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Accessibility Improvement of Public Schools Through User Involvement in JAPAN

Maiko SUGAWARA^{a,1}

^aDepartment of Human Environment Design, Toyo University, JAPAN

Abstract. According to the amendment (2020) of the Act on the Promotion of Smooth Transportation, etc. of Elderly Persons, Disabled Persons, etc. in Japan, public primary and junior high schools, which are newly built/renovated/extended, should be designed to be physically accessible for students with special needs. In addition, existing schools should also make efforts to improve accessibility. On this background, this paper focuses on the methods to effectively promote accessibility in schools that is achieved through user involvement for inclusive education. The survey subjects were all 164 public schools in Saitama city. A questionnaire to all schools was conducted to find out 1) the features of physical obstacles impeding inclusive education and 2) examples of user involvement in the planning stage of accessibility. In the results, accessible toilets have been installed progressively. However, inaccessible routes and spaces remained because there were no lifts in most existing schools. Regarding user involvement, a good practice was discovered in one case of restroom renovation which reflected parents' requests. In reality, because of the limitation of the budget of the municipality, it was obviously difficult to provide sufficient accessibility in all 164 schools in the short period. To achieve fully accessible schools for everyone, it is crucial to create short/mid/long-term facility management strategies and to share knowledge/skills regarding accessibility improvement among administrative officers, architects, and users, so that they can find efficient and effective ways to promote accessibility.

Keywords. Public schools, School buildings, Accessibility, User Involvement

1. Introduction

In Japan, public primary and junior high schools, which are newly built/renovated/extended, should be designed to be physically accessible for students with special needs, according to the amendment (2020) of the Act on the Promotion of Smooth Transportation, etc. of Elderly Persons, Disabled Persons, etc., abbreviated as the "Barrier-Free Act". In addition, existing schools should make efforts to improve accessibility as well.

Before that, these obligations to guarantee the accessibility of schools were placed on only special schools, so that this amendment was evaluated as a breakthrough in the history of inclusive education. It can be said that the triggers of this progress were the ratification of the Convention on the Rights of Persons with Disabilities and the Tokyo

¹ Corresponding Author, Maiko Sugawara, Department of Human Environment Design, Toyo University, 1-7-11, Akabanedai, Kita-ku, Tokyo, 115-8650, Japan; E-mail: sugawara@toyo.jp

2020 Olympic and Paralympic Games. Besides that, Japanese schools are expected not only to play a role as education facilities but a role as evacuation centres in the case of natural disasters. The recent frequent natural disasters, such as the huge earthquakes and flood disasters, make us aware of the necessity of the accessibility of schools as evacuation centres for everyone.

The Ministry of Education, Culture, Sports, Science and Technology (MEXT) conveyed a survey to clarify the actual situation of the accessibility of all public primary and junior high schools in 2021 and set the installation targets for 2026 regarding accessible toilets, step-free access, and lifts as shown in Table 1. Based on these targets, municipal governments need to manage their own school facilities to approach the goal. However, the practical methods and difficulties to improve the accessibility of schools under municipal governments are unclear. In addition, how to reflect user needs on school planning/refurbishment practically are also indistinct.

Therefore, this paper focuses on the methods of school facility management to effectively promote accessibility in schools, which will be achieved through user involvement for inclusive education.

Objective			2021	2026
Accessible toilets		School buildings	65.2%	All schools designated as
		Gyms	36.9%	evacuation centres
				(approx.95% of public schools)
Step-free	Gates to	School buildings	78.5%	All schools
Access	entrances	Gyms	74.4%	
	Entrances to	School buildings	57.3%	All schools
	classrooms	Gyms	57.0%	
Lifts		School buildings	27.1%	All schools where students with special needs enrol (approx. 40% of public schools)
		Gyms	65.9%	All schools where students with special needs enrol (approx. 75% of public schools)

 Table 1. Targets laid out by MEXT for accessible public schools

2. Literature review

Legal systems to guarantee accessibility of buildings have some differences between countries. In Japan, accessibility of buildings has been stipulated in the Barrier-Free Act, not in the Building Act. The accessibility guidelines [1], which were created by the MLIT (Ministry of Landscape, Infrastructure, Transport, and Tourism), show details regarding how to design public/private facilities from the perspective of accessibility. There are also guidelines for managing the facilities of primary and junior high schools [2], including learning spaces for students with special needs, which were created by MEXT. Local governments seriously need to promote accessibility in their schools based on them.

As for international reviews, Bar & Galluzzo (1999) [3] elaborated the measures of Universal Design for accessible schools according to the Americans with Disabilities Act (ADA). Although the Barrier-Free Act is less enforceable than the ADA, it is quite suggestive in terms of planning the ideal school buildings. On the other hand, Francis & Joyce (2018) [4] in Ghana and Pastraporn et al. (2016) [5] in Malaysia examined the physical environments of schools in each country in terms of inclusive education and Universal Design. They attempted to reflect their results on political measures for better

accessibility in schools. In addition, Mualla & Selen (2012) [6] illustrated that the policies and specifications regarding physical environments for inclusive education in Turkey tended to be technical and complementary for students with disabilities. They attempted to apply UD principals to school planning for all students.

On the contrary, Japan still has fundamental problems of accessibility in schools, though there were several guidelines as mentioned above. Some papers dealt with physical environments for students with special needs in special schools [7][8], however recent papers regarding general schools for students with special needs are few. Junko & Satoru (2013) [9] showed the effective methods of restroom renewal for everyone through user involvement in general schools. It is expected that these methods will expand the target from restrooms to all school buildings which should be refurbished.

3. Methodology

As a case study, the research targets were all municipal schools in Saitama city, which is one of the biggest municipalities in Japan. In 2021, the population of the city was approximately 1.3 million people and there were 104 primary schools, 58 junior high schools, and two special schools. In the same year, Saitama city produced the rebuilding/refurbishment plan of the schools for the next 30 years and will review it each ten years. The points regarding updating school facilities were 1) efficient facility management, 2) enhancement as evacuation centres, 3) eco-friendly facilities, 4) adequate ventilation, and 5) accessibility for everyone. To proceed with them as planned, it is important to clarify the actual situation of each point and to find concrete measures. Of this whole plan, this paper focuses on accessibility.

The questionnaire was conducted at 164 municipal schools between October 21st and November 30th in 2021. The respondents were the staff of school management. Of the 164 schools, 95 responded (57.9%) as shown in Table 2.

Table 2. Details of the responses				
	Target number	Responding Number		
Primary schools	104	61		
Junior high schools	58	32		
Special schools	2	2		

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The items examined to evaluate accessibility were as follows;

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- Facilities for physical accessibility: lifts, accessible toilets
- Routes for physical accessibility: Entrances to the school, classrooms, rooms for teachers and staff, and other facilities
- Facilities for students with intellectual disabilities, foreign students, and students with different gender identities: relaxation spaces, specific spaces for learning Japanese, specific spaces for changing of clothes, and toilets

In addition, the opinions of the respondents regarding the problems of school facilities for students with special needs and the necessity/challenges of refurbishment for better accessibility through user involvement will be disclosed.

4. Results and Discussions

4.1. Features of target schools

Firstly, according to the statistics of Saitama city in 2021, 1,044 (1.5%) primary school students out of 67,631 enrolled in special classes, and 407 (1.3%) junior high school students out of 31,742 studied in special classes. In addition, 56 students with profound and multiple disabilities enrolled in two special schools.

Regarding the status of special classes in target schools, all 93 primary and junior high schools, except one school, had one to four special classes. One special class was for students with low vision and the others were for students with intellectual or developmental disabilities.

In terms of physical disabilities, 19 primary and junior high schools (20%) had one student each who used a wheel chair or cane. Of the 19 students, 10 enrolled in general classes, seven in special classes, and two were unknown. In addition, five primary and junior high schools had one student each who needed medical care, such as suctioning and urethral catheterization. Three students out of the five enrolled in general classes and two students studied in special classes.

Secondly, considering the features of school facilities, the rebuilding/refurbishing plans of Saitama city mentioned the heavy financial burden for their management. Many reinforced concrete schools were built in the 1970's and 1980's, and the deterioration of these schools causes facility problems. In fact, as described in Figure 1, more than 60% of school buildings and 50% of gyms of the target schools were over 40 years old.



Figure 1. Age of school buildings and gyms of target schools

The amendment (2020) of the Barrier-Free Act is expected to provide accessibility steadily, especially in new schools, so the focus is the accessibility of most existing school facilities.

4.2. Lifts and accessible toilets

52 target schools (54.7%) out of 95 had lifts. However, 25 of which had lifts only for freight. Lifts which students could use had been installed into only 27 target schools. On the other hand, 34 target schools out of 43 which had no lift were built over 40 years ago. Thus, vertical accessibility still presented difficulties.

Regarding accessible toilets, 79 targets school (83.1%) had one or more. Comparing our 2010 survey results [10] of 45.1%, schools with installation of accessible toilets had

increased considerably. Half of the target schools have one accessible toilet on the ground floor and 16 schools (16.8%) have one on each floor. The others had specific features, such as two accessible toilets on the ground floor or one in each school building.



4.3. Accessible routes not requiring assistance

According to Figure 3, first, regarding accessibility to the school buildings, approximately 80% of schools had accessible routes not requiring assistance from 1) gates of school sites and 2) parking spaces. The access to gyms also had similar high percentages. On the other hand, entrances for teachers and school staff at half of the target schools were inaccessible. It means that teachers and school staff who use wheelchairs almost never work at those schools.





Second, as to rooms for studying, classrooms on the ground floor were the most accessible. However, more than half of target schools had difficulties in accessibility to classrooms on the upper floors, which included rooms for music, science, art and so forth. It is apparent that insufficient physical environments impede students' learning.

Third, the percentage of accessible rooms for teachers and staff stayed around 50%, except nurse's rooms which were generally located on the ground floor. It can be said that whether these rooms were accessible or not depended on their location.

Finally, regarding access to other facilities, e.g., gyms, pools, and broadcasting rooms, low percentages of accessibility were found except regarding toilets. These rooms are also important for the quality of students' school lives, so the accessibility of these rooms should be considered as well.

4.4. Facilities for students with intellectual disabilities, foreign students, and students with different gender identities

Moving on to facilities for students with other special needs, 26.3% of target schools had proper rooms where students with intellectual disabilities could be relaxed or relieve stress, such as play rooms, snoezelen rooms, and tatami rooms. It appears reasonable that the other target schools, which had inadequate (27.3%) or no such rooms (38.9%), also had the need for these kinds of rooms for their students.

Regarding specific spaces for foreign students to learn Japanese, 20 target schools had such spaces. In addition, instructors for Japanese supported them a couple of days a week. However, 27 schools which had some foreign students didn't provide any specific rooms or support. This result needs to be more investigated whether those foreign students need support for Japanese or not.

As to facilities for students with different gender identities, more than 80% of target schools answered that they took gender identities into account when those students use toilets and change clothes. In many cases, they could use accessible toilets. However, one of the schools added comments that it was inconvenient for them to use because of the distant location from their classroom.

4.5. Problems of school facilities for students with special needs from the viewpoints of the school management staff

According to the free answers, low-quality facilities because of deterioration were considered common problems. They had many facility problems of whole school buildings, toilets, and gyms not only for students with special needs but for all students. In addition, in terms of roles as evacuation centres, planned maintenance and bottom-up management were strongly required.

Cost of refurbishment was also a fundamental issue. In particular, difficulties to install lifts or stair lifts were often noted. Some of the answers argued that it was hard to gain the understanding of parents about installing a costly lift for one student. However, it can be pointed out that this is a misunderstanding. The lift will be for future students/teachers/residents with reduced mobilities. Such viewpoints are still insufficient.

One of the respondents answered in detail. "Students need to enter the school site from an inclined road or stairs. The school has a stair lift, though students need staff support to use it. The room doors are hard to open for wheelchair users. The narrow aisles in rooms and the high sinks are also difficult for them to use. Eventually the refurbishment of whole buildings will be needed." In this case, each facility problem can be divided into the following categories; 1) minor refurbishment within a year or so, 2) refurbishment that needs a few years' plan and 3) major refurbishment that takes a couple of decades to do. Thus, it is important to make these lists of facility problems and figure out the right timing to update the facilities.

4.6. Necessity/challenges of refurbishment for accessibility through user involvement

In terms of user involvement, 48 respondents had their working areas refurbished for accessibility. However, 27 of them had no occasion to ask opinions from students or their parents. Whether users were involved in refurbishment plans depended on schools or school management staff.

Challenges of refurbishment with user involvement were revealed from free answers. Main concerns were lack of knowledge and experience regarding refurbishment. One of the respondents answered, "Though I obtained advice from teachers for special education and contractors and visited some schools to study good practices of refurbishment, it was difficult to judge whether the refurbishment went well." In addition, another respondent noted, "Students' requests can be reflected on refurbishment plans. However, there are concerns regarding versatility." It means that the best refurbishment for a student is not always the best for another.

Another respondent noted that there had been a refurbishment for a new student who uses a wheel chair. Several meetings were held with a principal, teachers, administration officers, the student, and the parents to discuss how to refurbish the school according to the needs of the student. Consequently, the refurbishment was minimal because of financial boundaries and physical restrictions of the school. However, it can be said that such discussion before the enrolment cultivated a better understanding of the student's needs among them and helped them discover reasonable accommodations.

As one of the examples of user involvement, X school, which had no accessible toilet, planned to install one for a new student, who used a wheel chair and had a mild intellectual/hearing disability. At the planning stage of the toilet, school management staff showed his parents Plan A, which was a typical plan in public facilities of Japan, as shown in figure 4. They found out that there was no bed, except a baby changing station. The student usually needed support to change his diapers, so his parents requested the school to install a bed which he could lie down on as Plan B.



Figure 4. Plans for an accessible toilet in X school

This example demonstrated that it was not enough to simply follow the accessibility guidelines for public facilities. The types of users at the schools should be taken into consideration. In addition, the installation of a bed into an accessible toilet will also be useful for elderly people when schools play the role of evacuation centres.

5. Conclusion

The low vertical accessibility remained due to the deterioration of existing schools which were over 50% of all schools in Saitama city. The municipality faced the financial burden of big-scale refurbishment as in many others municipalities. To improve their accessibility efficiently, short/mid/long-term facility management strategies are needed. In addition, refurbishment of schools which have no lift but have students with special needs should be a priority. It is also essential to take soon-to-be students with special needs into consideration and prepare adequately accessible environments for them, so that they can enter schools without anxieties of accessibility.

It will be meaningless if a refurbishment doesn't meet user needs. At a planning stage, school management staff should ask opinions of users, assume various users/situations in schools including the need for evacuation centres, and get advice from experts on the plans. These measures will nurture knowledge and skills of school management staff to update school facilities and to provide reasonable accommodation. It is also crucial that these experiences are shared between different schools to be able to take advantage of other school refurbishments. Establishing organizational methods which ensure sufficient discussion of accessibility improvement in schools will contribute to creating an inclusive environment and inclusive education.

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