

About WEDC

The Water, Engineering and Development Centre is one of the world's leading education and research institutes for developing knowledge and capacity in water and sanitation for sustainable development and emergency relief.

We are committed to the provision of effective, evidence-based and appropriate solutions for the improvement of basic infrastructure and essential services for people living in low- and middle-income countries. With over 45 years of experience, we offer expert advice and quality learning opportunities for sector professionals.

Founded in 1971, WEDC is based in the School of Civil and Building Engineering at Loughborough University, one of the top UK universities. Being a part of a leading university gives us a recognised platform of independence and quality.

What makes us stand out from the crowd is our outreach to practitioners. We use our knowledge base and our applied research work to develop the capacity of individuals and organizations throughout the world, promoting the integration of social, technical, economic, institutional and environmental activities as foundations for sustainable development.

Visit our website to find out more about our postgraduate and professional development programmes (MSc, Diplomas and postgraduate certificates available at the University or by distance learning); our research; our advisory services; our international conferences; and our extensive range of information resources which are free to download from our knowledge base.

<http://wedc.lboro.ac.uk>

**Water, Engineering and Development Centre
School of Civil and Building Engineering
Loughborough University
Leicestershire LE11 3TU UK**

T: +44 (0) 1509 222885 LinkedIn: [WEDC UK](#)
E: wedc@lboro.ac.uk Twitter: [wedcuk](#)
W: wedc.lboro.ac.uk YouTube: [wedclboro](#)



16 – Inclusive design of school latrines

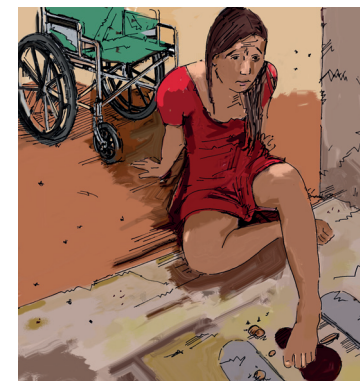
Inclusive design of school latrines

WEDC research shows that the additional cost of making a school latrine accessible is less than 3% of the overall costs of the latrine. The most cost-effective way to improve access for children with disabilities is to incorporate accessibility into the design from the outset (inclusive design) rather than making expensive changes later.

Inclusive design means a user-friendly, child-friendly design, which benefits all users, including adolescent girls, small children, and children who are sick. However well designed the latrine, other factors such as location, distance and approach path affect accessibility and need to be part of planning and design.

Contents

Introduction.....	1
How much does accessibility cost?.....	1
What makes these latrines accessible?	1
Who benefits?	2
Design and construction recommendations	3
Water	3
Access.....	3
Cultural traditions	4
What about existing latrines?	4
Acknowledgements.....	7



This guide examines the cost of the inclusive design of school latrines and who benefits.

© WEDC, Loughborough University, 2016

Author: Hazel Jones

Illustrations: Rod Shaw and Ken Chatterton

Designed and produced by WEDC Publications

This guide is one of a series of published learning resources which are available for purchase in print or available to download free of charge from the WEDC Knowledge Base. Any part of this publication, including the illustrations (except items taken from other publications where WEDC does not hold copyright) may be copied, reproduced or adapted to meet local needs, without permission from the author/s or publisher, provided the parts reproduced are distributed free, or at cost and not for commercial ends and the source is fully acknowledged. Please send copies of any materials in which text or illustrations have been used to WEDC at the address given below.

Published by WEDC, Loughborough University

ISBN 978 1 911252 05 04

**Water, Engineering and Development Centre
School of Civil and Building Engineering
Loughborough University
Leicestershire LE11 3TU UK**

T: + 44 (0) 1509 222885 LinkedIn: [WEDC UK](#)

E: wedc@lboro.ac.uk Twitter: [wedcuk](#)

W: wedc.lboro.ac.uk YouTube: [wedclboro](#)



Learn with WEDC

Learn with one of the top, award-winning universities of excellence in the UK and partake in a quality learning experience.

Gain a recognised, respected, independent and validated qualification.

WEDC offers you a wide variety of learning opportunities in all aspects of water and environmental management, water and waste engineering and infrastructure in emergencies.

You can learn in different ways and at different levels. Come to WEDC or study at home or at your place of work.

Choose from one of our postgraduate programmes and study towards a Postgraduate Certificate, Diploma or Master of Science (MSc). Study by research towards a PhD.

Alternatively, tailor-make a programme from our wide range of stand-alone modules to suit your particular professional development requirements.

Or you may prefer to invite us to collaborate with you to devise a programme especially for your staff.

Go straight to details about one of our learning opportunities.

Postgraduate programmes

- [Infrastructure in Emergencies](#)
- [Water and Environmental Management](#)
- [Water and Waste Engineering](#)

Other courses and programmes

- [Special courses for groups](#)
- [Professional development](#)
- [PhDs](#)
- [Online courses](#)



Notes

This image shows a single page of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page, leaving small margins at the top and bottom. There are no vertical margin lines, text, or other markings on the page.

Introduction

Children with disabilities – physical, sensory (blindness, deafness), intellectual, or mental health impairments – are recognised as one of the groups least likely to be enrolled in school. 5% or less complete primary school¹, leaving them more at risk of poverty². Disabled girls are particularly affected.

Children with disabilities have a right to education guaranteed under the UN Convention on the Rights of Persons with Disabilities³.

Many of these children could participate in education if the school environment was accessible⁴. School planning and construction rarely consider issues of accessibility and barrier-free design, either because of lack of awareness, or because of a perception that it must be expensive⁵.

Poor school sanitation hinders many children from going to school, and exposes them to increased health risks⁶. Although many governments and agencies have policies about the inclusion of children with disabilities in school, these rarely consider water, sanitation and hygiene (WASH) issues.

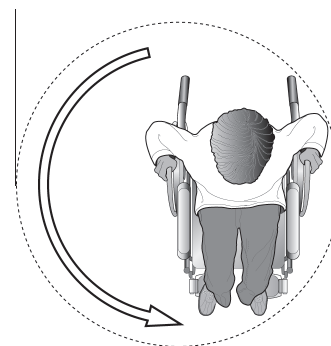


Figure 1. A poor environment

How much does accessibility cost?

Making public infrastructure accessible can cost less than 1% of total construction costs, if accessibility is planned from the outset⁷. However, this evidence is not specifically related to water and sanitation. Limited data from WaterAid estimates that it costs 8% extra to make a school latrine accessible⁸.

Research carried out by WEDC in collaboration with World Vision and WaterAid in Ethiopia found the additional cost of making a school latrine accessible to be under 3% of total costs [see Table 1].

What makes these latrines accessible?

Each latrine block to have one accessible cubicle with:

- additional space (at least an extra 1m2) (e.g. Figure 2)
- wider door (minimum 80cm wide)
- handrails for support attached either to the floor or side walls (e.g. Figures 6, 7 and 8)

- raised toilet seat, preferably fixed (e.g. Figures 6, 7 and 8)
- an access ramp ideally with a gradient of 1:20, but if space is limited, maximum gradient 1:12. (Figure 5)
- Users on crutches or in wheelchairs could use the latrine more easily and no longer had to go home to use the latrine.
- Blind users found the access ramp enabled them to walk with ease and confidence, and could use their white stick to easily locate the toilet seat.
- Young children could hold the support rails to better aim at the toilet hole.
- School directors concluded that the latrines benefitted all schoolchildren

Who benefits?

During primary school visits, users were asked for their views on the inclusive latrines compared with the conventional latrines. The key benefits they identified were:

Table 1. Costs of inclusive design of school latrines in Ethiopia

Latrine description	Description of access features	Total cost of latrine	Cost of access features*	% cost of accessibility
School A Single block VIP latrine of 8 cubicles (urban) Completed 2009	<ul style="list-style-type: none"> • Access ramps x 2 • Widened doors x 2 • Support rails for 2 cubicles • Raised toilet seats x 2 	£5,663	£169	2.98%
School B Single block dry pit latrine of 8 cubicles (rural) Completed 2010	<ul style="list-style-type: none"> • Access ramps x 2 • Widened cubicles x 2 • Widened doors x 2 • Support rails for 2 cubicles 	£7,122	£179	2.51%
School C Two blocks VIP latrines of 8 cubicles (urban) Completed 2009	<ul style="list-style-type: none"> • Access ramps x 2 • Widened cubicles x 2 • Widened doors x 2 • Support rails for 2 cubicles • Raised toilet seats x 2 	£7,231	£161	2.23%

*Costs have been rounded to the nearest whole GBP

Further reading

1. DFID (2010) *Learning For All: DFID's Education Strategy 2010–2015*. Department for International Development: London. p.21. <http://www.dfid.gov.uk/Documents/publications/education/educ-strat.pdf>
2. Filmer, D. (2008) *Disability, Poverty, and Schooling in Developing Countries: Results from 14 Household Surveys*.
3. UN (2006) *Convention on the Rights of Persons with Disabilities*. United Nations: New York. <http://www.un.org/disabilities/>
4. DFID (2010) *Education for Children with Disabilities - Improving Access and Quality*. Department for International Development: London. <http://www.dfid.gov.uk/Documents/publications1/edu-chi-disabil-guid-note.pdf>
5. Jones, H.E. and Reed, R.A. (2005) *Water and Sanitation for Disabled People and other Vulnerable Groups: designing services to improve accessibility*. WEDC, Loughborough University: UK. <http://wedc.lboro.ac.uk/wsdp>
6. WELL (2004) *The Education MDG: What water, sanitation and hygiene can do*. WEDC, Loughborough University: UK.
7. Steinfeld, E. (2005) *Education for All: The Cost of Accessibility*. Education Notes 38864. The World Bank: Washington.
8. WaterAid (2010) *Accessibilité des infrastructures communautaires d'adduction d'eau potable, d'assainissement et d'hygiène*. Technical Briefing Paper. WaterAid Madagascar.
9. Reed, R.A. and Shaw, R.J. (2008) *Sanitation for Primary Schools in Africa*, WEDC, Loughborough University, UK. <http://wedc.lboro.ac.uk/knowledge/know.html>



Figure 5. Latrine block with ramp access to entrance on left



Figure 7. Raised toilet seat with support rail fixed to floor

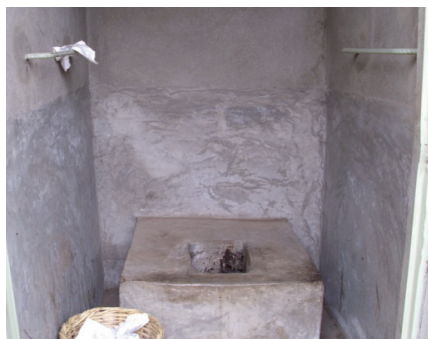


Figure 6. Raised toilet seat with handrails on side walls ⁶



Figure 8. Raised toilet seat with rails fixed to wall and floor ⁶

from grade 1 to 8, including disabled children, as they were safer and more secure than the old latrines. They also reduced soiling of the latrine and, since they were popular with the children, reduced open defecation. Some parents have promised to enrol their disabled children in school.

- Monitoring of construction is crucial. Designs that look good on paper are often 're-interpreted' by contractors who don't understand the reasons for the changes.
- Awareness-raising about appropriate use/misuse of inclusive design features should be incorporated into school hygiene education, and O&M plans.

Number of cubicles per school⁹

Girls:

1 cubicle for every 25 girls, (minimum 4 cubicles) including 1 cubicle for disabled girls

Boys:

1 cubicle for every 50 boys (minimum 4 cubicles) including 1 cubicle for disabled boys

and

at least 1 metre of urinal for every 50 boys

Water

Latrines can contaminate nearby groundwater, so locate them at least 15 metres from wells and boreholes on the downhill side. Keep latrines 15 metres from any surface water such as ponds, rivers and streams.

Surface water can seriously damage latrine structures. Make sure that rainwater can drain away quickly and that surface water running across the site after heavy rain is diverted away from the latrine block.

Design and construction recommendations

- New designs and plans must be developed in consultation with the intended users or their representatives.
- External factors such as distance, location, and surrounding access are equally important (Figure 3).

Access

Latrine blocks must be connected to other school buildings by clearly defined paths (Figure 3). Paths must be wide enough for two people to pass each other, have an even surface and be self-draining. Steps may be necessary in steeply sloping areas but provide an alternative route using ramps for people with walking difficulties.

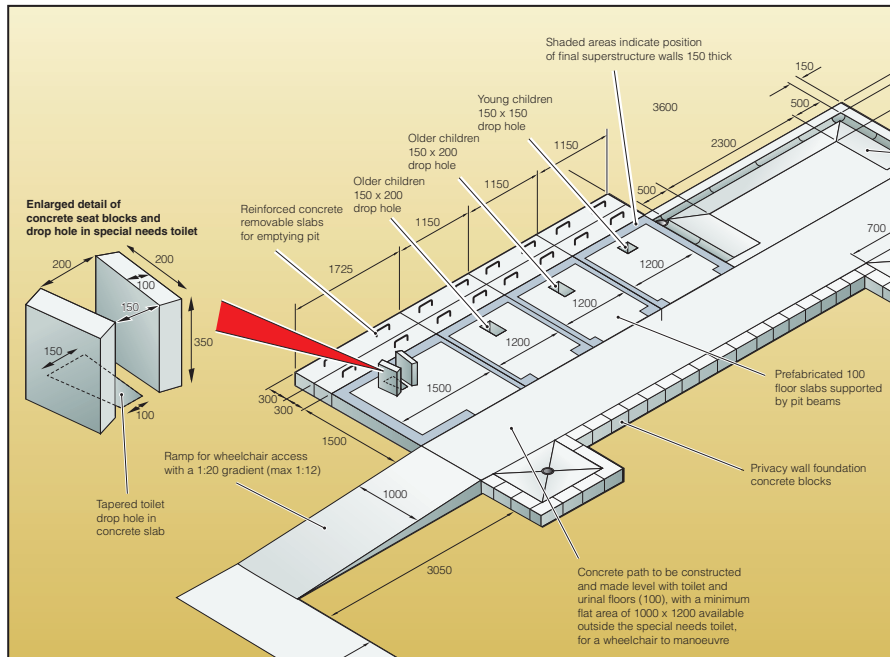


Figure 2. Floor construction: cement block or burnt brick with concrete slab (boys) ⁹

Cultural traditions

The religious or cultural traditions of some communities may also have a bearing on the siting and alignment of latrines. It is always important to consider such traditions before finally deciding where to locate the latrine block.

What about existing latrines?

- An absolute minimum requirement is to provide two widened toilet cubicles with a widened door, one for females and one for males, in each school (e.g. Figure 2).
- Ramps, handrails and seats are easier to fit later, and can be added as required.
- Water for hand-washing and personal hygiene is important, even where the type of latrine technology does not require water for flushing.
- Lack of inclusive WASH in schools is only one of the barriers children with disabilities face. Others include obstacles in the overall school environment, the attitudes of teachers, parents and students,

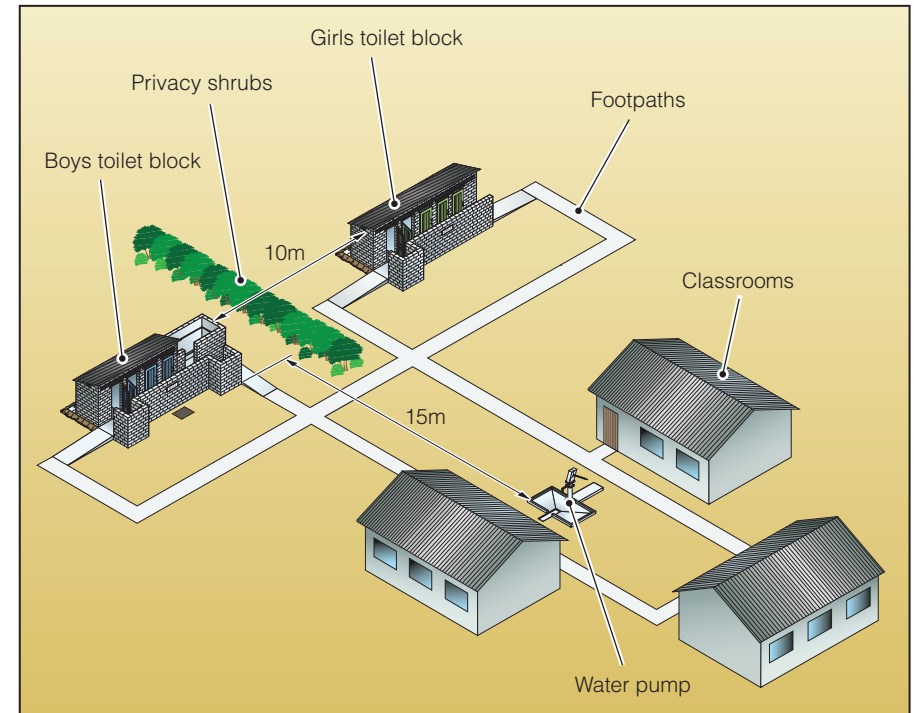


Figure 3. Guidelines for siting latrines ⁹

and education policy, curriculum and teachers' skills. This range of barriers needs to be addressed holistically.

Acknowledgements

The research in Ethiopia was made possible by World Vision Ethiopia, who provided information and logistical support; DFID who provided funding for research expenses; and Sue Cavill who provided valuable comments on the text.

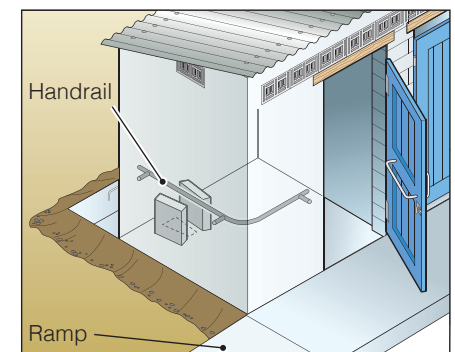


Figure 4. Cubicle for disabled pupils ⁹