into the following categories: teachers' utterances (professional terms/figurative terms) and teaching styles (i.e., individual, group, or whole-class instruction).

### 2.4 Focus-group interviews

First, we watched the video recordings together. Then, we interviewed the teachers to obtain more information about their utterances and instructional styles. Then, we held a discussion among the teachers and researchers for each subject. Through these methods, we identified the similarities and differences between the teachers' awareness and teaching methods in different school phases. Five teachers who participated in CPT also participated in the focus-group discussions: two from primary school and three from JHS. Two separate sessions were held; the first was conducted on July 28, 2017, and the second on July 30, 2017. Finally, we verified if there were any changes in the

teachers' awareness concerning their teaching methods by comparing their first classes of the academic year with those taught after several video analyses.

### 3. Results and Discussion

#### 3.1 Results of the teacher questionnaire

The following 5-point Likert scale questions were asked to the teachers:

	Questions
1	I agree with the implementation of CPT at this school.
2	I feel that CPT has many benefits for teachers.
3	I feel that CPT has many benefits for students.
4	I think I can teach in different school phases.
5	I would really like to participate in CPT.
6	I feel that CPT makes heavy demands on teachers.
7	Coordination among teachers from different school levels is essential for effective CPT.
8	CPT reinforces coordination among teachers from different school phases.
9	Primary school should also have subject-specialist teachers.
10	From now on, we should implement CPT in subjects other than music, PE, and visual arts.
11	CPT is effective for the primary school to JHS transitional curriculum.
12	CPT should be continued in this school.

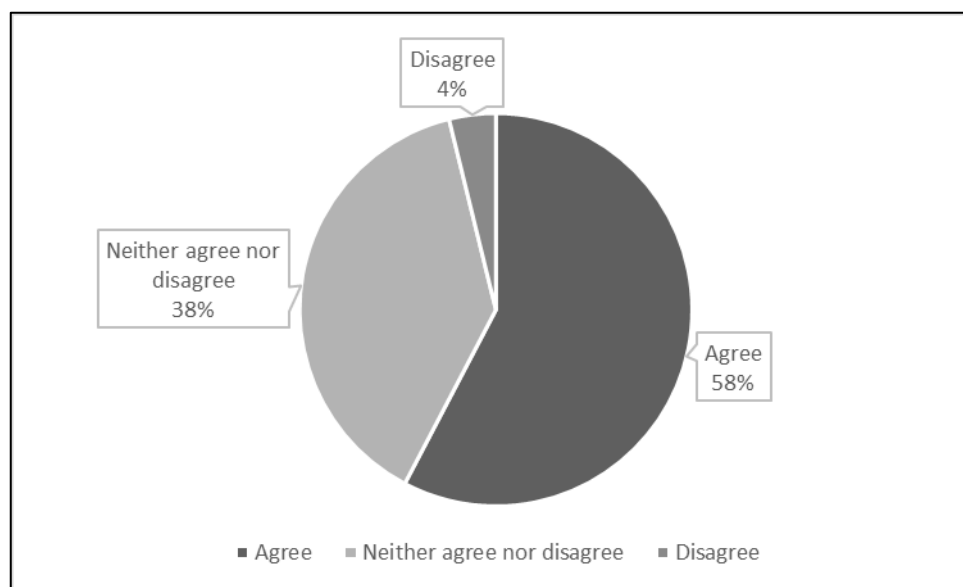


Figure 1. I agree with the CPT method used at this school.

Figure 1 shows the results of Question 1, “I agree with the CPT method used at this school.” Fifty-eight % of the teachers agreed with the CPT. The main reasons given for the response “agree” were: “I learned about the situation of children after graduation by participating in the first-year JHS class, and my understanding of early childhood education changed” (kindergarten teacher). “It minimizes the primary to JHS transition gap and knowing the children makes it possible to provide them with continuous support” (primary school teacher). On the other hand, the reasons some teachers gave for answering “Neither agree nor disagree” were as follows: “I believe there is an educational significance, but I can’t agree wholeheartedly because of the increased burden on my teaching schedule” (primary teacher), and “If the purpose is not clear, it can become a heavy burden”

(JHS teacher). Finally, only 4% of teachers responded “disagree” to this question. One teacher gave the reason that, “I feel it may be difficult to do it with the current staff” (JHS teacher). Next, we classified the answers according to two different groups: the teachers who were participating in CPT and those who were not. The results are displayed in Figure 2.

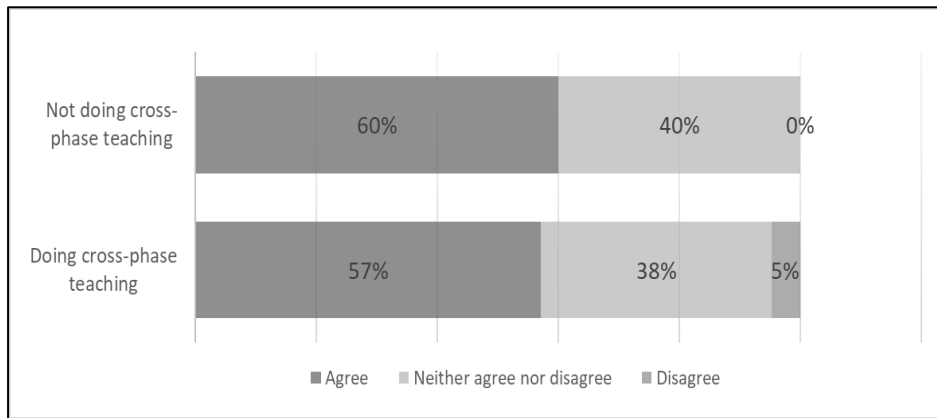


Figure 2. Teacher responses categorized according to groups.

From the results shown in Figure 2, it was found that there were no teachers who disagreed with CPT among those practicing it. One of the factors that caused some teachers with CPT experience to answer “neither agree nor disagree” was their feeling of uneasiness putting it in practice.

Figure 3 shows the results to Question 6, “I feel that CPT makes heavy demands on teachers.” Here, we can see a significant difference between the teachers who were involved in CPT and those who were not. The teachers practicing CPT did not feel that it was a large burden for them, while the teachers without CPT experience tended to think that it would be a large burden. The main reasons for each group were as follows:

Reasons	*Teachers participating in CPT	**Teachers not participating in CPT
** It is impossible, considering the schedule	(JHS teacher).	
**The primary school grading and JHS test-grading happen all at once; so, it would be quite a hard task	(primary school teacher).	
*I don't feel it's a big burden for the teacher, but it might be for the person coordinating the schedules	(primary school teacher).	

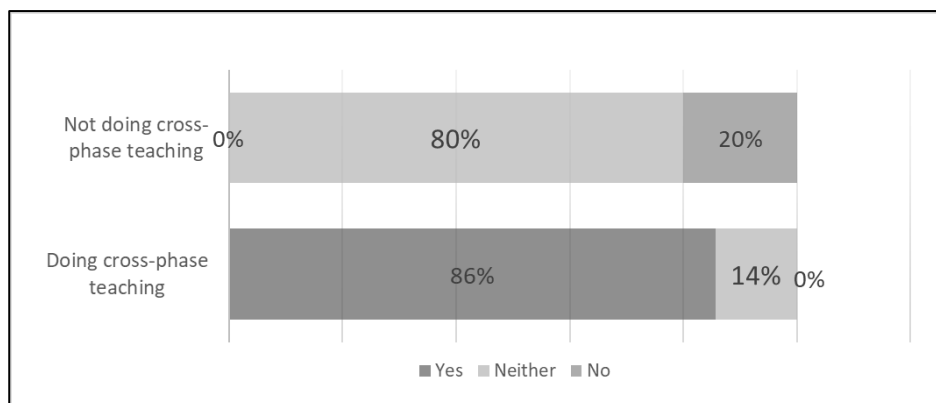


Figure 3. I feel that CPT makes heavy demands on teachers.

Figure 4 shows the results for Question 9, “Primary school should also have subject-specialist teachers.” Here, the results are classified according to the school phase to which the teachers

belonged. First, none of the kindergarten teachers agreed. Second, more primary school teachers agreed than JHS school teachers, who already have the subject-specialist system. However, for all school levels, the opposition was less than the majority. The reasons the teachers gave for each answer are as follows:

- Reason** \* Agree \*\* Neither agree nor disagree \*\*\* Disagree
- \* Fifth and sixth grade should completely do it. Third and fourth grade should do everything possible (JHS teacher).
  - \* When considering the characteristics of the subject, the specialist should do CPT systematically (JHS teacher).
  - \* It is possible in science, home economics, visual arts, music, and PE (primary school teacher).
  - \* It is possible in all subjects above the fourth grade (primary school teacher).
  - \*\* It is desirable for subjects other than Japanese and mathematics, since it is difficult for other teachers to be familiar with all students' academic abilities unless there is a high level of collaboration with the homeroom teacher (primary school teacher).
  - \*\*\* The lower the age, the more it is necessary for children to have their homeroom teacher's assistance (primary school teacher).

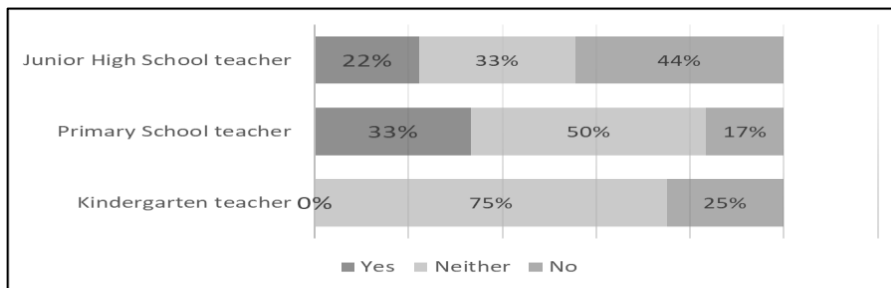


Figure 4. Primary school should also have subject specialist teachers.

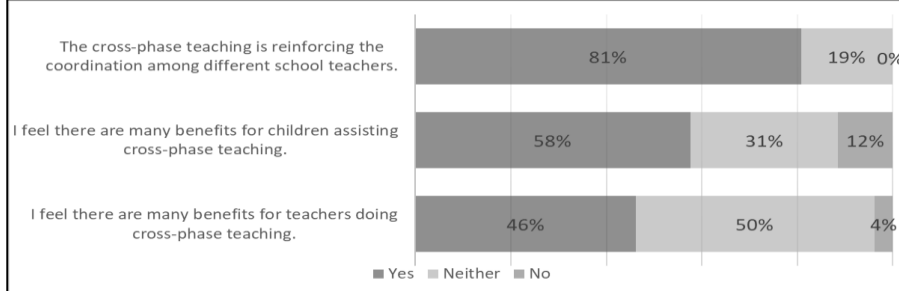


Figure 5. Questions about the effectiveness of CPT.

Figure 5 summarizes the results of Questions 2, 3, and 8, which were all about the effectiveness of CPT. Based on these results, it was found that many teachers felt that CPT has more benefits for children than teachers. We believe that the reason for this response from teachers is related to the perceived burden of CPT on their teaching schedules.

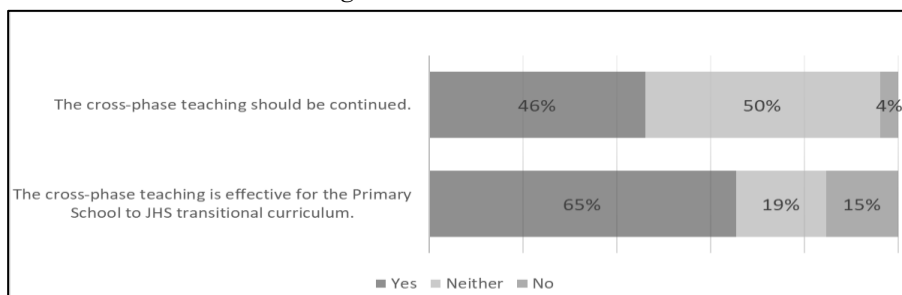


Figure 6. Questions about the prospects of CPT.

Figure 6 summarizes Questions 11 and 12, which are both related to the prospects of CPT. Figures 7 and 8 display the results of classifying the results of Figure 6 into two groups: teachers who were

practicing CPT and those who were not.

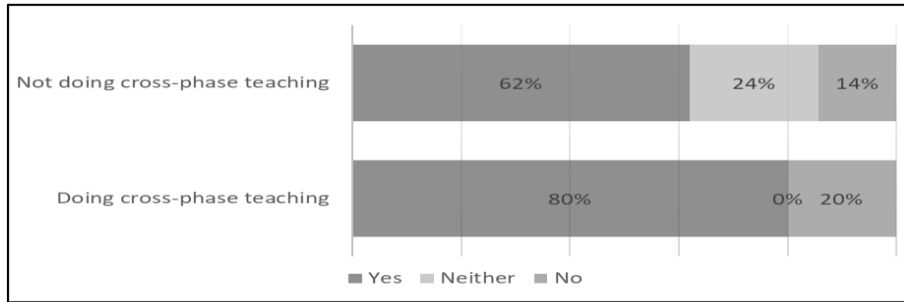


Figure 7. CPT is beneficial for the primary school to JHS transitional curriculum.

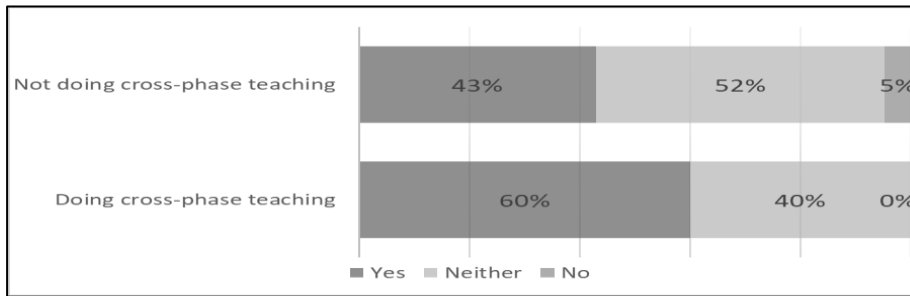


Figure 8. CPT should be continued at this school.

The results of these two questions suggest that teachers practicing CPT viewed its prospects more positively. Besides, only one teacher felt that CPT was not effective for the transitional curriculum improvement. As a reason, he/she was concerned that his/her own guidance and the understanding of the school phases was not enough.

In this questionnaire, there was not a high contrast in the results between the three school types: kindergarten, primary school, and JHS teachers. However, the questionnaire results revealed that teachers' perceptions of CPT different between the teachers who were involved in it and those who were not. Many teachers responded that different schedules in each phase and heavy teaching demands were the problems to be solved to improve CPT. However, despite the problems some teachers identified, many recognized the educational benefits of CPT. Thus, a future task is to create a flexible system in which the teachers are not bound by their schedules and the number of classes they teach.

### 3.2 Results of the student questionnaire

The following 5-point Likert scale questions were asked to the students:

	Questions
1	I'm glad primary school teachers are teaching JHS classes.
2	The classes taught by primary school teachers in JHS are easy to understand.
3	I feel that I was able to work with confidence when primary school teachers taught JHS classes.
4	I feel that primary school teachers and JHS teachers teach in different ways.
5	I want the primary school teachers and JHS teachers to teach in the same way.
6	I want CPT in other subjects besides music and PE.
7	CPT should be continued in primary school and JHS.

This school has kindergarten, primary school, and JHS all located at the same site. Taking advantage of this situation, we are implementing an integrated education program for all 12 years.

The primary school students can progress to JHS, and besides that, few external students enroll because of examinations. Because of this factor, we divided the students into two groups, internal students (Group A) and external students, (Group B), and then studied their answers to identify any differences.

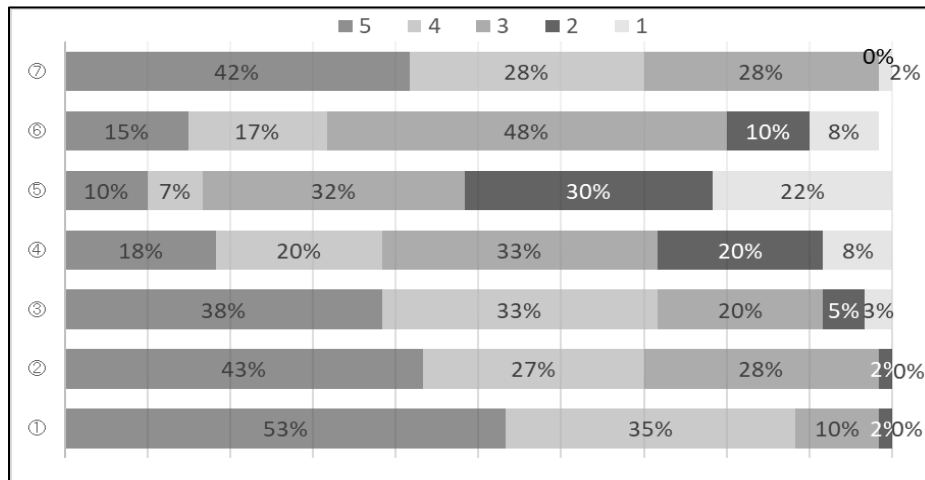


Figure 9. Answer rate by item of questionnaire for Group A.

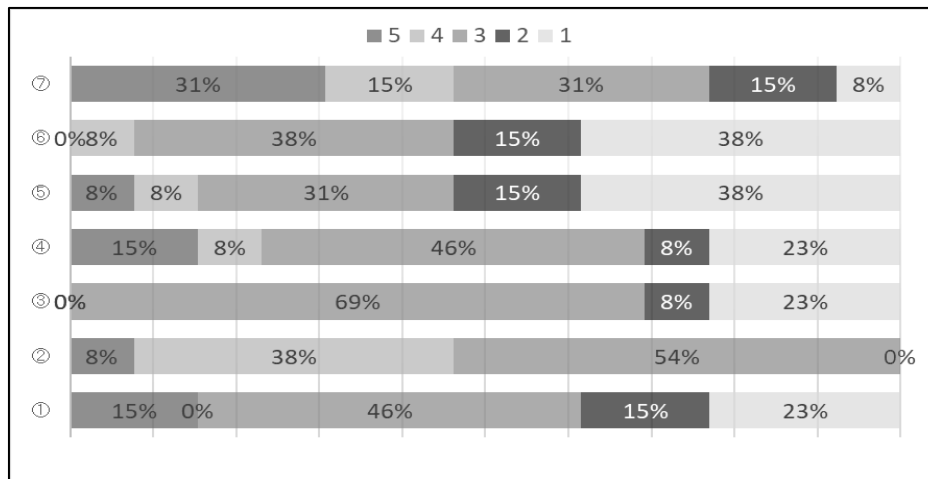


Figure 10. Answer rate by item of questionnaire for Group B

Figures 9 and 10 show the answer rates for each question for Groups A and B. The positive answers and negative answers for Group A and B are displayed in Table 1. In addition, the underlined rates are those that contrast greatly with the other group. For all questions, Group A's answers were more positive than Group B's. The positive answer rates for questions 1 to 3 were especially high. Here, it was revealed that the students felt comfortable and happy when primary school teachers were teaching in JHS classes. Moreover, the results of question 7 showed that Group A thought positively about continuing CPT. On the other hand, negative answers from Group B exceeded those from Group A in all cases except Question 2. There is a large contrast between the two groups in their answers to Question 6, which showed that few students recognized the need for CPT in JHS. In question 5, the answers of more than the half of both groups were negative, therefore we did not find much difference between the two groups for this question. This finding shows that the students did not recognize the need for unified teaching, and they were able to adapt to the transition between phases.

Table 1. Positive and negative answers of Group A and Group B

	Positive (5, 4)		Negative (2, 1)	
	Group A	Group B	Group A	Group B
1	<u>88%</u>	15%	2%	<u>38%</u>
2	<u>70%</u>	46%	<u>2%</u>	0%
3	<u>72%</u>	0%	8%	<u>31%</u>
4	<u>38%</u>	23%	28%	<u>31%</u>
5	<u>17%</u>	15%	52%	<u>54%</u>
5	<u>32%</u>	8%	18%	<u>54%</u>
6	<u>70%</u>	46%	2%	<u>23%</u>

For each question item, we provided a free description field so that the students could describe the reasons for their answers. We organized the contents as follows.

Table 2. Group A reasons

Question	Reasons (Positive answers are underlined)
1	<ul style="list-style-type: none"> <li>• <u>I can have peace of mind: 13 students</u></li> <li>• <u>They know both our strengths and weaknesses: 7</u></li> <li>• <u>It is easier because you know how to teach us: 6</u></li> <li>• <u>They are easy to talk to: 5</u></li> <li>• <u>I feel nostalgic: 5</u></li> <li>• <u>I'm happy to have my primary school teachers again: 3</u></li> <li>• <u>I like the teacher: 3</u></li> <li>• <u>It is easy because I am already familiar with the teacher: 3</u></li> <li>• <u>Other: 5</u></li> <li>• Any teacher is okay: 4</li> <li>• I would also like to attend new teachers' classes: 2</li> <li>• I want teachers who explain things well regardless of cross-phase teaching: 1</li> <li>• It doesn't matter: 1</li> </ul>
2	<ul style="list-style-type: none"> <li>• <u>Primary school teachers explain things better: 12</u></li> <li>• <u>You know each other well if it's the same teacher: 12</u></li> <li>• <u>They are easy to understand: 9</u></li> <li>• There's no difference: 7</li> <li>• <u>Sometimes they reference what we learned in primary school: 5</u></li> <li>• I don't really know: 5</li> <li>• <u>They are easy to talk to: 2</u></li> <li>• <u>They know our strengths and how to exploit them: 2</u></li> <li>• <u>Other: 5</u></li> <li>• No response: 2</li> </ul>
3	<ul style="list-style-type: none"> <li>• <u>I felt relaxed: 14</u></li> <li>• <u>Because they taught as until now: 8</u></li> <li>• <u>I feel insecure in front of new teachers: 5</u></li> <li>• <u>I feel familiar: 5</u></li> <li>• It doesn't really change: 5</li> <li>• I don't really know: 4</li> <li>• <u>I'm used to it: 3</u></li> <li>• I don't feel it that much: 2</li> <li>• <u>They know us well: 2</u></li> <li>• <u>They understand well the differences between primary school and JHS: 2</u></li> <li>• <u>Other: 3</u></li> <li>• No response: 6</li> </ul>
4	<ul style="list-style-type: none"> <li>• I don't really feel it: 24</li> <li>• I don't really know: 7</li> <li>• Average: 4</li> <li>• <u>The class progresses at a different speed: 7</u></li> <li>• <u>The degree of difficulty is different: 2</u></li> <li>• <u>The time and way of explaining is different: 2</u></li> <li>• <u>The guiding principles are different: 3</u></li> <li>• <u>Other: 4</u></li> <li>• No response: 5</li> </ul>



5	<ul style="list-style-type: none"> <li>• Both ways of teaching are fine: 37</li> <li>• I don't particularly care: 6</li> <li>• <u>It is easier when it's unified: 5</u></li> <li>• Others: 4</li> <li>• No response: 9</li> </ul>
6	<ul style="list-style-type: none"> <li>• Either's fine: 22</li> <li>• <u>I agree because I want to learn from various teachers: 7</u></li> <li>• <u>I agree because I can enjoy and feel relaxed: 7</u></li> <li>• It is fine to learn from JHS teachers subjects other than music and PE: 6</li> <li>• I doesn't have to change: 6</li> <li>• <u>I want to learn from a teacher I already know: 3</u></li> <li>• I don't really know: 2</li> <li>• <u>Other: 1</u></li> <li>• No answer: 7</li> </ul>
7	<ul style="list-style-type: none"> <li>• Either's fine: 11</li> <li>• <u>Please continue because I can live with peace of mind: 10</u></li> <li>• <u>We'll have a good exchange among primary school and JHS if we keep doing it: 7</u></li> <li>• <u>I can enjoy and get used to it early in the school year: 6</u></li> <li>• <u>Things you learn in primary school are also useful in JHS: 3</u></li> <li>• <u>I want CPT to be a continuous thing: 3</u></li> <li>• <u>I can see my old teachers: 2</u></li> <li>• <u>Other: (8名)</u></li> <li>• I disagree because CPT isn't natural: 1</li> <li>• I don't feel it is necessary because they teach the same things: 1</li> </ul>

Table 3. Group B reasons

Question	Reasons (The positive answers are underlined)
1	<ul style="list-style-type: none"> <li>• I don't really know: 8</li> <li>• I <u>feel relaxed: 2</u></li> <li>• Any teacher is fine: 1</li> <li>• No response: 2</li> </ul>
2	<ul style="list-style-type: none"> <li>• I don't really know: 5</li> <li>• <u>They teach us kindly: 1</u></li> <li>• <u>They explain things well: 1</u></li> <li>• <u>They teach us in order: 1</u></li> <li>• <u>I feel comfortable with primary school teachers: 1</u></li> <li>• No response: 4</li> </ul>
3	<ul style="list-style-type: none"> <li>• I don't really know: 9</li> <li>• <u>I think you can feel relaxed if you came from the same school: 1</u></li> <li>• No response: 3</li> </ul>
4	<ul style="list-style-type: none"> <li>• I don't really know: 6</li> <li>• <u>Primary school teachers advance the class slower than JHS teachers: 1</u></li> <li>• I don't see any difference, because we are headed toward the same goal: 1</li> <li>• I forgot how primary school teachers teach: 1</li> <li>• There's more opportunities to work with other students: 1</li> <li>• Primary school teachers don't know many things: 1</li> <li>• It is almost the same: 1</li> <li>• No response: 1</li> </ul>
5	<ul style="list-style-type: none"> <li>• I don't really know: 5</li> <li>• It is normal because each teacher is different: 5</li> <li>• You get bored if it's the same teacher (1名)</li> <li>• <u>It's easier to understand classes if they are unified: It's much easier when you start studying in JHS: 2</u></li> </ul>
6	<ul style="list-style-type: none"> <li>• I don't really know: 4</li> <li>• It's okay as it is now: (3名)</li> <li>• The homeroom teacher should teach all the subjects except music and PE: 2</li> <li>• <u>I would like to take other primary school teachers' classes: 1</u></li> <li>• Neither: 1</li> <li>• No response: 2</li> </ul>
7	<ul style="list-style-type: none"> <li>• I don't really know: 2</li> <li>• <u>It should be continued, because you can't do it in a normal school. It's one of the good things about collaboration: 3</u></li> <li>• Neither: 2</li> <li>• <u>It is good for those coming from the same school: 1</u></li> </ul>

	<ul style="list-style-type: none"> <li>• <i>I agree because it's much easier to familiarize oneself with the teacher:</i> 1</li> <li>• It must be a hard task for teachers: 1</li> <li>• No response: 3</li> </ul>
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According to Group A's (internal students) responses, many students felt positively about CPT and attending primary school teachers' classes. Some of the factors accounting for their positive reactions included the sense of security and familiarity they experienced in primary school teachers' classes. In addition, it was found that the students experienced some psychological stress relief by having classes with their primary school teachers, who used easy and detailed instructional methods. Moreover, many students approved of the continuation of CPT, based on psychological factors such as security, enjoyment, and familiarity, while very few students agreed for reasons based on academic factors.

As expected, many students in Group B answered, "I don't really know" to each question. It was hard for them to understand the significance of CPT if they had recently transferred to Mihara JHS from other schools. However, the Group B students still recognized some of the benefits of CPT, such as advancing the class slower and more detailed instruction.

3.3 Class observations

3.3.1 PE class analysis and discussion

First, the following results were obtained from the PE class analysis. We analyzed the classes from two different perspectives. We clarified the differences between primary school and JHS by analyzing the instructional styles of each teacher. Further, we examined the effectiveness of CPT by the differences in each class's method. After analyzing, we compared the CPT classes (primary and JHS) with normal classes and clarified the differences.

It was presumed that analyzing PE classes with different subject matter could cause a big difference in the comparison and analysis mentioned above. To avoid this, we selected classes on ball movement (ball games in JHS) for analysis.

First, we show the results of a comparison of the same teacher's classes. The comparison discussed the differences in learning styles between primary school and JHS. Two points were compared and examined: teaching styles and utterances.

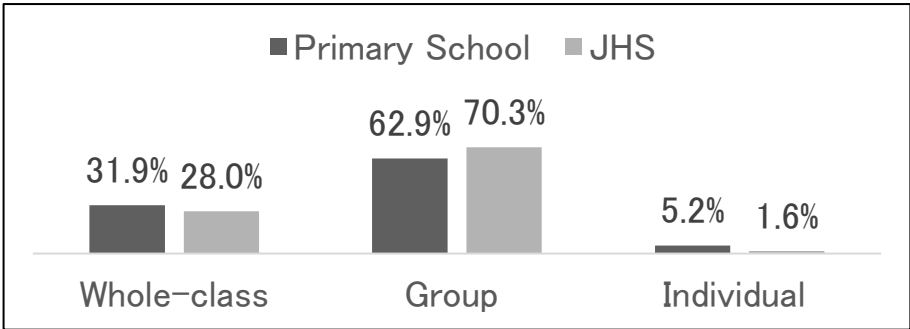


Figure 11. Different instructional methods used.

The instructional methods were classified into three groups: whole-class, group, and individual. In physical education, individual work refers to individual problem-solving, while individual but common activities were counted as whole-class work. Figure 11 shows the proportions of the three categories in all classes.

The results of this analysis showed that individual-work time was extremely limited. We speculate that this was due to the selection of ball movement activities and games. Because the ball movement activities and games are team activities, this led to teachers using whole-class and group activities more than individual activities. These results may have differed considerably with other learning contents, for example, contents related to closed skills like apparatus gymnastics, mat exercises, or hurdling in track and field.

Figure 11 also shows that JHS has slightly more group activities and fewer whole-class activities than primary school. Based on the developmental stage of JHS students, if the tasks to be achieved are different for each group, whole-class teaching could be reduced, whereas each group decision according to their tasks such as practice methods and strategy planning could be increased. We believe that this proves that students are more capable of solving problems by making use of what they have learned in primary school. This capacity could also vary widely from first to third-year of JHS. Instead, to succeed in group activities in primary school, it is necessary to ensure sufficient time for explanation in advance. Therefore, we hypothesize that the proportion of whole-class activities will increase.

The student participants in this study had only one year difference in their age: sixth grade (primary school) and first-year (JHS) students. Therefore, the differences in instructional methods and contents are more relevant than the age difference. We anticipate that a class style of JHS in which subjectivity is respected could improve the learning efficiency of the upper grade students, that is, fifth and sixth grade students preparing for the transition to JHS. The fact that primary school teachers are familiar with the learning activities the students did in primary school could also have led them to respect student's subjectivity more. This is because being familiar with the learning activities of primary school allowed them to teach in JHS in a more effective and specialized way. On the other hand, it became clear that for JHS teachers, it was important to be familiar with the learning activities used in primary school to practice a more systemic teaching.

As for teachers' utterances, the following results were obtained. First, to understand the definition of utterances, several previous studies have examined teacher utterances. These studies revealed that teacher utterances can affect student confidence and the improvement of skills Takahashi, Okazawa, Nakai, and Yoshimoto (1991)<sup>2</sup> termed praise as "positive feedback" and advice on skill improvement as "corrective feedback." Based on this research, we compared the feedback used by teachers participating in CPT with the feedback used by those who were not. The results are shown in Figure 12.

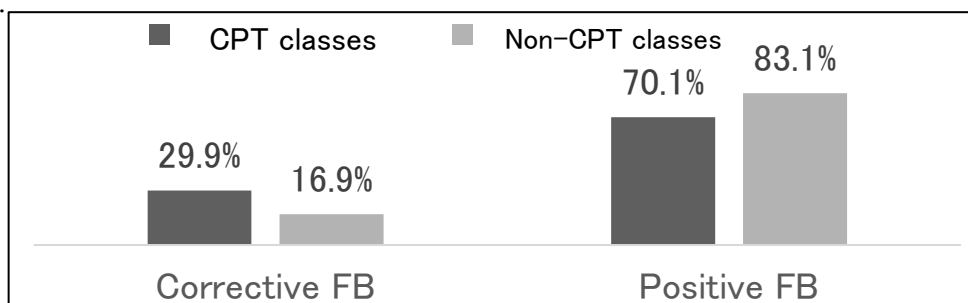


Figure 12. Comparison between CPT and non-CPT classes

The results of the analysis showed that that teachers participating in CPT employed corrective

feedback on many occasions. From this result, we can also infer the differences in teaching styles between primary school and JHS teachers. For example, in lower primary school, it is more difficult for young children to maintain learning motivation. Furthermore, in this period, more positive feedback such as praise is necessary to motivate children in PE and sports. Thus, the results showed that having primary school teachers in JHS increased the amount of positive feedback used in JHS classes. On the contrary, in JHS, learning requires the acquisition of both knowledge and skills. Thus, teachers must give more detailed instructions. That includes many ways of using and moving the body, spatial and temporal instructions, and other related skills. However, the differences in the supplementary textbook contents at each school phase does not demonstrate this very clearly. The fact JHS physical education has exams testing students' knowledge makes it inevitable that teachers must provide more detailed instructions. Because of this, we believe that corrective feedback also increases. Accordingly, to further verify this consideration, three teachers compared the positive feedback and corrective feedback used in their classes, as shown in Figure 13: Teacher A (primary school teacher doing CPT), Teacher B (primary school teacher not doing CPT), and Teacher C (JHS teacher doing CPT).

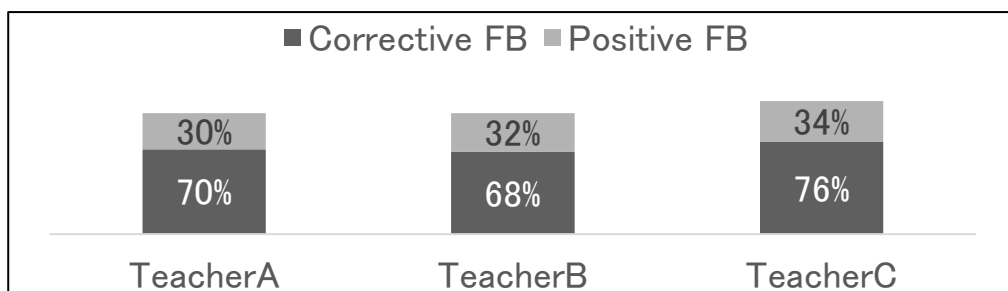


Figure 13. Type of feedback used in each class.

As mentioned before, Teacher B, who had never taught JHS before, used more positive feedback. Instead, Teacher C (doing CPT), who usually taught in JHS, employed more corrective feedback. We believe that Teacher C's teaching style is clearly different from that of primary school because he/she was teaching in high school until last year. The higher the grade and the more advanced the developmental stage, the more teaching styles change and the amount of teacher instructions increases. It is likely that teachers learn the appropriate teaching style for the age or grade level they are teaching, which accordingly becomes their established style.

CPT allows teachers to gain teaching experience in both educational phases, which thus improves their professional knowledge and instructional methods. In this class analysis, Teacher A showed an aspect that stands in between primary school and JHS teachers. By teaching in both schools, it makes it possible for teachers to understand the characteristics of both school phases, and it allows teachers to teach according to their students' needs. In other words, through CPT, the teaching methods are enriched, and teachers acquire various new instructional techniques to provide appropriate guidance for the learners. If we consider as a premise that, teaching experiences inform teaching styles, CPT could be an effective method of professional development for less experienced teachers to further enrich that style. Therefore, based on the results of our analyses, we believe that encouraging teachers to adopt flexible teaching styles improves their own teaching skills; moreover, it positively effects children's development.

### 3.3.2 Music class analysis and discussion

The following are the results of the music class analysis. In the CPT music classes, we focused on two teachers: a primary school teacher (a music specialist participating in CPT) and a JHS teacher (a music specialist/8<sup>th</sup> grade homeroom teacher). Similar to PE, in music, two aspects were selected for analysis: teaching styles and utterances. The subjects were second- and third-year JHS students, and the class analyses focused on singing to avoid a large difference in teaching content.

First, the results of the teaching styles analysis are as follows. We did not find a significant difference in teaching styles. The only difference found was that primary school uses more pair work, but other than that, no differences in teaching or school phases were found. Every class included pair work, whole-class activities, and individual activities; we speculate that this is due to the nature of the subject (music).

Next, we show the results of the utterance analysis. We classified the focused classes in Table 4 and compared them from three perspectives.

Table 4. Results of the utterance analysis

1	2 <sup>nd</sup> and 3 <sup>rd</sup> grade classes taught by JHS teacher (CPT)
2	8 <sup>th</sup> grade classes taught by JHS teacher
3	2 <sup>nd</sup> and 3 <sup>rd</sup> grade classes taught by primary school teacher
4	7 <sup>th</sup> grade classes taught by primary school teacher (CPT)

After comparing 1 with 2, 1 with 3, and 3 with 4, the results in Table 5 were calculated.

Table 5. A comparison of teacher's utterances

	Utterances
1-2 comparison	The frequency of using technical terms of the subject did not change.
1-3 comparison	There was a difference in whether the teacher was directly using the technical terms of the subject.
3-4 comparison	The frequency of using technical terms of the subject was significantly higher in 7 <sup>th</sup> grade.

Based on these results, we found that there was not a significant difference in the teaching methods used in music according to school phase. Furthermore, we found that depending on the children's developmental stage, they tended to communicate the content words in a different way, even if the teaching methodology itself did not change. As for other outcomes, we found that there were more student utterances in primary school than in JHS. Therefore, we believe that teachers' utterances can change depending on children's utterances. To further explore this finding, however, a more detailed class analysis is required.

### 3.4 Focus-group discussion results

Tables 6 and 7 show the results of the focus-group discussions with the teachers. Information about the interviewees is provided in Table 6.

Table 6. Interviewees classification

	School phase	Subject	Work experience
A	JHS teacher	PE	Teaching experience in high school. This is the teacher's first year teaching in primary school and JHS.
B	JHS teacher	Music	Teaching experience in JHS and high school. This is the teacher's second year of teaching in primary school
C	Primary school teacher	PE	Originally a high school teacher. This is the teacher's tenth year teaching in primary school, and first year in JHS.
D	Primary school teacher	Music	Originally a high school teacher. This is the teacher's eighth year in primary school, and second year teaching in JHS.

Several teachers not participating in CPT also participated in the focus group, and the interviewer was randomly selected from among the researchers.

Table 7. Changes in teachers' awareness

	Before CPT (April 2017)	After CPT (August 2017)
A	<ul style="list-style-type: none"> <li>• I am perplexed about the different reactions of primary school and JHS students.</li> <li>• I feel a sense of burden concerning the fact that my own teaching style doesn't match that required in primary school.</li> <li>• They don't understand the technical terms. (I don't know how detailed I should be.)</li> </ul>	<ul style="list-style-type: none"> <li>• I used to respond to all the reactions of primary school students, but now I understand better how to respond in necessary moments.</li> <li>• I feel my JHS classes changed through teaching primary school.</li> <li>• I developed a better understanding of the primary school learning contents through this practice; now I fully understand the requirements of the primary school curriculum.</li> </ul>
B	<ul style="list-style-type: none"> <li>• I am perplexed about the different reactions of primary school and JHS students.</li> <li>• They don't understand the technical terms. (I don't know how detailed I should be.)</li> </ul>	<ul style="list-style-type: none"> <li>• I used to respond to all the reactions of primary school students, but now I understand better how to respond in necessary moments.</li> <li>• I feel my JHS classes changed through teaching in primary school.</li> <li>• I developed a better understanding of the primary school learning contents through this practice; now I know the learning systematics in a true meaning.</li> </ul>
C	<ul style="list-style-type: none"> <li>• At first, teaching the JHS students reminded me of the 6<sup>th</sup> graders.</li> <li>• There is a gap between what I imagined and the reality of JHS students.</li> </ul>	<ul style="list-style-type: none"> <li>• I see much clearer the difference of perspectives when teaching in primary school or in JHS.</li> <li>• I became more conscious that JHS deepens professional development.</li> </ul>
D	<ul style="list-style-type: none"> <li>• I didn't feel that there was any big gap, because I had these students when they were in primary school.</li> </ul>	<ul style="list-style-type: none"> <li>• I became more aware of the professional requirements of teaching JHS.</li> <li>• I feel pleasure in understanding the growth process and continuity of children through firsthand experience.</li> </ul>

It became clear that Primary schools experienced a change in awareness through CPT, by comparing the results of the before and after interviews. Teachers participating in CPT noticed changes in their own teaching methods when they changed to a different school phase, and recognized the necessity of improving their teaching strategies to improve their professional development. Moreover, the results of the focus-group interview revealed that CPT provided teachers with firsthand understanding of the learning systematics and the developmental process and learning progress of children.

#### 4. Conclusion

Figure 14 shows the effects of CPT observed in this study.

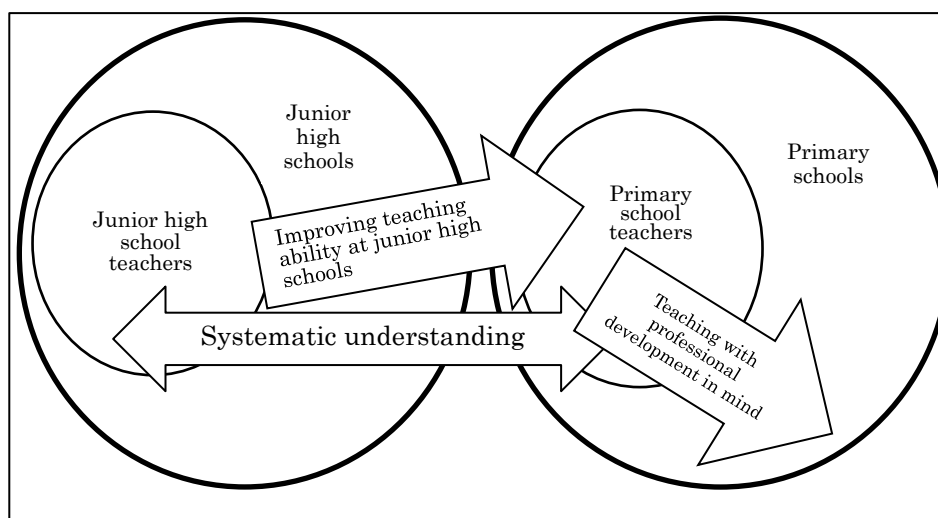


Figure 14. The effects of CPT.

Figure 14 shows that a JHS teacher's teaching skills for JHS improved owing to the one year CPT practice in primary school. Specifically, they learned how to react in front of primary school students, and learned how to give instructions in a more detailed way. They felt that it changed the utterances they used and increased the variety of words used in JHS classes. As for the primary school teachers participating in CPT in JHS, the teachers felt a sense of improvement in their own teaching skills; it also made it possible for them to understand how primary school learning is connected to JHS learning and adapt their teaching strategies accordingly. Furthermore, they were able to deepen their professional development; the same can be said about JHS teachers.

According to these results, we found out that continuous CPT can enhance teachers' professional awareness and instructional methods. We believe that these changes can lead to improved student learning outcomes. Furthermore, the results of our research revealed that CPT reduces students' psychological stress during the transition from primary school to JHS. In Japan, until now, CPT has been used as a one-time event from JHS to primary school with the purpose of professional development and support. For this reason, it was difficult to understand the significance of CPT from primary school to JHS; however, one of the achievements of this study is that students recognized the benefits of CPT. A limitation of the present study is the discrepancy in each teacher's attributes and abilities. This is due to the fact that the subjects had less than 10 years of teaching experience; they were thus more able to react in flexible ways because they had not yet perfected their teaching styles or solidified their educational perspectives. Another limitation is the fact that both the music and PE teachers were originally secondary school teachers, which may have affected their teaching methods in JHS. Therefore, future research with more teachers with varied professional experience and backgrounds is required to further improve the primary to JHS transitional curriculum.

Finally, this study was conducted at an integrated primary and JHS. If we implement CPT in a regular public school, it will be necessary to explore a moderate transition that is consistent with the curriculum.

## References

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