



The evidence to support hygiene, sanitation and water in schools

Marielle Snel and Kathleen Shordt

Clean, well-designed sanitation and handwashing facilities in schools, coupled with effective hygiene education, will have enormous health benefits. The evidence suggests that under these conditions pupils will be healthier, better able to learn, less likely to drop out of schooling, and will in turn spread good hygiene messages to their families.

In one promising initiative, in early 2000, the School Sanitation and Hygiene Education programme was launched in six countries: Burkina Faso, Colombia, Nepal, Nicaragua, Viet Nam and Zambia. By 2015, the programme aims to educate 80 per cent of primary schoolchildren about hygiene and to have all schools equipped with sanitation and hand-washing facilities. Students are targeted both as direct beneficiaries and as agents of behavioural and attitudinal change within their families and their communities. The programme recognizes the importance of providing hygienic in-school sanitation facilities, taking into account the specific needs of female students.'

Kofi Annan in the *Report of the Secretary-General of the United Nations on Sanitation to the Commission on Sustainable Development, 12th Session (CSD-12)* in New York, 14–30 April 2004.

Working in school sanitation and hygiene education (SSHE) means focusing on our responsibility to provide children with an effective and healthy learning environment. Part of this learning environment is facilitated by hygiene, sanitation and water initiatives in schools. At the very least, there should be a clean environment that provides the facilities that children need for sanitation, hand-washing and water supply, and support for children to develop skills, attitudes and knowledge on good health and effective hygiene. At the same time, children

can communicate their new behaviours and skills at home, in their communities and use them in future when they become parents themselves. Girls will particularly benefit from such an environment.

This article focuses on the evidence for the effectiveness of hygiene, sanitation and water in schools. It is drawn from the papers presented at the School Sanitation and Hygiene Education international symposium that took place in Delft, 8–10 June 2004. It also includes lessons learned and opportunities as presented in 14 professional papers on a range of topics and experiences in SSHE. These were based on experiences in nine countries as well as on international and theoretical research.

In summary, the essentials on hygiene, sanitation and water in schools can be clustered into five different perspectives:

Health perspective

- Sanitation is a basic human right.
- Dirty facilities can make children sick: improved hygiene and sanitation at school is critical to the health of school children.
- Hygiene habits and hand-washing practices among all children improve their overall health.

Learning perspective

- Education and health are co-dependent: stunting, nutritional deficiencies, diarrhoea and helminth infections affect school participation and learning.

Gender perspective

- School drop-out rates and low literacy levels, especially among adolescent girls, can be attributed in part to inadequate sanitation and health conditions in schools.

Change agents' perspective

- Children can be change agents for their own families and communities.

Future impact perspective

- Schools provide an excellent opportunity to create life-long changes in hygiene behaviour.

The health perspective

Diarrhoea and helminth (worm) infections are two major health concerns that affect school-age children on a large scale, and that can be reduced through improved hygiene, sanitation and water in schools.

The number of cases worldwide of intestinal helminth infection in school-age children is estimated at: roundworm 35 per cent (320 million); whipworm 25 per cent (233 million); hookworm 26 per cent (239 million)¹. Many children suffer from multiple species infections. These parasites consume nutrients from the children they infect. In so doing, they bring about or aggravate malnutrition and retard children's physical development. This can lead to stunting, weight loss and anaemia (iron deficiency anaemia, IDA).²

Schools are often more than just places for learning and behavioural

change. If school sanitation and hygiene facilities are absent, or are poorly maintained and used, schools become a health hazard. During the 1997–98 cholera epidemic, the Ugandan Government spent 4.3 billion Ugandan shillings (US\$23 million) in health care costs. Schools rapidly became a place for disease transmission and 560 schools had to be closed due to a lack of adequate and acceptable facilities.

Human excreta is dangerous

1 g of excreta can contain:
 10 000 000 viruses
 1 000 000 bacteria
 1 000 parasite cysts
 100 parasite eggs

Safe excreta disposal is important. The text box shows how dangerous human excreta can be. Of course, not every virus or bacterium is dangerous. However, the overall load can be very large.

Figure 1 shows that there is a direct link between diarrhoea and toilet hygiene.³ In this study, more than 40 per cent of the cases of diarrhoea in schoolchildren were attributed to transmission at school rather than transmission at home.

Four key interventions to fight diarrhoea are:

- *quality* of water: bacterial and chemical
- *quantity* of water used
- *hygiene*, including hand-washing and face washing

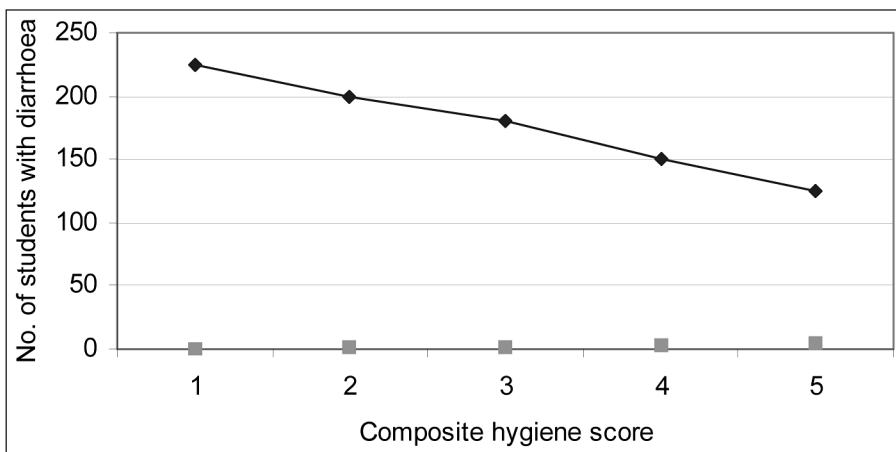


Figure 1. School hygiene and incidence of diarrhoea among 9800 school children in Cali, Columbia

Table 1. Levels of illness caused by waterborne disease around the world

Disease type	Morbidity	Mortality (deaths/year)
Diarrhoea	> 4 000 million	2.5 million
Roundworm	250 million	60 000
Hookworm	151 million	65 000
Whipworm	42.5 million	10 000
Trachoma	146 million (+ 6 million blind)	None
Schistosomiasis (bilharzias)	0.2 million	20 000

Adapted from Fresh Framework and World Health Report, 1998 – WHO website, 2004

- *sanitation*, particularly, safe disposal of human excreta.

The results of an analysis of 144 studies related to water and sanitation showed,⁴ somewhat counter-intuitively, that:

- safer excreta disposal led to a reduction in child diarrhoea of up to 36 per cent,
- better hygiene through consistent hand and face washing, food protection and domestic hygiene brought a reduction in child diarrhoea of 33 per cent,
- improved water supply led to a reduction in children’s diarrhoea of only 15–20 per cent.

The analysis showed that hygiene promotion has more impact on public health than water supply provision. (However, Esrey’s studies only looked at improvements in water quality at the source, not in its quality at home. More recent studies show that transportation and storage deterioration cause higher levels of childhood diarrhoea than suggested by Esrey – unless household treatment is carried out.⁵) Nevertheless, Esrey’s

studies showed the importance of synergy between hardware (technical solutions) and software (behavioural change). Among hygiene behaviours, hand washing in particular provides a great health advantage. Hand washing can block the transmission of pathogens (germs and faecal matter) that cause diarrhoea. In school programmes this is very important. Even if latrines are well maintained, if hand washing is not consistent, then the health benefits will not be maximized.⁶

A study⁷ suggests that sanitation and water-related diseases could be reduced by 43 per cent if people always washed their hands after defecation. For eye health, face washing is important; for skin health, body-washing.

Experimental field studies have shown that, under similar conditions, any common household washing agent – soil, ash or soap – produces similarly efficient results. It confirms other clinic-based studies, which showed that, if the scrubbing action is vigorous, then any of these agents removes bacteria from the hands.⁸

The learning perspective

Children with worm infections tend to perform worse in school. A study⁹ from Mali (Figure 2) demonstrates that the intensity of schistosomiasis infection (as measured by the number of eggs per 10 ml of urine) is inversely related to academic performance. Although the study sample of 580 children in two primary schools is small, there is little reason to believe that the results would differ in other affected countries.

A study¹⁰ in Jamaica (Figure 3) shows that children treated for whipworm performed better in cognitive tests than children who were not treated. The use of the ‘placebo’ implies that every participant thought

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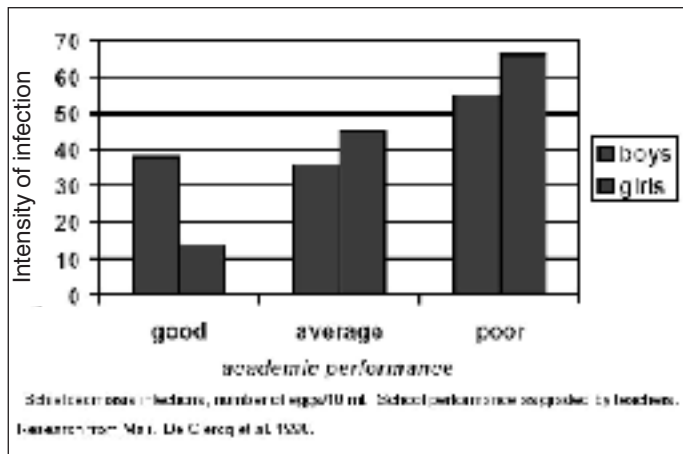


Figure 2. Intensity of Schistosomiasis infection by academic performance

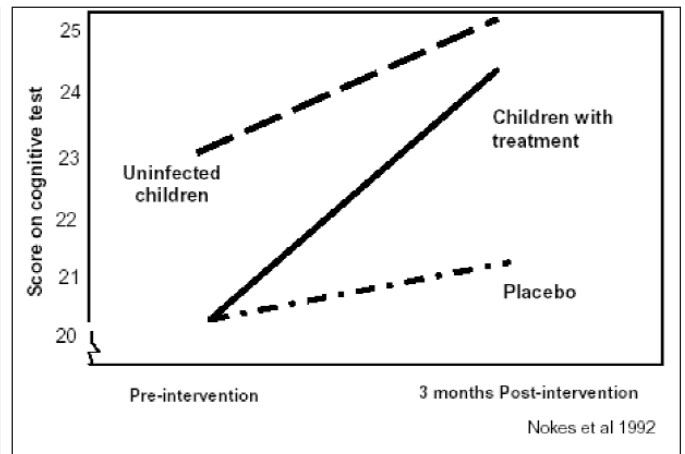


Figure 3. Improvement in cognitive performance with treatment in school children in Jamaica

they were being treated. This study supports the findings of the preceding study. Children with worm infections also tend to be absent from school more often. A study,¹¹ from the same group in Jamaica shows that children who have greater levels of infection (in this case from whipworm) tend to be absent from school up to one-third more often.

The gender perspective

As is described more fully in Rose Lidonde's article, girls are discouraged from attending school if there is a lack of private sanitary facilities. About 1 in 10 school age African girls do not attend school during menstruation or they drop out altogether at puberty because of a lack of clean and private facilities.¹² The low level of literacy among women, as a result of girls leaving education, aggravates prejudices about the roles in life of men and women. In Mexico, when asked why the girls were cleaning the toilets and the boys were playing basketball, the teachers said, 'Boys do not clean toilets in Mexico'. By promoting girls' attendance and retention in school, the sanitation project influences sound cultural patterns of conduct in future.

A number of recommendations arise from this perspective:

- separate facilities are needed for adolescent girls
- designs should be adjusted to the different needs of girls and boys

- cleaning should be shared by both sexes
- both fathers and mothers should know about the SSHE programme
- education should address sensitive aspects such as menstruation, initiation rites and sexually transmitted diseases.

Good programming has been found to work. In Bangladesh, a school sanitation programme increased girls' enrolment by 11 per cent.¹³

First results of an assessment in 1667 schools in Alwar¹⁴ (India) demonstrate a synergy between good classroom practices and SSHE. Over 5 years an increased enrolment of girls by 78 per cent and boys by 38 per cent could be measured (see Figure 4). Significantly higher learning achievements were measured in project schools. Further, it showed that a visible change in conditions at school improved community and parent participation.

The change agents' perspective

Organizing children and teachers for cleanliness and to take care of facilities is very important in each programme. But the need for cleanliness extends beyond toilets or school grounds. A recent project¹⁵ in Papua New Guinea showed a huge impact when children were used as ambassadors for change in their families and communities. SSHE projects in India and Nepal that were reported upon at this symposium also showed the important role children can play in changing hygiene behaviour in their family and community.

The 'future impact' perspective

How long will children retain the knowledge, attitudes and skills relating to hygiene that they learn in school? In a study¹⁶ on the long-term effect of hygiene education it was found that

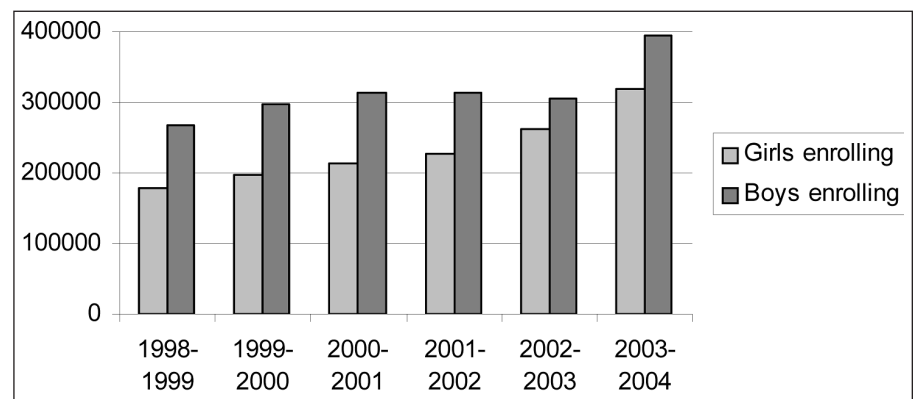
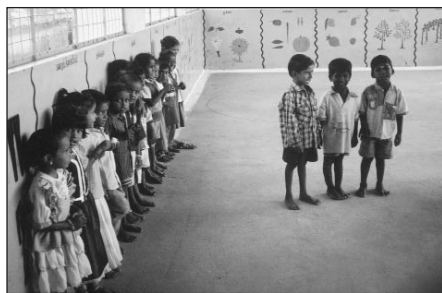


Figure 4. Trends of enrolment (classes I to VIII): Alwa, Rajasthan, India



Children have the right to learn in a clean, safe environment

new behaviours do not necessarily fade as years go by and that it is not inevitable that people revert to less hygienic practices.

The research data demonstrated that hygiene behaviour is sustained beyond the end of an intervention. For the studies in five countries, 25 comparisons were made between hygiene behaviour and the end date of the project. The behaviours were: hand-washing skills, the person washing hands with soap and water, the location of soap and water in the household, latrine showing signs of use, person using latrine consistently, latrine being maintained and cleaned, and water covered and stored safely. The end dates of the projects under comparison were 1998 and 2000. In only 2 out of 25 comparisons did people practise safer hygiene behaviours in projects that ended in 2000 compared with projects that ended in 1998.



Hygiene messages are strengthened when school, parents and community groups work together

In summary

SSHE suffers from the unsettling habit of trying to 'reinvent the wheel' in determining strategies and institutional options. Today, however, there is a growing body of literature on SSHE from specific projects that deserves to be reviewed. It should be noted that the problems of SSHE are generic but the solutions are not. It is therefore not necessarily a question of applying the same approach in different areas. We must continue to learn from past and present experiences, to reflect on them and to use them to improve programmes now and in the future. That in itself may be one of our greatest challenges, and one which IRC and the various organizations who have attended the international symposium have taken upon themselves to work on in the coming years. All children have a basic right to use good water and sanitation facilities and to learn behaviour that will lead them into a healthier future.

About the authors

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- 14 Results presented by Sumita Ganguly, UNICEF India, during her presentation at this symposium.
- 15 Layton, S. (2004) 'Setting standards – children as ambassadors for change', AT Project, Papua New Guinea, paper written for this symposium.
- 16 Results of a six country study in Ghana, India, Kenya, Nepal, Uganda and Sri Lanka, results published in *Waterlines* Vol. 22 No. 3.



Why gender is important in SSHE

Rose Lidonde

A lack of private sanitary facilities discourages girls from attending school, especially after puberty. It is essential that school sanitation and hygiene education meets girls' needs if they are to get a good education.

Poor sanitation in schools limits school attendance. In particular, about 1 in 10 school-age girls do not attend school while they are menstruating, or they drop out at puberty, because of a lack of clean and private sanitation facilities. Of all the children between the ages of five and 14 in the world, 87 per cent live in developing countries. For these children, the mortality rate is now 14 times higher than for children of the same age groups in the industrialized countries. That risk can be reduced enormously when children stay in a healthy environment and get used to practising good hygiene both in and out of school.¹

What do we mean by gender?

Gender is not about women and girls only. It is about boys, girls, men and women; and not in relation to their sexual differences but the socially and culturally determined differences between women and men. People and societies make these differences and therefore they can be changed. Particularly with regard to personal hygiene and sanitation habits and needs, women and men, and adolescent boys and girls differ. Therefore, gender mainstreaming involves assessing all the implications that any sanitation and hygiene intervention can have for women and men. These differences need to be reflected in relevant policies, strategies and approaches that promote improved sanitation and hygiene behaviour.

School drop-out rates among girls

School drop-out and low literacy rates, especially among the girl children, can

be largely attributed to poor sanitation and health conditions in schools. Girls, who are already marginalized in accessing education, also suffer because of inadequate sanitation facilities that allow them no privacy, especially during their menstrual period. The lack of private sanitary facilities for girls discourages parents from sending them to school, contributes to girls dropping out at puberty, and is a contributing factor to there being fewer women teachers, who are needed to encourage girls to attend schools. The low level of literacy among women, as a result of girl drop-out, aggravates superiority and inferiority complexes among men and women. By promoting girls' attendance and retention in school, sanitation projects influence sound cultural patterns in the future.

Results from a study in Uganda

A joint study undertaken on School Sanitation and Hygiene Education (SSHE) in Uganda by the Water and Sanitation Program—Africa Region, UNICEF and NETWAS² produced the following findings.

Where hygiene and sanitation promotion has been undertaken actively in schools, there are high levels of pupil knowledge of hygiene and sanitation issues with the main source of information being the schools. In all the schools visited, the pupils were generally clean, and those interviewed were aware of the problems associated with poor sanitation. However, translation into behaviour still remains too low and does not always show significant improvement.

Health clubs or committees have been set up in many schools (63 per cent). Weekly health parades have now

increased in all schools to facilitate personal hygiene inspection and education. This helps to promote good personal hygiene. The teachers also report some linkages and impact on the surrounding community. If they observe a pupil with problems, such as always being dirty or infested with lice, they investigate further by visiting the child's home. They often find poverty or a weak family structure (old grand parents as the carers) in these homes.

It was also established that districts and sub-counties were now beginning to plan and budget for sanitation from their own resources. This shows that they are beginning to appreciate the importance of sanitation. Involvement of politicians in the sanitation programme had resulted in better physical and financial accountability as well as increased implementation in some areas. For example, some districts had begun to recruit more staff and to fill vacancies



Hygiene education materials should be engaging and fun

of health and community development staff so as to give more support to water and sanitation development.

Communities had been mobilized to play their role by contributing towards the construction of latrines. It must be said, however, that some communities contributed unwillingly, or often not at all, as they often had a different understanding of their responsibilities towards school activities.

In general, there was insufficient monitoring and supervision at the national level. The Monitoring and evaluation unit in the Directorate for Water Development had produced a set of survey tools for water and environmental sanitation in 1998, but the monitoring checklists at the school level, though effective, had proven to be too time consuming. When used, there was insufficient feedback for appropriate actions to be taken.

Overall, there was some integration between software and hardware components, but priority and resources were still skewed towards activities such as latrine construction and borehole drilling. Integration becomes difficult when the school does not have the required facilities to put into practice the hygiene lessons learned in class. For example, many lessons emphasized hand washing, but most schools do not have a water supply within a reasonable distance (0.5 km or less) and therefore water is not available for drinking, let alone for washing hands. Others had latrines that are very dangerous structurally and hazardous hygienically. So such messages like 'use the latrine' become difficult to translate into practice. The reverse is true for hardware installations without supportive software inputs. For example, many schools had hand-washing facilities locked up in their stores because they failed to understand the value of washing hands.

Lessons learned and the way forward

The following recommendations are necessary to improve current school sanitation and hygiene promotion.

Advocacy and political support are vital.

- If coverage is to be realized, more support from sector partners is



Teaching children hygiene practices is as important as providing the facilities

needed. However, political interference in the tendering process results in delays and affects quality.

The choice of hardware.

- More technology options are needed that could be more child friendly as well as giving schools more choice.
- Schools have to be considered holistically, where classrooms, urinals, latrines, hand-washing facilities and water-supply sources are all classified as sanitary requirements.
- Implementation of technologies for the disabled children in all schools should be organized.
- Physical facilities should be planned for teachers, in order for them to stand out as role models.
- Gender concerns should be integrated into the software.
- Sanitation software should be prioritized at all levels. Behaviour change calls for more application of participatory approaches and continual reinforcement of hygiene messages. Specific practices that people are likely to change should be targeted first.
- Changing practices depends on a complex set of social and psychological factors. Hence it is important to take into account, gender and other social, economic and cultural differences (ethnicity, class, religion) that might facilitate or inhibit behaviour change.
- If the facilities are to be used and maintained well, both boys and girls, different age groups and classes and male and female teachers should be involved in planning, implementation and evaluation of the SSHE programme. This means training more teachers as well as School

Management Committee members and prefects on the use of participatory approaches to behavioural change for improved hygiene and sanitation practices.

- Sanitation and hygiene promotion messages should not focus on health benefits alone. There is a need also to promote values of self-esteem, recognition and accepted status in the society.

How to build capacity.

- Working through existing institutions rather than creating new structures ensures ownership, capacity and sustainability of the programme activities. Institutions that exist are more legitimate because they have statutory powers and are governed by the laws of Uganda.
- Start on a pilot project and then draw from this experience and the ownership of the process by various stakeholders to move to scale.
- Keep a balance between the 'hardware' and 'software' aspects of SSHE.
- If increased coverage and sustainability are to be realized, it is important to build the capacity of staff and management to organize the SSHP. The syllabus may need to be examined from a gender perspective, for example, some books depict cleaning activities as roles for girls only. In addition, some messages are incomplete e.g. hand-washing lessons, which leaves out the emphasis on soap.
- Mechanisms (such as school competitions, health clubs, follow-up on students' overall cleanliness and hygiene practices) that help students adopt improved hygiene behaviours in schools and at home should be promoted.
- Apply a multi-sectoral approach, whereby education, nutrition and health are linked to water supply and sanitation in order to enhance impact. A school sanitation programme provides one of the ideal and rare opportunities for different departments to learn about each other's systems.
- The participation of the schools, students, school management teams, teachers, and especially head teachers, are crucial.

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- Participation ensures that project activities are relevant and sustainable. Communities should contribute in whatever way they can to the acquisition of new sanitation facilities.

Monitoring and evaluation.

- Follow-up and supervision are necessary for the progress of activities, as well as ensuring that the teachers apply the participatory tools that they learned during the training. But monitoring checklists for operation and maintenance should be simple to use and should take very little time.

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webwatch

School Sanitation and Hygiene Education

- **IRC School Sanitation and Hygiene Education (SSHE)**
A leading resource and centre of expertise for this topic, IRC's SSHE page focuses on the responsibility to provide children with an effective and healthy learning environment. It includes links to key articles, projects, publications, the SSHE newsletter and the 'SSHE-forward' e-discussion group.
<http://www.irc.nl/page/114>
- **WELL Fact Sheet (May 2003) School Sanitation and Hygiene Education**
The WELL Factsheet series containing recommendations made by WELL – written primarily as a response to WELL enquiries and frequently asked questions, regularly updated to reflect current issues and thinking within the water, sanitation and environmental health sector. School Sanitation and Hygiene Education is a five-page fact sheet, which provides a clear and concise overview of the issues.
<http://www.lboro.ac.uk/well/resources/fact-sheets/fact-sheets-pdf/ssahe.pdf>
- **UNICEF Water, Sanitation and Education**
This site includes video footage and regional case study examples of the impact of water and sanitation services on children's school attendance and their corresponding educational achievements.
http://www.unicef.org/wes/index_schools.html
- **Sanitation Connection: Why focus on school sanitation and hygiene education (SSHE)?**
Looks at school sanitation as a right, addressing a combination of required hardware and software issues. The site includes links to key publications, websites and mailing lists.
<http://www.sanicon.net/titles/topicintro.php3?topicid=20>
- **WHO Water, Sanitation and Health: Focusing on youth and using education**
Part of the 'Sanitation challenge: Turning commitment into reality' (2004) report considers the impact of education programmes on improving sanitation.
http://www.who.int/water_sanitation_health/hygiene/envsan/sanitchallenge/en/index9.html
- **NETWAS School Sanitation and Hygiene**
Water and sanitation in Kenyan schools is generally poor. This short report describes the work of the Water and Environmental Sanitation Co-ordinating Group (WESCOORD), co-chaired by the Ministry of Water and UNICEF, which addresses the challenges of mobilizing resources for strengthening health-promoting activities in schools, and which has resulted in a sudden increase in primary school attendance of an estimated 1.6 million children.
<http://www.netwasgroup.com/newsletter/articles/2004/01/9>
- **Hygiene Central**
This part of the London School of Hygiene and Tropical Medicine website documents research that is underway in schools, applying social marketing to develop effective hygiene promotion programmes.
http://www.lshhtm.ac.uk/dcvbu/hygienecentre/projects/school_sanitation_and_hygiene.htm
- **World Bank School Health**
The FRESH framework (Focusing Resources on Effective School Health) is the starting point for developing an effective school health, hygiene and nutrition programme in child-friendly and health-promoting schools, to improve school health and educational outcomes. FRESH interventions include health-related school policies, provision of water and sanitation, skills-based health education and health and nutrition services in schools.
<http://wbln0018.worldbank.org/HDNet/hddocs.nsf/c840b59b6982d2498525670c004def60/0fe98b669f62d3ec85256a42005cf99f?OpenDocument>
- **EHP Hygiene Improvement Framework**
This framework is a tool for designing and implementing diarrhoea prevention activities. This web page describes its different components, how it can be implemented together with its benefits and outcomes.
http://www.ehproject.org/PDF/Joint_Publications/JP0013-HIFPhamplet%20PS.pdf

Compiled by Julie Fisher, Water, Engineering and Development Centre, UK.