

Empowering schools and communities in Kenya: A school-based water treatment, hygiene, and education program using electrochlorination

Background

Adequate facilities for water, sanitation, and hygiene (WASH) are lacking in many schools in developing countries. Globally, almost half of all schools lack access to safe water.¹ In Kenya, simple school-based water treatment and handwashing interventions have led to reductions in pupil absenteeism by 26%—39%.^{2,3}

This project aims to pilot tools for water treatment and WASH education in three primary schools in Western province, Kenya.

Goals

- Understand current WASH status and practices in the three primary schools in Butere District of Western Kenya.
- Implement and evaluate an intervention program aimed at improving water treatment, hygiene, and WASH education.



Health teacher educating pupils about proper water treatment with chlorine.



Students carrying water on school grounds.



Teachers participating in the interactive chlorine treatment game.

References

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3. Blanton E, Ombeki S, Oluoch G, Mwaki A, Wannemuehler K, Quick R (2010). Evaluation of the role of school children in the promotion of point-of-use water treatment and handwashing in schools and households–Nyanza Province, Western Kenya, 2007. *American Journal of Tropical Medicine and Hygiene* 82, 664–671.

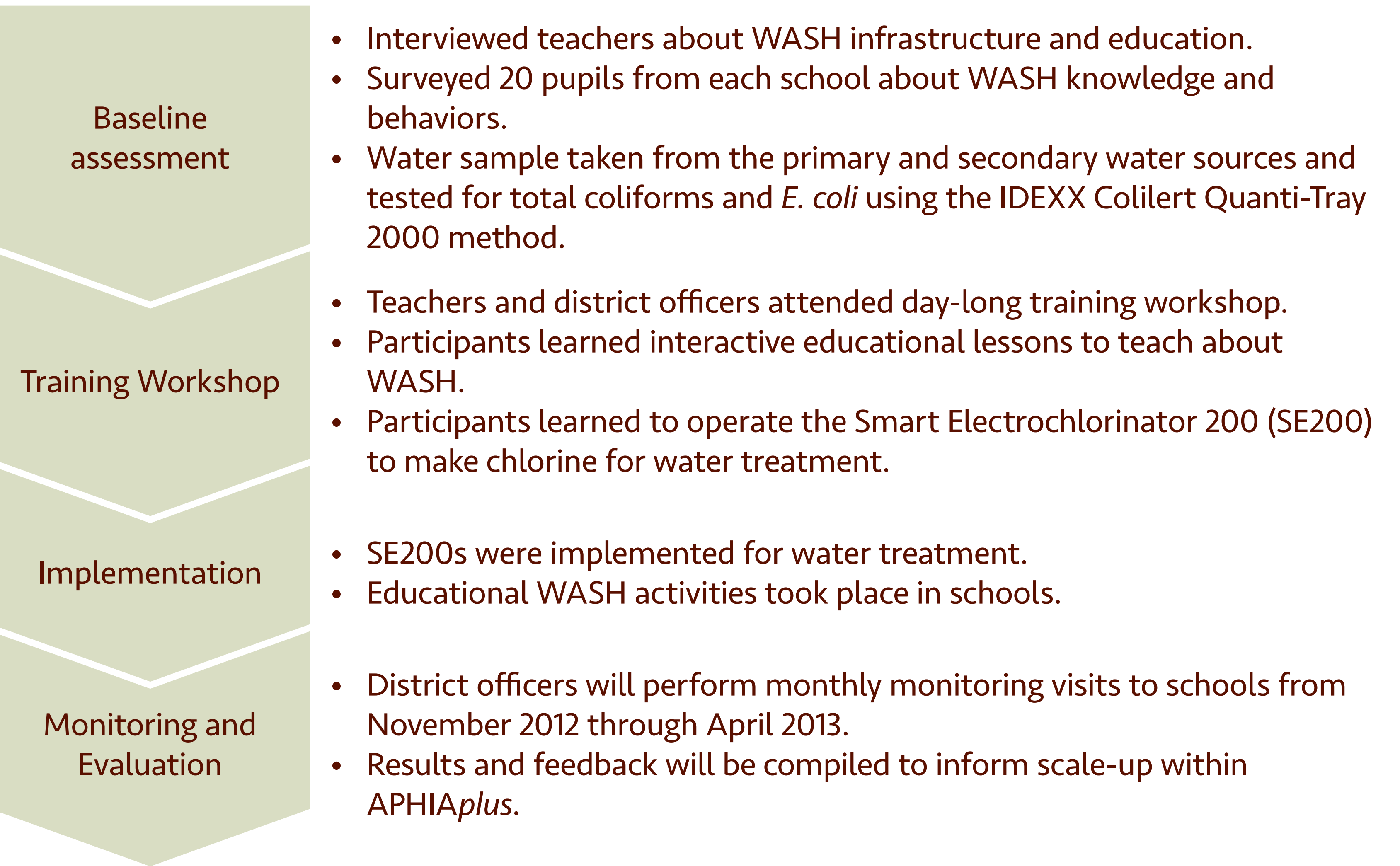
Acknowledgements

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Approach

Provincial Ministry of Education (MoE) and Ministry of Public Health and Sanitation (MoPHS) officers identified Butere District as the location for the project due to the high incidence of diarrheal disease. Three schools were identified, and a head teacher and health teacher were recruited at each.



Findings

Water quality

The World Health Organization recommends that the *E. coli* concentration in drinking water is less than 1 CFU/100 mL. Overall, slightly more than one-third of all samples were microbiologically safe according to these guidelines.

Table 1. Water quality results from school water samples in three schools.

	Percent of Samples			
<i>E. coli</i> (CFU/100 mL)	School 1 (n=11)	School 2 (n=12)	School 3 (n=16)	Total (n=39)
<1	54.5	8.3	50.0	38.6
1-10	36.4	33.3	18.8	28.2
>10	9.1	58.3	31.3	33.3

Findings (continued)

WASH facilities

Despite on-site water sources, availability of water was not reliable at the three schools due primarily to maintenance, repair, and water rationing issues. There was inadequate water storage capacity and no water treatment. None of the handwashing stations for pupils had soap, and most did not have water on the day of the visit. All of the latrines at the schools were simple pit latrines. Only one school met the WHO guidelines for pupil:latrine ratio for males (50:1 plus a urinal), and another school met the guidelines for females (25:1).

WASH awareness and behavior

Surveys were administered to 20 pupils per school. Results indicated that only 23 out of 60 pupils could identify at least one way of preventing transmission of diarrheal disease. Health teachers are responsible for teaching pupils and fellow teachers about WASH. WASH concepts are most often taught by verbal explanations rather than interactive exercises. Sample interactive lessons shown in the workshop were met with positive feedback by attendees.

Table 2. General characteristics and school WASH facilities.

	Indicator	School 1	School 2	School 3
General	Number of pupils (M, F)	1350 (669, 681)	974 (489, 485)	463 (233, 230)
	Electricity (Y/N)	N	Y	N
Drinking Water	Primary source	Borehole	Tap	Borehole
	Secondary source	N/A	Spring	Stream
	Storage	5000 L (broken)	8000 L (in progress)	None
	Treatment	None	None	None
Handwashing	Number of stations	0	8	2
	Number with soap	0	0	0
	Number located within 10 m of latrines	0	2	1
Latrines	Pupil:latrine ratio (M)	29.1	81.5	77.7
	Pupil:latrine ratio (F)	29.6	69.3	23.0

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