




Special Issue article: School Health Promotion in Japan and its Contribution to Asia and Africa

## Water, Sanitation and Hygiene (WASH) in Japanese elementary schools: Current conditions and practices

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**Abstract** **Background:** Water, sanitation, and hygiene (WASH) is the foundation for preventing infectious diseases, as the current COVID-19 pandemic has shown. WASH is essential for school health, yet there have been very few papers published on WASH in Japanese schools. The objective of this review is to describe the current conditions and practices in Japanese elementary schools using an international framework for WASH in schools and identify implications for handwashing promotion in other areas.

**Methods:** This research was based primarily on a literature review. Information on common WASH practices was also collected through an international workshop attended by school health experts.

**Results:** There is a rigorous legal foundation for ensuring the physical infrastructure and quality control of a safe water supply in Japanese schools. Water quality is monitored regularly by *Yogo* teachers and school pharmacists. Strategic locations and an abundance of water supply infrastructure facilitate handwashing behavior. Hygiene promotion activities by *Yogo* teachers and student's health committees play a major role in increasing awareness, while health education classes provide minimal but necessary knowledge on handwashing with soap. Flush toilets are the standard, but there is still a demand for improvement of toilet facilities. Children's participation in daily cleaning of school toilets contributes to students understanding the importance of cleanliness.

**Conclusions:** Drawing from the Japanese example, WASH in schools' interventions are suggested to include laws and policies, a designated teacher, and children's participation to sustain both infrastructure and hygiene promotion.

**Key words** Handwashing, Japan, school toilets, WASH in schools, *Yogo* teacher.

### Introduction

#### Background

The importance of basic hygiene behavior, handwashing with soap in particular, became very evident during the current COVID-19 pandemic.<sup>1,2</sup> The effectiveness of handwashing with soap as a countermeasure for infectious diseases, especially diarrheal diseases and pneumonia, has been demonstrated by public health specialists for many years.<sup>3,4</sup> It is one of the simplest and most cost-effective measures for preventing infectious diseases,<sup>5</sup> yet hygiene promotion intervention and changing individuals' behavior has been a challenge in public health.

Access to safe drinking water that is free from pathogens, access to sanitation that enables separation of fecal matter from human contact, and hygiene behavior such as handwashing with soap (referred to as WASH) are all foundations for health.<sup>6</sup>

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WASH in schools has been one of the priorities in international development. When the Focusing Resources on Effective School Health (FRESH) approach, which is an interagency initiative by the World Health Organization (WHO), United Nations Children's Fund (UNICEF), United Nations Educational, Scientific, Cultural Organization (UNESCO) and the World Bank, was first launched in 2000, provision of safe water and sanitation at schools was one of its four original components. It was considered "the essential first steps towards a healthy physical, learning environment."<sup>7</sup> WASH in schools is also included in the Sustainable Development Goals (SDGs) target 4.a, as a component of a "safe, non-violent, inclusive, and effective learning environment," and targets 6.1 and 6.2 as part of "universal" WASH access.<sup>8</sup>

According to the most recent (2018) WHO/UNICEF statistics on WASH, access to basic safe water supply, basic sanitation, and basic hygiene at primary schools in least-developed countries was 50.9%, 46.4%, and 28.8%, respectively.<sup>9</sup> These data alone show the necessity for considerable improvement of WASH in schools. However, the question is, how can this be achieved and maintained?

Japan has high access rates in all three areas of WASH, but there have been very few papers published that focus

on WASH in Japanese schools. This could be because, the Japanese school health framework does not use WASH as a single sub-sector. Rather, it has a legal bases for each of the components, safe water supply, sanitation, and hygiene, as well as practical measures taken by *Yogo* teachers. A *Yogo* teacher is a special licensed educator allocated at each school who plays a key role in promoting school health.<sup>10</sup>

Japanese schoolchildren once had a high prevalence of infectious diseases until the post-World War II when it reduced drastically. Access to piped water in Japan increased from 26.2% in 1950 to 87.6% by 1975 and 98.0% by 2018; this is said to be a contributing factor to the reduction of infectious diseases in the country.<sup>11,12</sup> On the other hand, even with the high achievement of the WASH indicators, Japanese schools still face problems in WASH-related issues. Understanding the state of WASH in Japanese schools will elucidate implications for other countries.

### **Objective and framework**

The objective of this review is to describe the current conditions and practices related to safe water supply, hygiene promotion, and sanitation issues in Japanese elementary schools using the international WASH framework. The framework used is the categorization of the WHO/UNICEF Joint Monitoring Program that monitors the indicators for SDGs.<sup>8</sup> However, the purpose of this paper is not to conduct an evaluation of Japanese achievement based on the measurement of the indicators. I used the three categories as it would be informative to organize the information to enhance further understanding of WASH in Japanese Schools:

1. Safe water supply
2. Hygiene (handwashing)
3. Sanitation (adequate toilets)

I put hygiene before sanitation as the school water facility serves both (1) and (2). For hygiene, this paper focuses only on handwashing, not on food hygiene or menstrual hygiene.

I further categorized the information on these three areas into three distinct aspects:

1. Physical infrastructure
2. Soft infrastructure
3. Children's participation

Physical infrastructure is defined as the material aspects of infrastructure. Soft infrastructure includes operational and maintenance aspects of the infrastructure, monitoring, education, and positive behavior promotion. I separated children's participation as a separate category because it plays an important role and it has legal and institutional support in the Japanese school health system.<sup>13</sup>

### **Research methods**

The research was primarily based on a literature review. Considering the bases of the current conditions at Japanese elementary schools, laws (acts) and official guidelines related to school health published by Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT) were reviewed. These documents were retrieved by searching the MEXT (<https://www.mext.go.jp/>) homepage. Keywords used for the search within these documents were "environmental health", "drinking water", "handwashing", and "toilets". Reference books published for *Yogo* teachers as well as academic articles, books, and websites related to the keywords (limiting them to cases in Japan), were also screened using a Japanese database called CiNii (<https://ci.nii.ac.jp/ja>) and a standard internet search engine (Google). To check articles published in English on the topic, Scopus was utilized with the keywords, "school", "Japan", "water/sanitation/toilets/hand washing", but this did not yield many results other than parasite control or those already mentioned in this paper.

To verify the common practices and the situation of school health that was found in the literature review, expert opinion and information was extracted from the discussions of an international workshop attended by school health specialists. The workshop was organized by the Osaka University UNESCO Chair in May 2019, for school health experts from Japan and Asia. In the roundtable discussions, about 10 participants shared their experience and knowledge on school health policies in Japan and their application. The discussions were not limited to the area of WASH, but it covered the topics on policies, national guidelines, organizational management, and stakeholder involvement in school health activities in Japanese schools.

### **Results**

The overall legal basis of environmental health and hygiene education at schools is the School Health and Safety Act (*Gakkou hoken anzen hou*),<sup>14</sup> which was enacted in 2009, as a revision to the 1958 School Health Act. In addition, the Health Promotion Act (*Kenkou zoshin hou*)<sup>15</sup> and the MEXT's curriculum guideline Course of Study (*Gakushuu shidou youryo*)<sup>16</sup> provides a further foundation. School environmental health is legislated for within the School Health and Safety Act, and its details are described in a MEXT public notice called School Environmental Health Standards (*Gakkou kankyou eisei no kijyun*).<sup>17</sup> The Water Supply Act (*Suido hou*) and several related ministerial orders of the Ministry of Health, Labor and Welfare (MHLW) related to safe water supply<sup>18</sup> also stipulate that high quality water should be provided at schools.

Table 1 is the overall summary of the results, adapted to a matrix.

**Table 1** Main points on WASH in Japanese schools

	Physical infrastructure	Soft infrastructure	Children's participation
Water	Water supply facilities regulated by laws and official guidelines	Water quality monitored by a school pharmacist and a <i>Yogo</i> teacher	Many children bring their own drinking water in a water bottle
Hygiene	Strategic location of water supply Abundance of long sinks Soap/dispenser	Health education exists but minimum Health promotion by <i>Yogo</i> teachers Management of soap by <i>Yogo</i> teachers	Students' health committee helping to increase awareness
Sanitation	Toilet space design and number not specified In the process of shifting to Western-style toilets School toilets for an evacuation center	Daily monitoring of toilet facilities by <i>Yogo</i> teachers	Daily toilet cleaning responsibilities by children Students' beautification committee

WASH, water, sanitation, and hygiene.

### Safe water supply

#### Physical Infrastructure: High-quality water supply

Ninety-eight per cent of the population of Japan has access to piped water,<sup>19</sup> thus most elementary schools in Japan are supplied with piped water. However, as of 2016, 1.6% of schools water supply was from well water as the School Health and Safety Act does not limit the water supply to piped water only.<sup>20</sup>

Water quality is regulated in detail by School Environmental Health Standards (MEXT public notice)<sup>17</sup> and MHLW ministerial orders under the Water Supply Act. When wells are used for drinking water, they must be equipped with a chlorine disinfection device and the water must be checked daily, with more thorough screening periodically. Public piped water supply must be monitored, for example, for free residual chlorine in the water, if the water is first stored in storage tanks at schools instead of a direct connection to the faucets.

Water quality requirements differ for drinking water, water for miscellaneous use (such as watering green spaces, cleaning, and, in some schools, for toilet flushing), and water for swimming pools (which are common at most Japanese elementary schools for physical education classes). The School Environmental Health Standards also require that hardware, such as faucets, pipes, and tanks, is checked on a regular basis.

It should be noted that 95.7% of the public elementary schools in Japan are designated as emergency shelters for their community in the event of earthquakes or flooding.<sup>21</sup> For emergency purposes, 67.6% of the schools have prepared drinking water stored in plastic bottles or tanks.

#### Soft infrastructure: Monitoring of water quality

Since the infrastructural provision for water supply is no longer an urgent issue in Japanese schools, the emphasis is on monitoring of water quality. "The Manual for School Environmental Health Management" published by the Japan Society of School Health (JSSH)<sup>22</sup> describes the detailed

points and frequency of checks that should be conducted at each school.

Daily monitoring of water quality is conducted by schoolteachers under the supervision of *Yogo* teachers and health coordinators (*hoken shuji*). According to the JSSH manual, free residual chlorine level, color, smell, and taste of the water must be checked every school day. Periodical (in most cases once a year) water quality tests are conducted by a school pharmacist. A school pharmacist is allocated to all schools by law (School Health and Safety Act), and he/she is responsible for the supervision of the monitoring and the maintenance of school environmental health, including mandatory periodical tests such as water quality tests.<sup>23</sup> Most of the school pharmacists (85.5%) serve the schools 11 days or less in a year and most have a full-time job at a pharmacy or hospital.<sup>20</sup> The water quality tests conducted by the pharmacists are more detailed. They check for general bacteria, *Escherichia coli*, chloride ion, and PH, among other elements.

The completion percentage of all the required water quality tests was 82.4% at elementary schools in 2016. If partial completion is added, the rate is 95.3%.<sup>20</sup> In the same survey conducted by the school health pharmacists' subcommittee of the Japan Pharmaceutical Association, 83.7% of the elementary schools owning water tanks replied that they cleaned inside the tanks once a year. Whether these figures are high or low is open to discussion, but the JSSH is pushing for 100% completion.<sup>24</sup>

#### Children's participation: or parent's request?

Despite the fact that most Japanese schools are equipped with a piped water supply with regular quality monitoring, 86% of the elementary schools either allow or require their students to bring a drinking water bottle from home.<sup>25</sup> The high number of O157 cases with some deaths among school children in 1996<sup>26</sup> is the suggested reason for this, although the water was not identified as the source of contamination. The schools that currently require students to bring their own water bottle explain that the water supplied to the school from the city waterworks is safe, however, there could be some problems

with the long extension pipes within the school buildings and some faucets that have been unused for a while may not have enough free residual chlorine in the water.<sup>27</sup> Other schools may encourage children to bring their water bottles to hydrate themselves frequently to prevent dehydration caused by heat stress. There are also schools where, despite the school claiming the school water is safe, parents request that their children be allowed to bring their own drinking water. Some research shows the parents are more likely to make this request when they have a negative perspective on the original water source (river) or on the quality of the piped water itself.<sup>28,29</sup> However, the hygiene status and safety of water bottles may be an issue that needs to be looked into for school children in Japan.

### Hygiene (handwashing)

#### Physical infrastructure of hand hygiene

For the children to wash their hands, they inevitably need to be provided with handwashing facilities. Surprisingly, the location and number of such facilities in Japanese schools are not prescribed by the laws and guidelines related to school health. Even the Guideline for Designing Elementary School Facilities (*Shogakkou Shisetsu Seibi Shishin*)<sup>30</sup> just states the importance of efficiently and adequately designing the number and location of the faucets and plumbing by considering the level of usage at each school, which is rather vague. However, it suggests installing handwashing facilities close to classrooms, near the door going into the school health room (*hoken-sitsu*) from outside, and between the playground and the entrance to the school building (Fig. 21). The Guideline also implies having separate handwashing facilities for the toilet area.

Although the Guideline does not define the number and location of the faucets, one of the characteristics of Japanese elementary school structures is the abundance of water supply infrastructure.<sup>31</sup> As shown in Figure 1, long sinks with several faucets and hand soap are installed in several locations on each floor. This facilitates children washing their hands before serving and eating school lunch in their classroom. Some schools promote brushing teeth after lunch (though this has been suspended during the COVID-19 pandemic) and this sink allows many children to wash hands and brush teeth without forming a long queue.

However, there have been some changes in the recommended design since MEXT issued a report in 2009. The long sinks were often placed in front of each classroom along the corridor, but the report warned that those sinks can make the floor wet, leading to cases of pupils slipping and injuring themselves. It instead suggests constructing the sinks in an alcove.<sup>32</sup> However, schools' infrastructure cannot be renovated immediately because of budget limitations, therefore the suggested changes may emerge when new school buildings are built or renovated (Fig. 2).

The location and design of handwashing facilities for the school kitchen are determined in detail in the School Lunch Hygiene Management Standard (MEXT ministerial order)



**Fig. 1** Water supply facility between the playground and school building.

under the School Lunch Act (*Gakkou kyushoku hou*). The handwashing facilities are designated for the cooking staff only and must have a separate sink for the room where they change into their uniforms, toilet, and designated sections in the kitchen. It must be equipped with a faucet that can be operated with an elbow or foot, liquid soap, disinfectant



**Fig. 2** Long sinks on each floor.

alcohol, paper towels, as well as a nail brush for each individual. The Standard also indicates that if a school has a cafeteria, it should be furnished with handwashing facilities.

### *Soft infrastructure for hygiene*

Regarding soft infrastructure shaping children's handwashing behavior, three components in school health should be addressed: (i) health education (*hoken or hoken gakushuu*), (ii) health promotion (*hoken shidou*), and (iii) management of soap.

In health education, the importance of personal hygiene, such as handwashing, is touched upon. A health education textbook shows the proper steps for handwashing and photographs comparing the bio-culture of petri dishes that have been pressed into by hands, washed with soap, without soap, or no handwashing at all.<sup>33</sup>

However, health education alone in the schools may not be playing a major role in the promotion of handwashing. In the Japanese elementary school curriculum, health education is not an independent subject but is included in physical education (*Taiiku*, referred to here as P.E.). Health education classes do not start until the 3rd grade and in the 3rd and 4th grades combined, only 8 h is allocated to health education among the 210 h of P.E. classes. For 5th and 6th grades only 16 h of 180 h are allotted for health education. Personal hygiene is just one of the issues in the 3rd and 4th -grade curriculum, while prevention of infectious diseases is mentioned in 5th and 6th grades. Based on the opinions of the participants in the Osaka University UNESCO Chair workshop, the time given is apparently not enough to induce behavior change. The time allocation as well as the general contents of each subject is defined by the MEXT Course of Study.<sup>16</sup> P.E. classes, including health education classes, are generally taught by classroom teachers.<sup>10</sup> The professional knowledge of a *Yogo* teacher may be called for in health education classes and they may provide support in some cases.<sup>34</sup>

On the other hand, health promotion activities are mainly the responsibility of a *Yogo* teacher.<sup>35</sup> Health promotion aimed at large groups of students (i.e. collective health promotion, as opposed to individual health guidance) can be done as a lecture or a workshop under Special Activities (also translated as Student-led Activities: *Tokubetsu katsudo*).<sup>16,36</sup> The content and method of collective health promotion are more flexible.

In addition to the promotion of handwashing, students bringing their own handkerchief and tissue is also a ubiquitous aspect of collective health promotion at Japanese elementary schools. Paper towels are not usually provided for children at Japanese public elementary schools; thus, a personal handkerchief is considered necessary for maintaining hand hygiene after washing hands. The need for a personal handkerchief and handwashing can be called for in the monthly newsletter for the children (*Hoken dayori*) issued by the *Yogo* teacher. During Special Activities, children may be checked to see whether they brought their handkerchief, with the cooperation of the homeroom teacher and the students' health committee

(explained below). As an incentive, an award could be provided to the class which had the highest number of personal handkerchiefs in the school.

Finally, hand soap, which is very important in the prevention of infectious diseases, is managed by the *Yogo* teacher. The School Environmental Health Standard requirement only mentions soap for handwashing facilities in the toilet and the lunch preparation room. However, most of the sinks inside Japanese elementary school buildings have hand soap. The type of soap is shifting from solid soap, hung in a net, to liquid or foamy soap in a dispenser, for hygiene reasons.<sup>37</sup> Since there are many water supply facilities, it requires constant monitoring and diligence for its management. Some schools conduct this monitoring during the daily morning school patrol before the children come to school.<sup>38</sup>

### *Children's participation: students' health committee*

In Japanese elementary schools, children participate in student committees of their choice when they become higher-grade students, not limited to, but usually beginning in the 5th grade. These are called pupils association activities (*Jidou-kai katsudou*) and is endorsed in the MEXT Course of Study. The pedagogical purpose is to foster the children's sense of responsibility, problem-solving skills, and ability to cooperate with students of other grades. Although the number and types of committees are determined by each school, most schools have a health committee.<sup>1</sup>

The students' health committee plays a vital role in hygiene promotion. They can plan and take responsibility in an activity, for example, the monitoring of the above-mentioned handkerchief promotion, while receiving advice from a *Yogo* teacher. The committee members may produce posters prompting adequate handwashing and assist the *Yogo* teacher in refilling or replacing soap.

## **Sanitation**

### *Physical infrastructure: the toilet*

The Guideline for Designing Elementary School Facilities<sup>30,39</sup> urges elementary school toilets to have the following: flush toilets, separate toilets for girls and boys, independent toilets for staff members and guests, variation in toilet size that considers children's height differences, a toilet with handrails for the disabled and elderly, a toilet space with windows that allows sunlight and ventilation, and handwashing facilities connected to the toilet space. While the number and types of toilets is not specified, the Guideline instructs that the number of students and usage should be considered. The most recent Guideline (2019),<sup>39</sup> which was revised from the previous version after 3 years, added the recommendation for western-style toilets (sit-down toilets instead of Japanese-style squatting toilets) and dry-type floors for the toilet space.

It is surprising that the number of toilets per student is not specified by law or government policy. This may be due to

the criticism made by professionals in the mid-1980s claiming school facilities should be adaptable to varying educational methods.<sup>40</sup> In the 1960s, when the government was keen on increasing the number of schools, the standardized school design yielded facilities that were inadequate or unattractive. The Ministry of Education's standardized numbers for toilets were (i) one urinal per 50 boys, (ii) one stool per 25 boys, and (iii) one stool per 20 girls. Currently, a guideline for calculating the adequate number of toilets is provided by the Society of Heating, Air-Conditioning and Sanitary Engineers of Japan (SHASE).<sup>41</sup> The calculation method and adequate toilet design has been and still is an area of research by architects and engineers.<sup>42,43</sup>

One may think Japanese schools would not have problems with toilet infrastructure. However, according to a survey conducted in 2015, the top priority for the improvement of school facilities identified by schoolteachers was toilets (59%).<sup>44</sup> Seventy-nine percent of the teachers perceived the problems they had with their school toilets were "bad odor and lack of cleanliness."

The recent issue on infrastructure is renovating the toilets from Japanese squat-style to western toilets. Western-style toilets are preferred by children as their homes have this style, and western-style toilets are more hygienic, while Japanese-style toilets are reported to have far higher *E. coli* bacteria levels. MEXT conducted a complete census of the toilet types for all public elementary and junior high schools in 2016.<sup>45</sup> Among the 1.4 million toilet bowls, 56.7% were Japanese style. This survey was done as Kumamoto prefecture experienced a large-scale earthquake in 2016 and the elderly evacuees at the schools were reported as not being able to use Japanese-style toilets.<sup>44</sup> MEXT is now recommending western-style toilets upon renovation. Renovating the wet-type floor to dry-type floor is also now recommended as it would make the toilet space more hygienic and easier to clean.

#### *Soft infrastructure issues for sanitation*

The MEXT School Environmental Health Standard (2016) stipulates that a school must monitor school cleanliness daily, including the cleanliness of the toilet areas and facilities. Checking if there is any toilet that is out of order or damaged is part of that duty. This responsibility is often undertaken by a *Yogo* teacher; the monitoring of toilets is part of the morning school inspection.<sup>38</sup> The *Yogo* teacher would also check the availability of toilet paper and soap.

Daily cleaning of the toilets is done by children as described later, but the *Yogo* teacher will inform the classroom teacher of the monitoring results. School toilet maintenance may require more vigorous cleaning by the school staff or a professional cleaning company. The types of detergent for cleaning which the children are allowed to use are quite limited, to avoid accidents and allergies.

Some *Yogo* teachers conduct a class on the proper use of toilets as part of the collective health promotion activities. These days, defecation education (*haiben kyoiku*) has become

an important topic. Many children refrain from defecating at school (nearly 60%) causing constipation (over 16%) and stomach ache.<sup>46</sup> The reason for hesitating to defecate at school includes disgust at the smell, especially when the school facility is old, but also embarrassment or fear of bullying.<sup>47</sup>

#### *Children's participation: toilet cleaning activity*

In Japanese elementary schools, it is a very common practice that children clean the school toilets. According to a survey of public elementary and junior high schools ( $n = 273$ ), routine toilet cleaning was done by students only (53%), or students plus teachers, school staff, or a cleaning company (40%), which means 93% of the schools have their children participate in toilet cleaning. The rest of the schools reported that the cleaning was done by a school janitor (5%), or a cleaning company (3%).<sup>48</sup> As these figures show, some schools and some local governments do not allow their children to clean the toilets, because of the possibility of children getting infectious diseases through the cleaning activities, among other reasons. There are heated discussions on social media on why some schools do not let the children clean school toilets.

The activity of cleaning their school is stipulated in the MEXT Course of Studies as part of the Special Activities, with an explanation of its purpose and educational benefits.<sup>13,16</sup> Homeroom classmates are divided into several groups and each group takes turns cleaning their classroom and the common areas of the school such as the playground, gym, science room, music room, and toilets. The cleaning activity takes place almost every day after lunch or after the last period. These details are planned by the school with the support of the *Yogo* teacher, while the homeroom teacher is responsible for supervising students' cleaning activities.<sup>49</sup>

In addition, some schools have a beautification committee (*Bika Inkai*) which monitors and promotes cleanliness at school, including toilet facilities. The committee may check the toilet for its cleanliness or make a poster prompting the children to put their toilet slippers neatly at the doorway.

As such, children participate in keeping the school toilets clean. Besides the pedagogical values of cleaning activities stipulated in the MEXT Course of Study, toilet cleaning from childhood is speculated to make the children use toilets in a cleaner manner and shape their sense of hygiene.

## **Discussion**

A rigorous legal basis facilitates the physical sanitation infrastructure and quality control of safe water supply in Japanese schools. Ensuring safe water quality owes much to the daily monitoring by a *Yogo* teacher, however, the involvement of a semi-external human resource (a school pharmacist) in monitoring the environmental health infrastructure is also a contributory factor. Although a safe water supply is provided at schools, the majority of elementary school children bring their personal drinking water, the safety of which cannot be assured by the schools.

The strategic location, design, and large number of water supply infrastructure facilitate hygiene behavior at schools. It is interesting to note there are no specific policy guidelines for the physical hygiene infrastructure in schools. Further examination may be necessary of the impact of the design change (e.g., possible reduction in the number of faucets) as instructed by MEXT, on children's hygiene behavior. Hygiene promotion activities by *Yogo* teachers and student's health committees play a significant role in increasing awareness, whereas health education classes provide necessary, but minimal, knowledge on handwashing with soap. A study using the direct observation method showed a high percentage (86%) of elementary school children washed their hands with soap before lunch.<sup>50</sup>

Access to sanitation has been achieved in Japanese elementary schools from an international viewpoint, yet toilet improvement is still the most frequent request by teachers and children. This could be because toilets are expected to evolve in response to changes in the social environment, such as a westernization of lifestyle, school's increasing use as evacuation centers, an aging Japanese society, and higher consciousness of hygiene among children. Japanese children participate in daily cleaning of school toilets; this activity helps the toilets to be clean, and it may also contribute to the children's understanding the importance of cleanliness.

The following points are the implications and suggestions for WASH in schools' interventions drawn from the example of Japan.

1. Rigorous laws and policies facilitate standardized physical infrastructures such as water supply facilities and school toilets, but vigorous monitoring and maintenance (soft infrastructure) are essential for the hardware to be effective, such as water quality tests, refilling of soap dispensers, and the cleaning of toilets.
2. Handwashing can be enhanced with an "encouraging" physical infrastructure such as is strategic location and a higher number of water supply (handwashing) facilities.
3. A pivot teacher, such as a *Yogo* teacher, and children's participation is important in continuous prompting of hygiene behavior.

Improving WASH in schools is currently an urgent issue, not just in the middle- and low-income countries, but also in most parts of the world, especially since the COVID-19 pandemic. Quickly introducing WASH facilities and conducting handwashing promotion at schools are necessary during the emergency stage but taking this opportunity to institutionalize WASH in schools is equally important. WASH in schools needs to be sustainable. The three points identified from Japan's experience are key to the sustainability of WASH in schools.

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## Disclosure

The author declares no conflicts of interest.

## Note

<sup>1</sup> Student's health committee should not be confused with School Health Committee, which consists of a head teacher, parents, school doctors, community members and so on.

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