

Articles

The Comparison with Children's Evaluations of a Temporary School Route and a Refurbished Route.¹⁾

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This study compares children's evaluations of a temporary school route and a refurbished route. I walked along school routes, following and with the school children, in order to identify the differences in their behavior between walking along a temporary school route during the refurbishment period and along the refurbished route. The group of children preferred the school route, which had a variety of environmental experiences, compared to the route that had poor environmental experiences. The children did not give tangible reasons for their preference of school routes but had clear emotional responses. This study points out the importance of constituting physical and social environmental design for children's emotional well-being. Even if a road is refurbished to improve road safety, the safety for children is not accomplished without taking into account children's own assessment of the road.

Key words : child, street, children's play, affordance, evaluation

1. Background and Purpose of the Study

It has been a long time since the problem of children hardly playing outside emerged. It has been pointed out that the deterioration of the play environments of children due to rapid urbanization, which began in 1955, must have directly contributed to this problem (Senda et al., 1981; Mizuki & Minami, 2002). Concerning the rapid disappearance of playgrounds for children in the community,

Fujimoto in Social Education stated in 1974 as follows: "Such a drastic change in the community environment due to urbanization has had a decisive impact on the play spaces for children and has served to change their play styles. It is urgent to review their play spaces from the perspectives of sociology and behavioral science." Although 30 years have passed since then, the play environment surrounding children still remains unsatisfactory.

Studies conducted in this field include the following: maintenance and arrangement planning of parks; analyses of the morphological characteristics of playgrounds; the clarification of the characteristics of play spaces, the relationships between play and the

1) This study was conducted under the auspices of the project "Constructing the horizontal human relations" of New Research Initiatives for Humanities and Social Sciences, Japan Society of the Promotion of Science. This paper was originally published in Ritsumeikan Journal of Human Sciences, No. 13, 9-20 (2007).

corresponding environment, the environmental perception of children and the actual conditions of playmates, time and space; and a comparison of play environments between cities overseas and those in Japan (Mizuki & Minami, 2002). The overall trend of research themes has changed roughly as follows.

Initially, studies intended to solve the deterioration of play environments due to urbanization spatially and aimed to provide physical playgrounds to children. Spatial environmental improvements were actively carried out in the 1970s and 1980s, as exemplified by the construction of parks for children. A new issue emerged later, however, which was closely associated with an aspect of the actual play of children that had become clear: they played not only in places created for play, such as parks, but also in a variety of places within the community. Consequently, the perspective concerning play environments began shifting from the improvement of base playgrounds, such as parks, to the improvement of the overall play environment in the entire community. Thus, research from the perspective of community space planning that secures play environments for children began, leading to the second research trend in this field (Mizuki & Minami, 2002).

In the latter half of the 1980s, new studies, for which the main focus was not on urbanization, began, such as those by Teramoto et al. on the perception of children of the environment and others by Minami et al. on the reevaluation of the community environment from the perspective of children, leading to the broadening of research perspectives regarding the play environments

of children. In recent years, Kurihara et al. have been conducting studies that strive to capture the meaningfulness each place has, which suggests the research themes in this field have deepened from those addressing only physical playgrounds to those that strive to understand the essential nature of playgrounds. With respect to today's issue of obtaining a true understanding of the play environments of children, the need for studies that elucidate the structure of playgrounds from the perspective of environmental psychology that focuses on the mutual interaction between people and the environment, seems to be increasing.

Based on the above, this study discusses the difference in the qualitative evaluation of school roads with different environments from the perspective of children by focusing on the difference in the use of these roads and comments on them by particular groups of children.

When the school roads, the targets of this study, are viewed from a developmental perspective, they can be positioned as a secondary territory located between the primary territory, such as a house with the highest occupancy and the public territory, such as a school (Werner & Altman, 1998). It has been pointed out that this secondary space and time serves as an important place for children not only as a place to play, but also as a base outside the home where they can feel safe (Mizuki & Minami, 2002). In short, a school road is an important place for the development of children and therefore, a meaningful place to make observations and investigation on the play behavior of children.

2. Investigation Method and Outline of the Target Area

2-1 Outline of the Investigation

In the district of O elementary school in Kasuga City next to Fukuoka City, the author joined the two groups of fourth and fifth graders on their way home from school and recorded the relationships between their behavioral scenes and each place by taking notes and photos and conducting interviews.

While O elementary school has a designated school road, part of the designated road was changed due to road improvements during the period from December 2001 to March 2002. In order to find the association between different road environments and the loitering of children on their way home, the study was conducted during the following three periods: The first period before the road improvement: Observations were made on the designated school road.

The second period during the road improvement: Observations were made on a temporary school road.

The third period after the road improvement: Observations were made on the improved designated school road.

The time required to go home from school via the designated road was approximately 25 to 35 minutes, while it was about 30 to 40 minutes via the temporary school road. While the number of members in the group of fourth graders shifted between three and seven including two girls, the group of fifth graders was comprised of four boys and remained the same throughout the three periods.

The designated school road had the following characteristics: The road, before and after the road improvement, was barely wide enough to allow two cars to pass by each other. There were several shops and one community park along the road. As the traffic was busy on the road, cars often crossed the white line dividing the sidewalk from the road. The road was straight with little neighboring natural space. Since many people used the road, the children often came to the attention of the people of the community. After the road improvement, a sidewalk 1 to 1.5 meters wide was created with blocks separating it from the road.

The temporary school road was a community road in a residential district. Since it was only wide enough to allow one car to pass, there was not much vehicle traffic.

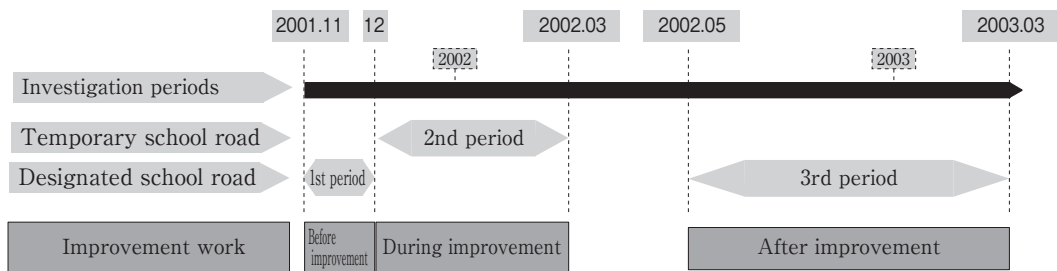


Figure 1 Investigation Periods and Corresponding School Roads

There was a lot of natural space along the road. The road was winding with a great deal of variety and bypaths. There were no shops and the children were barely noticed by the people in the community. The three investigation periods were set as follows: The first period was from November to December, 2001; the second period was from December 2001 to March 2002; and the third period was from May 2002 to March 2003.

2-2 Investigation Method – Process of joining the groups of children

In the field, the first contact with children was made as follows: Upon changing the school road, the school decided to have children come to and go home from school in groups. Particularly when they came to school in the morning, the school asked some of their parents to take turns accompanying them for their safety, which lasted for about two weeks. The author first joined this group of parents and accompanied children on their way to and from school every day. When the author used his camera or VTR to record the road environment and the behavior of the children on their way to and from school, some of them became interested in the equipment and often came to him and asked if they could use the camera or asked him to take pictures of them. The author, therefore, deliberately used the equipment as a medium to build a relationship with the children, gradually deepening his relationship with them.

After he became good friends with the children by joining them on their way to and from school every day, he explained the

content and purpose of the investigation to them. Then, some children who first approached him took a leadership role in calling for the cooperation of the other children, saying; “Let’s help him with his investigation.” This was how the author obtained their cooperation. He was welcomed into the groups of children as one of the members with whom they would go to and come home from school.

The frequency of the investigation was scheduled as follows: During the first period, a behavioral observation as to the activities of the children on their way to and from school was made three times. These observations were conducted as a preliminary investigation for the investigations in the second and third periods. In the second stage, a participant observation was made every day for 20 days before the winter vacation began. Since a relationship of trust seemed to have been established between the children and the author during these days, he changed the schedule after the winter vacation and made observations two or three times a week on fine days. During the third period, in order to incorporate seasonal changes into the investigation, observations were made four times for each grade per month in May, June, July and September. After autumn, supplementary investigations were conducted several times.

2-3 Points to note: Relationships between groups of children and the author

In this investigation, the author intended to join the children on their way home from school as a peer. To this end, he positioned

himself as one of their members, acting together with them rather than as an observer. The main focus was placed on walking back from school as the children did, acting like them and interacting with the road environment while sharing their experiences on the way home through a lot of conversation.

The reason for attempting such an equal participation was as follows: it is commonly known that it is difficult to obtain a true understanding of the behavior of children within a limited time frame and in order to do so one must spend much time with them as one of their members.

Children aged 10 to 12 develop their own worlds, shielded from the scrutiny of adults. When an investigator strives to approach children of these ages, it is indispensable to build trust with them on the foundation of an equal relationship (Fine & Sandstrom, 1988).

This is why the author of this study strived to capture the world of children on their way to and from school by locating himself directly in their territory. Consequently, the relationship between the children and the author became one between the groups of children and a big brother, not one between of informants and an observer. While he was not an "equal" member in the strict sense of the word, the author strived to maintain the position of a person who joined the children on their way home from school as one of their peers.

Since the author was an adult, however, he could not be a peer in the strictest sense. For example, when people in the community warned children playing on a cliff on their way home, he had to intervene between them.

On other occasions, he had to warn them at his own discretion. On the other hand, the author's presence served to give full play to the desire of the children to loiter on the way home: they did things that they usually refrained from doing due to school rules, because they felt safe to do so due to the presence of the author. At the beginning of the investigation, some conscious actions, where children deliberately showed the author what they usually did on their way home, were also observed.

As shown above, although the author basically maintained his position as a participant, it was not stable as he sometimes intervened in the activities of children, evoked their play or acted as an intermediary between children and adults.

2-4 Description and Analysis of Data

The method of data collection centered on the author's taking notes on the relationships between the activities of children and their way home from school while joining the two groups of fourth and fifth graders as an investigator. When activities specific to each of the school roads were observed, diagrams were plotted and photos were taken to record them. Many questions were posed to children on their way to and from school. These conversations and scenes were recorded in the field notebook immediately after each trip. They were recorded in temporal sequence while focusing on the various events that happened on the way, such as their relationships with the road environment, conversations, play among children and events that happened between children and

the author. In short, the descriptions in the field notebook were arranged not in a random order, but in chronological order centering on the main targets of the relationships of the children with the road environment, conversations among themselves and those with the author, play among them and events that happened between them and the author.

The analysis of the investigation was conducted basically on these descriptions in the field notebook. Upon conducting the analysis, while focusing on elucidating the qualitative difference in the assessment of the school road environment, the purpose of this study, the author first selected chunks of the statements and behaviors of children, which have relevance to the assessment and can be used as targets, from the descriptions in the field notebook and then sorted out their contents.

This is not a technique where research questions are first set up and data is selected to verify the questions, but one where among the overall descriptions of events that happened in the space and time of the way to and from school, those that seemed to fulfill the purpose of the investigation were selected and focused on. Specifically, those descriptions that depict the interactions of the children with the road environment, the statements of the children and their conversations or interactions with the author were selected from among all the descriptions made, which were then organized and analyzed.

This technique is an attempt to highlight the relevant information from among the data collected, which is specifically an experimental attempt of theoretical sampling of the

descriptions geared toward data description and analysis in the fieldwork targeting children on their school road. In qualitative research, however, the same technique or procedures may not be applied to each fieldwork and analysis since such research includes a wide range of target fields.

While the data handling in this particular fieldwork is based on past discussions on data collection and analysis that have been conducted in the field of qualitative research (Muto, Yamada, Minami, Aso and Sato, 2004), it should be noted that this is a qualitative study specific to a particular field. Despite the fact that this is a study based on theoretical sampling conducted in a particular field, the author believes that this study can be used in the formation of hypotheses applicable to the field of school roads at large.

3. Results and Analysis of the Investigation

3-1 Two particular patterns found in loitering on the way home

In order to determine the characteristics of play on the school roads, the patterns of play observed during the entire investigation period were listed in Table 1.

It can be seen from this table that there are two patterns in the loitering of children, namely, play among children and play in relation to the environment.

For play among children, there were many kinds of behavior that can be categorized as joking or frolicking, such as chasing and kicking. For play in relation to the environment, there were many kinds of play

that were performed through transaction with the environment that had appeared in front of the children while walking, such as walking on the blocks dividing the sidewalk from the roadway, touching flowers along the road and climbing up a small cliff by the road.

The above observations suggest that whether or not there are playful activities among children like frolicking or interactions with the road environment is an important requirement for the generation and development of loitering.

In the next section, the author strives to determine the relationships between the school roads and the formation of play and interactions by organizing the different types of play children performed in each of the three investigation periods, specifically by looking at how children reacted differently to each road.

3-2 Difference in play in different road environments

In order to determine the relationships between the road environment and the

loitering of children, the author summarized the forms of play and the major characteristics of the road in each investigation period in Table 2.

Regarding the difference in the environment of the school road before and after the improvement work, while there was no sidewalk before the improvement and cars would pass close to the children, a sidewalk 1 to 1.5 meters wide was created with blocks dividing the sidewalk from the roadway after the improvement work, reducing the danger of through traffic to children. The general characteristics of the road regardless of the improvement work include being a straight road with heavy through traffic and little neighboring nature.

The differences in the forms of loitering – particularly in the play among children – before and after the improvement work included the following:

For the play among children, while they used to spread out and frolic or fool around where the road became wider or the space became wider due to a neighboring parking

Table 1 Forms of Loitering

Loitering among children	Loitering in relation to the environment
Sword fighting with umbrellas	Walking while playing hopscotch
Tugging a bag from both sides	Walking on the blocks dividing the sidewalk from the roadway
Tripping each other	Touching flowers growing along the road
Word games (e.g., red-red-blue)	Picking up something from the road and playing with it (a twig)
Chasing (when the group behind walks past the group ahead, chasing starts)	Becoming excited about dog feces (those who step on them are referred to as “Unkoman” (turd man) and they start playing tag)
Hide-and-seek	Taking a secret bypath
Janken (rock-paper-scissors) and penalty games	Climbing up a small cliff
Conversation	Contact with an animal
Playing a trick on the lock of a school bag	Captureing an airplane into frame made by the finger

lot before the improvement work, these play activities disappeared after the sidewalk was installed as a result of the improvement work. In the interviews with the children, they commented that the road became too narrow to facilitate play, which seems to suggest that the installation of the sidewalk has served to restrain their play activities on this road.

On the other hand, the temporary school road had the characteristics of being narrow, rich in variety and nature and having little through traffic. Play among children in this environment included frolicking, playing tag and playing games while spreading out on the road. With respect to the relationship with the road environment, interactions with the environment were observed, such as climbing up the neighboring small cliff, making bypaths their secret paths and casting spells on airplanes flying in the sky.

When the forms of play of the children are compared among the three road environments, it is clear that loitering on the school road regardless of the improvement work lacked

the variety of play among children that was shown in the temporary road environment. One of the reasons for this seems to be that vehicle traffic prevented them from spreading out on the road, casting a damper on the development of their activities. Another reason seems to be that the road environment, such as the road structure and its accompanying nature, might be affecting their behavior.

The author will discuss below what specific aspects of the road environment affect the loitering by children by focusing on the structure of their play, specifically focusing on how their play started and developed on the temporary road.

3-3 Generation and development of loitering

In order to determine the tendency toward the generation of loitering, the corresponding relationships between the environment and the children at the onset of play were summarized in Table 3.

The table shows that a change in the

Table 2 Changes in the Road Environment and the Behavior of Children

	Play among children	Relationships with the environment
School Road (before improvement) Straight, little nature, heavy through traffic (play observed if there was a wide space)	In places where the road became wider or had a neighboring space like a parking lot, frolicking was observed.	<ul style="list-style-type: none"> • Playing hopscotch • Taking shelter from the rain under the eaves of a shop • Touching flowers • Walking with fences as a support
Temporary School Road Narrow, rich in variety and nature, little through traffic (lots of play observed)	Activities, such as running, frolicking, fooling around, playing tag and playing games (while spreading out on the road), were observed.	<ul style="list-style-type: none"> • Making a hiding place on the cliff • Making bypaths their own secret paths • Captureing an airplanes
School Road (after improvement) A sidewalk 1 to 1.5 meters wide was installed with dividing blocks (inhibiting the activities of children)	There was not enough space for children to frolic and play among children was hardly observed. (Since the road was narrow)	<ul style="list-style-type: none"> • Walking on the blocks dividing the sidewalk from the roadway • Skipping on the cover of a side ditch

Table 3 Conditions and the behavior of children at the onset of play

Environmental conditions at the onset of play	The loitering of children
Unusual climatic conditions, such as snow	Having a snowball fight
Turning points and points leading to a hill	Hiding or suddenly start running
When coming to and waiting at traffic lights	Running or fooling around
When twigs or dog feces are found on the road	Playing with the twigs or start playing tag
Encountering an acquaintance	Talking to him/her
Encountering a cat or other animal	Talking to it
Finding an airplane	Casting a spell on it

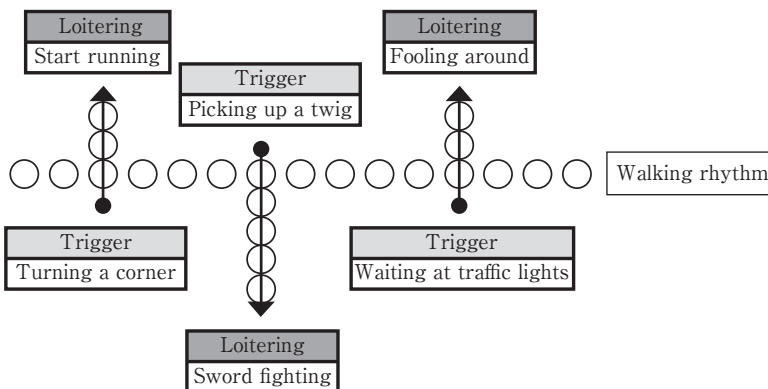


Figure 2 Walking rhythm and the onset of play

walking rhythm of children, such as when their state changes from stillness to movement, when the road environment changes or when there is a change in the environment before them, triggers their play: for example, they fool around while waiting for the traffic light to change, suddenly start running immediately after they turn a corner and start sword fighting when they happen to

find twigs on the road (Figure 2).

In order to determine the nature of the specific environmental conditions that have served as a trigger, these environmental conditions were classified for convenience into four groups as shown in Figure 3. While the triggers that had changed the walking rhythm of the children were often associated with climate, road structure or other people,

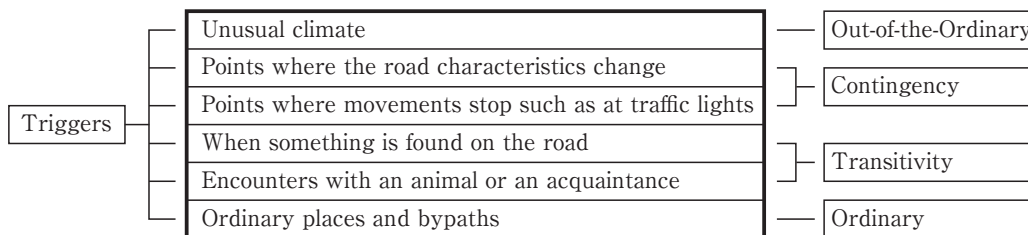


Figure 3 Play triggers and their nature

they could be classified roughly into the following three groups according to the inherent nature of the roads: Triggers related to the road form, such as turning points and traffic lights encountered on the road, were classified as Transitivity; those that added unusual conditions to the road environment, such as snow, as Out-of-the-Ordinary; and those associated with a sudden encounter, such as an encounter with an acquaintance, as Contingency.

Figure 4 focuses on the difference in specific environmental conditions of the two school roads in light of the aforementioned road nature. The development of the play of children was clearly different on these two roads, which suggests that there is a close

relationship between the structure and nature of a road and the loitering of children.

Loitering on the temporary road on one day developed as follows: Immediately after children turned from the conventional school road to the temporary road, they began playing among themselves, such as playing a rock-paper-scissors game. After walking a while, they climbed up a small cliff and played there for a while. Then, they started walking again and when they spotted an airplane, they capturing an airplane into frame made by the finger. Thus, their play often developed in a successive manner.

As can be understood by the fact that they start a game spreading out on the road immediately after turning a corner or

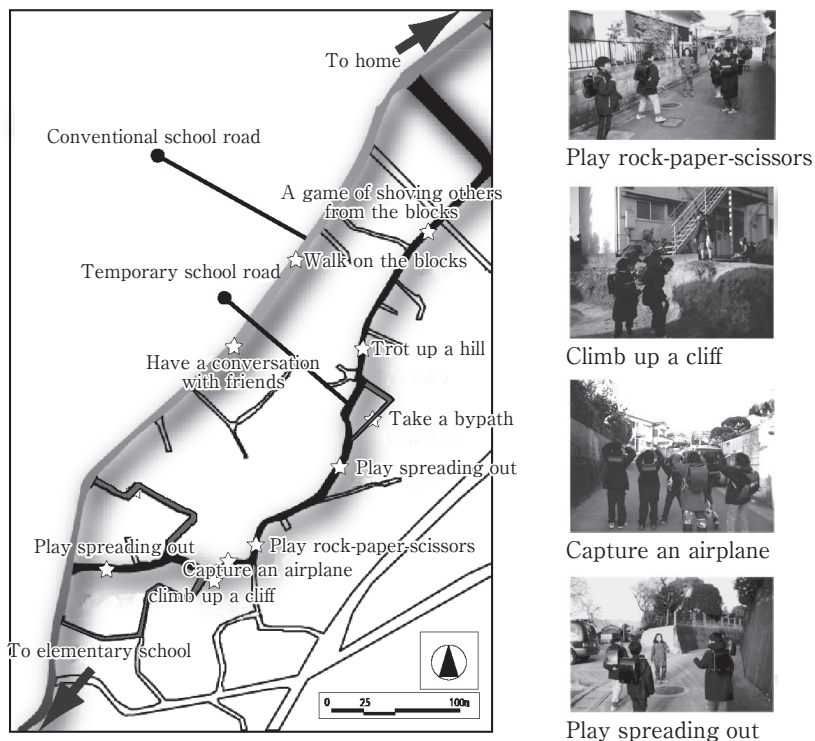


Figure 4 Difference in play between the two school roads

climbing up a cliff or capture an airplane as they spot an airplane, the onset and development of the play of children are closely associated with the versatile natural environment and the safety and variety (such as lots of corners) of the temporary road.

On the other hand, it was found that there was little play on the conventional school road among children throughout the investigation period. On the conventional school road, many isolated, one-off play activities were observed on the way home from school, such as walking on the blocks or touching flowers, which were elicited by contact with the road environment.

They were sporadic reactions to the environment that happened to emerge in front of children, rather than those that develop in a successive manner while walking.

From these observations, it can be said that provided that the safety of the road is secured, the loitering of children develops if the road is furnished with physical characteristics, such as the natural environment, that children can use as playthings or play spaces and with qualitative characteristics that enable them to have various environmental experiences.

The author has discussed how the loitering

Table 4 Impressions of the two school roads

Roads	The impressions of children of the school roads	
	Positive (pleasant & good points)	Negative (unpleasant & bad points)
Temporary Road	<ul style="list-style-type: none"> • Since the way home is a sloping road, it's fun. • I like the narrowness. • I feel like I am surrounded and protected. • I feel safe to play hopscotch. • We can play a game with manholes since there are no cars. • I enjoy climbing up and down the hill. • I enjoy waking on the blocks in front of houses. • I found a house with a Shiisa. It's interesting. • I want to pick the persimmons I found on the way home. • I want to build a secret base on the cliff. • The road is clean without any trash. • I enjoy walking while stamping on manholes. • This road makes me enjoy going to school. • I like the bypaths. • I enjoy the cooking smells coming from the houses. 	<ul style="list-style-type: none"> • It is far to school. • Although I want to climb the cliff, I hesitate to do so because I might be scolded for it.
Conventional Road	<ul style="list-style-type: none"> • I enjoy walking while playing hopscotch. • This road is shorter than the temporary road to school. • There are many bumps that I can enjoy going up and down. • I sometimes meet acquaintances. 	<ul style="list-style-type: none"> • Pupils of Kasuga Elementary School stare at us in the park. • There are few places we can loiter. • I am afraid of cars. • The car exhaust smells bad. • I don't feel safe to walk on this road due to the heavy vehicle traffic. • While the road is wide and has enough room to move around, I am afraid of the cars.

of children started and developed and its relationships with the road environment. In the next section, an analysis is conducted on what points children evaluate about the road when they loiter while walking on it.

3-4 Impressions of the road environments and consequent differences in play

In order to determine the tendency in the relationships between the impressions of the children of the school roads and loitering, their impressions of the school roads were summarized in Table 4. The impressions of the children of the temporary school road included the following comments: those showing interest in the natural environment neighboring the road, such as "I want to pick persimmons on the way home" ; those on discoveries about houses along the road, such as "I found a house with a Shiisa (a lion-shaped ornament from Okinawa)" ; those concerning the use of the road environment, such as "We can play a game of treading on manhole covers since there is little vehicle traffic" ; and those depicting the overall image of the road, such as "The slope is nice."

On the other hand, comments on the conventional school road centered on the danger of the through traffic, such as "I'm afraid of the cars" and "I don't feel safe as there are a lot of cars" and there were few comments on the road environment. There was also a comment stating, "Since the road is wide, I can easily move around, but I am afraid of the cars." These comments of the children showed that even if they wanted to frolic around with their friends, they could not concentrate on their play as they were forced

to always be on the lookout for cars.

The comments of the children on the two different road environments show that certain kinds of road conditions, such as little through traffic, are required for children to develop play on the way to and from school.

It follows then that when considering requirements for road environments that enable the development of the loitering of children, it is not enough for the road to have the various forms of environmental elements, such as a neighboring environment and space like natural environments and bypaths and play affordances like blocks dividing the sidewalk from a roadway. In addition to such road environments that have the potential for evoking the loitering of children, they must be furnished with basic conditions, such as the safety of children.

3-5 Overall impressions of the two school roads

This section discusses the image of the children of each road based on their overall comments on the two roads, which were provided after experiencing both roads. What the author intends to do here is to capture the characteristics of the environment not only via the verbal comments of the children, but also via their non-verbal responses.

Figure 5 is a summary of the overall impressions of the children after experiencing the two school roads. There were many positive comments on the temporary school road, such as "I want to take this road even if it is a longer way to school" and "It is difficult to explain what was so nice about the road, but it was a nice road." On the other

hand, most of their impressions of the conventional school road were negative, such as "I simply walked back home" and "There was nothing attractive about the road." It is interesting to note that children used such expressions as "simply going home" and "only walking" about the conventional road. In fact, when the road is looked at on a map, it becomes clear that the road is nearly straight and lacks variety in terms of the aforementioned road forms. Compared with the temporary school road, children seemed to view this conventional road as a straight road with little variety and had a relatively low opinion of it.

The comments of the children show that they really had a pleasant feeling when walking on the temporary road, although it was difficult for them to articulate the reason for the feeling in words. It is clear that the temporary road has something that the conventional one lacks. The comment of the children of "simply walking straight" seems to suggest that the development of play recognized by the children was very rare on the conventional school road. On a school road with such an environment, the dynamic relationships between the children and the road will tend to become passive compared with a school road like the temporary one, which has a natural environment and various road forms (such as a slope). If loitering activities, such as climbing up a cliff or taking a secret bypath, represent active relationships with the road, activities like jumping on the blocks, which happen to appear in front of children while walking, may represent passive relationships with the road. Thus, it is clear

that the dynamic relationships with a road can change depending on the road environment.

3-6 A new problem that has emerged on the conventional school road after the improvement work

A sidewalk was installed on the conventional school road to protect children from cars (Photo 1). Since the installation work began during this investigation, the author had an opportunity to observe a new danger to children that emerged after the work.

The danger arose from the fact that the installation of the sidewalk served to restrict the behavior of the children. Photo 2 and 3 show some examples of how children actually



Photo 1 Sidewalk installation work



Photo 2 Since the sidewalk is too narrow, a child walks outside it.

Table 5 Impressions after experiencing the two school roads

Overall impressions after experiencing the two school roads	
Temporary school road	<ul style="list-style-type: none"> • I want to use the temporary school road even if it is a longer way to school • It is difficult to explain what was so nice about the previous road (the temporary road), but it was a nice road • Although I often feel like using the previous road (the temporary road), I don't do so because the current road is the designated school road under the school regulations.
Conventional school road	<ul style="list-style-type: none"> • The current road (the conventional school road) is not interesting since I just keep walking toward home. • The current road where I just keep walking toward home becomes a dull place when I have nothing more to talk about with my friends. • The current road does not have anything "fun." • Although the current (conventional) road is a shortcut to home, it has no bypaths and I just keep walking on it. It's no fun.



Photo 3 Children playing outside the sidewalk

used the sidewalk.

Photo 2 is a rear view of two girls walking, where one girl is walking on the sidewalk while the other walks outside it. This is due to the narrow width of the sidewalk. At an interview with these girls, they said, "It used to be easy to walk side by side while speaking to each other before the installation of the sidewalk, but it has become difficult to do so after the installation work." They seemed to take pleasure in going home together while speaking to each other. Since the physical restriction brought by the installation of the narrow sidewalk now prevented them from

doing so, one of them stepped outside the sidewalk to make it easier for them to walk side by side and speak to each other. Since there is heavy traffic outside the sidewalk, the installation of the sidewalk for safety purposes, which was implemented without having a good understanding of the behavior patterns or the feelings of children, ended up in generating a new danger to them.

Photo 3 depicts a scene of two boys fooling around, where one boy lies outside the sidewalk. They made comments that showed their irritation at simply walking home on the narrow sidewalk without having any fun (Table 5).

After school, children go home while developing various loitering activities on the way home. Environmental designs that do not match the habits of children not only become meaningless for children, but possibly cause them unnecessary danger.

4. Conclusion

The following is what was found by observing

the experiences of the same groups of children on school roads with different environments and conducting interviews with them.

How the loitering activities of children develop depends largely on the physical structure of the road, such as the presence of corners and slopes and the presence of a natural environment surrounding the road. At the same time, whether or not children can feel safe to play, such as there being no vehicle traffic, is also an indispensable condition for the development of their loitering activities.

In short, the fact that the road possesses all the physical requirements for the experiences of children with the school road environment serves only to provide opportunities for such experiences. Whether children can avail themselves of these opportunities depends on whether or not appropriate social arrangements are in place. Providing such social arrangements is the way to secure a trigger for their experiences of the environment.

It was also found that children highly appreciated a road that provided them with a variety of experiences with the environment. While they always seemed to strive to gain the most out of any road, it is difficult to achieve it in a physical environment designed to discourage interactions. Consequently, children tended to evaluate such a road as a poor environment.

What is required in the future is the development of a road environment design that combines in a balanced manner a physical structure and social arrangements that enable the various experiences of children with the environment.

The results of this research have provided the following important suggestion regarding the development of an environmental design truly meaningful for children. Specifically, it is critical to establish design rules that reflect the habits of children as a new process perspective to the design of road environments. The installation of a sidewalk introduced here serves as a good example. While it was installed to ensure the safety of children, these children did not understand the purpose of the installation and formed a low opinion of the new physical environment, making it a dangerous environment contrary to the intention of adults of ensuring the safety of children.

In other words, this investigation has shown that however appropriate the logic in the creation of an environment may look from the perspective of adults, the creation of the environment may result in the creation of new dangers unless children evaluate it favorably.

When considering ways to improve the environment of a school road, it is essential to have a clear image of how children would deal with the improved environment. This research has provided one approach to create an environment that children would welcome, specifically an approach to assess the environment by experiencing it with children and closely observing their activities in it.

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Received Nov. 21, 2006

Final acceptance Dec. 21, 2006