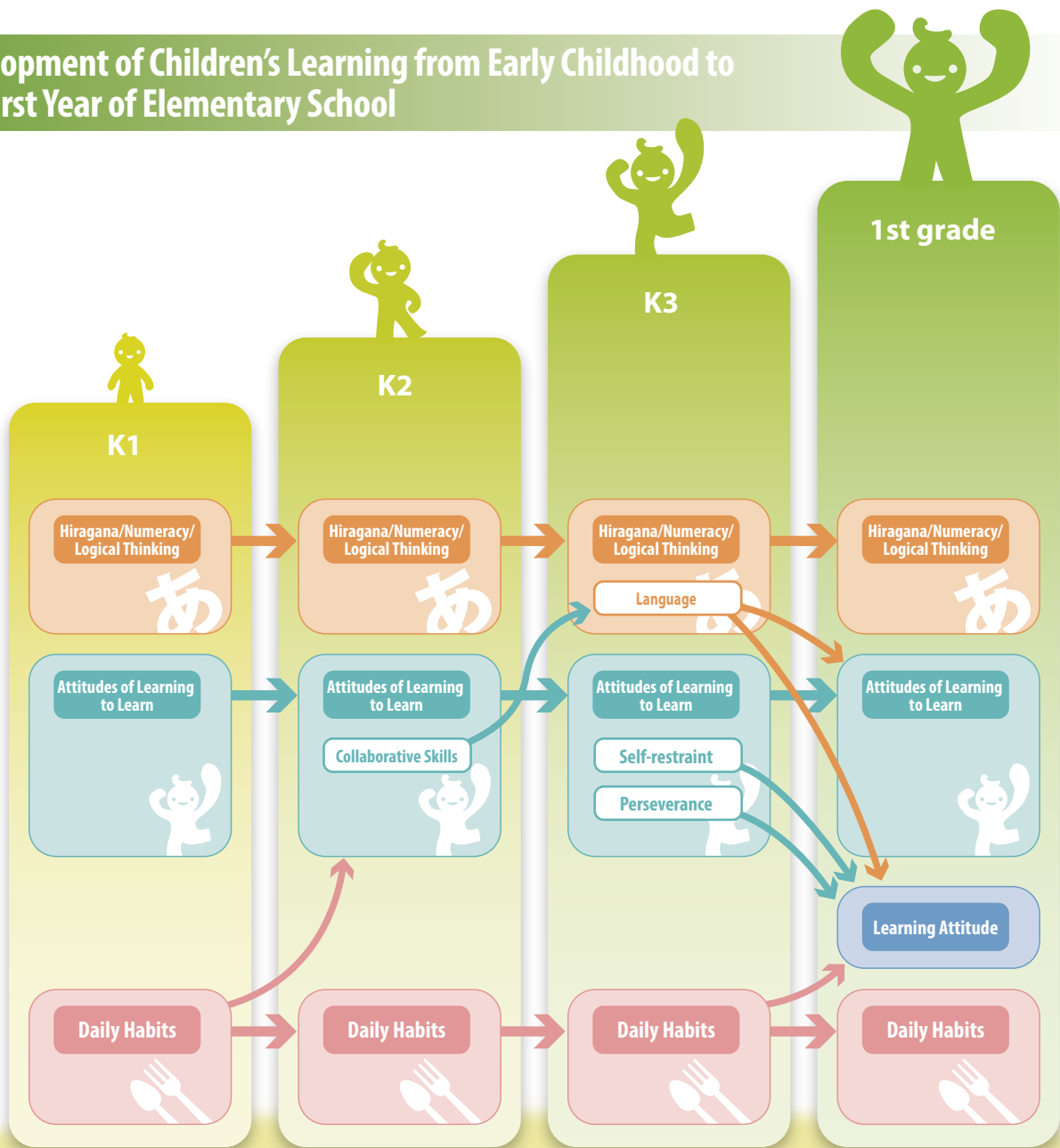


2 The Process of Learning

Do the three areas of “daily habits,” “attitudes of learning to learn,” and “hiragana/numeracy/ logical thinking” in early childhood develop independently or interdependently? Here we will introduce the process of children’s learning based on four-year longitudinal data.

Development of Children’s Learning from Early Childhood to the First Year of Elementary School

Fig. 2-1



*The bold lines indicate great influence, and the fine lines indicate slighter great influence.



“Daily habits” are the foundation of learning from early childhood through to the first grade of elementary school, and “attitudes of learning to learn” and “hiragana/numeracy/logical thinking” work together to stimulate growth.

Based on longitudinal data from K1 through to first grade, we analyzed the influence of the previous year to the subsequent year, and extracted the factors with great influence.

Fig. 2-1 shows that the three areas of “daily habits,” “attitudes of learning to learn,” and “hiragana/numeracy/logical thinking” each influenced the development of skills from one school year to the next. In particular, the skills that showed the greatest relationship between school years were as follows: “daily habits” in K1 influenced “attitudes of learning to learn” in K2, and “attitudes of learning to learn” (collaborative skills) in K2 influenced language skills in K3. Additionally, “hiragana/numeracy/logical thinking” (language) in K3 was closely related to “attitudes of learning to learn” in the first grade period.

Three Areas	Skills	Representative Examples of Items
Hiragana/Numeracy/Logical Thinking	Hiragana	Four items, including the ability to read the Japanese hiragana syllabary, etc.**
	Numeracy	Three items, including the ability to count using the Japanese style of counter words (1-ko, 1-pon, etc.), etc.**
	Language	Four items, including the ability to use their own words to describe things in a logical manner for others to understand, etc.**
	Classification Skills	Four items, including the ability to compare objects around them in terms of length, size and height, etc.**
Attitudes of Learning to Learn	Curiosity	Five items, including the ability to ask why about things they do not understand, etc.
	Self-assertion	Five items, including the ability to state what they want to do, etc.
	Collaborative Skills	Five items, including the ability to cooperate with friends when playing, etc.
	Self-restraint	Six items, including the ability to quietly listen until the end to what others say, etc.
	Perseverance	Four items, including the ability to take on challenges without giving up easily, etc.
Daily Habits	Daily Habits	Seven items, including the ability to go to bed at the same time every night *, etc.*

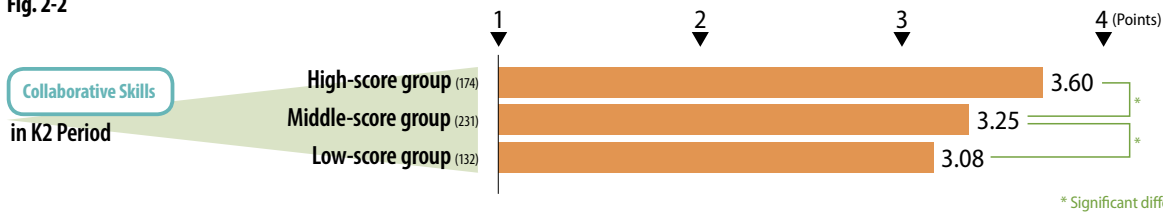
* Six items set for first grade period according to their development.

** The skills and number of items differ between K3 period and first grade period according to their development.

2 The Process of Learning

Language Scores in K3 Period

Fig. 2-2



* Significant differences were found.

* **Scoring method:** Points were calculated by giving 4 points to all “very true” responses, 3 points to all “somewhat true” responses, 2 points to all “not very true” responses and 1 point to all “not applicable” in each item. Only the respondents who answered completely were included in the analysis.

* **Three groups in Collaborative skills:** Scores were calculated in the above method for the items below, then classified into three groups according to their average scores.

- Can cooperate with friends when playing, etc.
- Can express their feelings and listen to others' opinions
- Can apologize and make up with friends after arguments
- Can ask people to let them join in, to play and to lend toys when playing

* **Language scores in K3 period:** Scores were calculated in the following six items and the averages obtained.

- Can play word games
- Can use their own words to describe things in a logical manner, so others can understand
- Can explain their reasons saying “Because...”
- Can explain things they have seen or heard to others
- Can read picture books or visual dictionaries unaided
- Can make up stories when assigned a topic

* Sample size indicated in brackets.

Description



“Collaborative skills” in K2 period leads to “language” skills in K3 period.

After dividing the 544 respondents into three groups (high, middle, and low-score groups) according to their scores on “collaborative skills” in the K2 period, we compared the “language” scores of the three groups in the K3 period. As indicated in Fig. 2-2, the “language” scores marked 3.60 for the high-score group, 3.25 for the middle-score group, and 3.08 for the low-score group. The results of this analysis indicate significant differences between the three groups. There was a tendency that the higher the levels of “collaborative skills” in K2 period, the higher the “language” scores were in K3 period. Collaborative skills involve demonstrating one’s attitude through adjusting one’s feelings and thoughts with others, and are developed through interaction with others. The survey results indicate that fostering collaborative skills in children leads to “language” skills in such areas as “can use their own words to describe things in a logical manner, so others can understand” and “can read picture books or visual dictionaries unaided.”

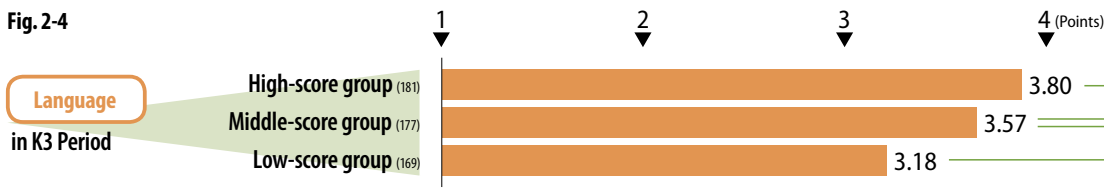
Attitudes of Learning to Learn Scores in First Grade Period

Fig. 2-3



Hiragana/Numeracy/Logical Thinking Scores in First Grade Period

Fig. 2-4



* Significant differences were found

* **Three groups in Language in K3 period:** Scores were calculated in six items and the averages categorized into three groups.

- Can play word games
- Can use their own words to describe things in a logical manner, so others can understand
- Can explain their reasons saying "Because..."
- Can explain things they have seen or heard to others
- Can read picture books or visual dictionaries unaided
- Can make up stories when assigned a topic

* **"Attitudes of learning to learn" scores in first grade:** 24 categories pertaining to curiosity, self-assertion, collaborative skills, self-restraint and perseverance for first graders (elementary) were calculated and the mean values obtained.

* **"Hiragana/numeracy/logical thinking" scores in first grade:** 16 categories pertaining to hiragana, numeracy, language and classification skills were calculated and the mean values obtained.

* Sample size indicated in brackets.



The "language" skills in the K3 period are closely related to the "attitudes of learning to learn" and "hiragana/numeracy/logical thinking" abilities in the first grade period.

As in Fig. 2-2, the respondents were divided to three groups according to their "language" scores in K3 period, and the scores of the three groups were compared in the scores of "attitudes of learning to learn" and "hiragana/numeracy/logical thinking" in the first grade period. In Fig. 2-3, the high group scored 3.35 for "attitudes of learning to learn" in language, 3.13 for the middle group, and 2.89 for the low group. As for the scores in "hiragana/numeracy/logical thinking," they were 3.80 for high language score group, 3.57 for middle language score group, and 3.18 for low score language group. The results of the analysis revealed significant differences between each group. It was found that "language" skills are related to "attitudes of learning to learn" and "hiragana/numeracy/logical thinking" skills.



Comments from the Research Group

Nurturing "attitudes of learning to learn" and "hiragana/numeracy/logical thinking" skills during daily life and play

How are "attitudes of learning to learn" and "hiragana/numeracy/logical thinking" skills nurtured in daily life and play? For example, when children build structures with wooden blocks, they have to consider the balance between the shapes and sizes of the blocks, express in words the image they have of the structure they wish to build, and consider various ways to realize this image. This provides the skills they need for "hiragana/numeracy/logical thinking." In addition, the desire to build the structure and work to complete it can also be said to represent an "attitude of learning to learn." Completing it provides them with a sense of satisfaction and confidence, which helps develop their "attitude of learning to learn" even further. It also enhances their knowledge and ability to think about the shapes and sizes of the blocks.

Therefore, such daily activities are consequently very significant for children, and the freedom to explore enhances "attitudes of learning to learn" closely related to the development of "hiragana/numeracy/logical thinking" skills. Children also receive a broader level of learning through interacting with a wide range of people, and it is thought that this is linked to the skills they need to cope with situations in a flexible manner.