
School Sanitation and Hygiene Education Symposium The Way Forward : Construction is not Enough!

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INTEGRATED WATER, ENVIRONMENT, AND SANITATION MANAGEMENT FOR COMMUNITY-BASED, PARTICIPATORY, AND SUSTAINABLE SCHOOL PLANNING: THE CASE OF NAIROBI, KENYA

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Abstract

Progress in children's welfare will only occur if they receive affordable, quality services of water, sanitation, health, and education. Inadequate water, environmental-and sanitary management, and unsuitable technology choice relative to, rapid urban growth and poor urban planning has lead in sub-Saharan Africa to a near unmanageable situation. Local authorities fall short to deliver basic services affecting groups at risk especially i.e. school children. Water, environment, and sanitation (WES) are children's rights. The impact of cities on children's health largely depends on provision of safe drinking water, waste disposal, and favourable environmentally-and sanitary conditions. Evidence shows, that a child-friendly school has positive effects on concentration, learning, and health. Thus, WES systems and school planning should be integrated to reach education for all (EFA) by 2015. WES and education are Millennium Goals to be realized while protecting the environment. Schools can play a guiding role in creating awareness, understanding, and action on sustainable development, WES and health. This paper addresses the need for an integrated approach and increased investment effort to WES management and community-based school planning in sub-Saharan Africa. Findings are discussed of research on Nairobi City Council primary schools and the implications for schools in Kenya and other sub-Saharan EFA countries.

Keywords: Water, Environment, Sanitation, Community-based School Planning

Case of Growing Up in Nairobi

Nairobi's conditions create hurdles for children to get quality education, and forms barriers to school planning [Dierkx RJ 2001]: Many schools are pure *business opportunities* to fetch fees, and levies. Most schools do not meet basic standards of health and inspections rarely take place [Daily Nation, March 2000]. *Authorities* are biased to 'modern', expensive, building methods. Use of sustainable methods is marginal. *Architects and the building code* form barriers, even if energy-efficient and affordable options are available [Njuguna DG, 1997].

Many schools are run-down as *maintenance* lacks behind. The government kept back from financing education, leaving it to communities. But, the impact of 'cost sharing' seems not to have been positive [Daily Nation, April 2000]. Education is costly: parents pay for fees, uniform, books, furniture, transport, (+ illegal extra-tuition). This is supposed to end with the free, universal primary education (UPE). Yet, prior to UPE, costs and logistics were not well

planned. Thus, many schools cope with a pupil/teacher ratio of 60-70 (even 110). More teachers are needed, but they refuse working in insecure areas. Despite 2 million people (60%-Nairobi's citizens) live in slums, no new schools were built since 1990 [IRIN, 2004].

Public transport exposes children to speeding vehicles. There is an increase in incidents of pupils as road crossings, fly-over or traffic lights are absent [Daily Nation, July, 2000]. Burst sewers and waste dumps create health hazards as waste floods schools in the rainy season. Factories and traffic create excessive noise and pollution, causing concentration and respiratory problems. Non-maintained public space causes problems with dust when schools have no trees and vegetation. There is serious environmental *degradation* at many schools. Gangs *terrorise* schools, causing stress, fear, and decline of educational standards. Schoolchildren are not spared the cost of crime and moral vice (incest, rape, child prostitution) in slums. [East African Standard, 1999].

There is lack of *consultation* and participation of communities. Top-down approaches are used in school planning, and innovation of climate/cultural-fit and cost-effective *school plans* lacks behind. The plans mostly from 1970/80s have not been adapted to improve on energy-efficiency, cost-effectiveness, aesthetics, flexibility and adaptability to suit current learning systems, and comfort of the users. Yet, the government acknowledges a need for better school environments. A Commission of Inquiry on Kenya's education system (1999) attributed declining standards in education in part to poor school environments [Koech DK 1999]. These barriers influence the quality of learning-and school environments. They are often interlinked. Analysing and solving them simultaneously, needs mutual effort of multidisciplinary teams, necessary for child-friendly environmental school planning.

Field Survey, Baseline Assessment and Children's School Design Workshop

The survey took place in 2000 in Nairobi [Dierkx RJ, 2002]. A sample of 80 schools was drawn out of a total of 240. The questionnaire being used touched upon:

- Environmental state of the school and school ground– including hygiene and sanitation, physical condition, and comfort level– and their relation to health of pupils and teachers;
- Community members' access to and knowledge of inclusive school environments and sustainable development and their relationship to education;
- Community members' perception of methods and materials used in school development.

For the workshop I selected 8 schools, representing a range of socio-economic areas, and choose Standard 8 pupils (13 year old). Arts-and-Crafts teachers were requested to select ten pupils. The children designed a safe, healthy and inclusive school. Instructions defined safety, health and environmental awareness, describing their importance, and gave children specific questions. I instructed pupils to make drawings of their schools, and write a short essay explaining their impressions. We carried out the workshops during school hours and children finished their projects after school.

I conducted an in-depth assessment of the workshop schools, and verified actual school conditions, collecting primary data on technical conditions; crowding; conditions of toilets, sinks and water sources; conditions of equipment and technology available; types, and condition of building materials being used; and solar control.



Fig 1. Poster used during the Children's School Design Workshop

Key Survey and Workshop Findings

Correlations were found amid student ill-health and adverse environmental conditions: flooded schools; excessive noise (traffic, industry); excessive odour (dumps, industry); solid/ fluid waste (small enterprises, sewers); polluted rivers (toxic waste); poor school conditions; and poor municipal services. Adverse environmental conditions often occur in combination with poor sanitation and water from unclean sources (water vendors). The data also revealed that information about sustainable building is not available. Developing pilot schools may increase understanding of such technologies by communities. Introducing and use of sustainable building materials (vs. conventional materials) will depend on the following criteria: that ease of maintenance, affordability, durability, availability, and appearance are equal or comparable to what is already used; and guidelines should be clear. The respondents do not favour City Council schools. They wish more variety, flexibility, affordability and ease of maintenance. They favour participation and control of the school planning process, together with architects.

During the workshops the children produced an array of projects. On the whole, the essays were more informative, giving more details than the drawings. In their drawings, the children focused on self-contained classrooms. Many drew separate buildings for classrooms, library, toilets, staff room, etc. Many included details about places for sports; playground space; outdoor lunch; storm drainage; and secure fencing. Children at Wangu Primary School (inner-city slum) and Buru Buru Primary School (higher-income estate), showed significant detail in environmental aspects of school: compost-pits, vegetable/flower gardens, fish ponds, rainwater harvesting, and landscaping. In their essays, most children were explicit about unfavourable conditions in-and outside schools: excessive noise and odour, lack of sanitation, lack of trees for shade, flooded playgrounds, gloomy and poorly maintained schools, violent street children, and unsafe roads (no pedestrian crossings, traffic lights, speeding cars).

Towards Child Friendly School Planning and Design

The design of Mukuru School with a group of Standard 8 children is a new approach to community-based WES and school planning in Kenya. The following contributes to the school's inclusiveness. (i) Application of new building technologies (local building innovation). (ii) Spatial organisation of the learning environment beyond the nucleus classroom. (iii) Integration of architecture with surrounding landscape and climate. (iv) Participation of local communities with assistance of local school advisors (involve community groups, residents, enterprises). (v) Finally, using architecture as a tool for learning (eco-orchard, eco-garden, water harvesting/filtering/recycling, solar power/water, and lab). Developing the learning program (architecture as learning tool, phased re-socialisation program, Basic Life Skills, income-generating skills) is left to the local community, school management, and authorities.

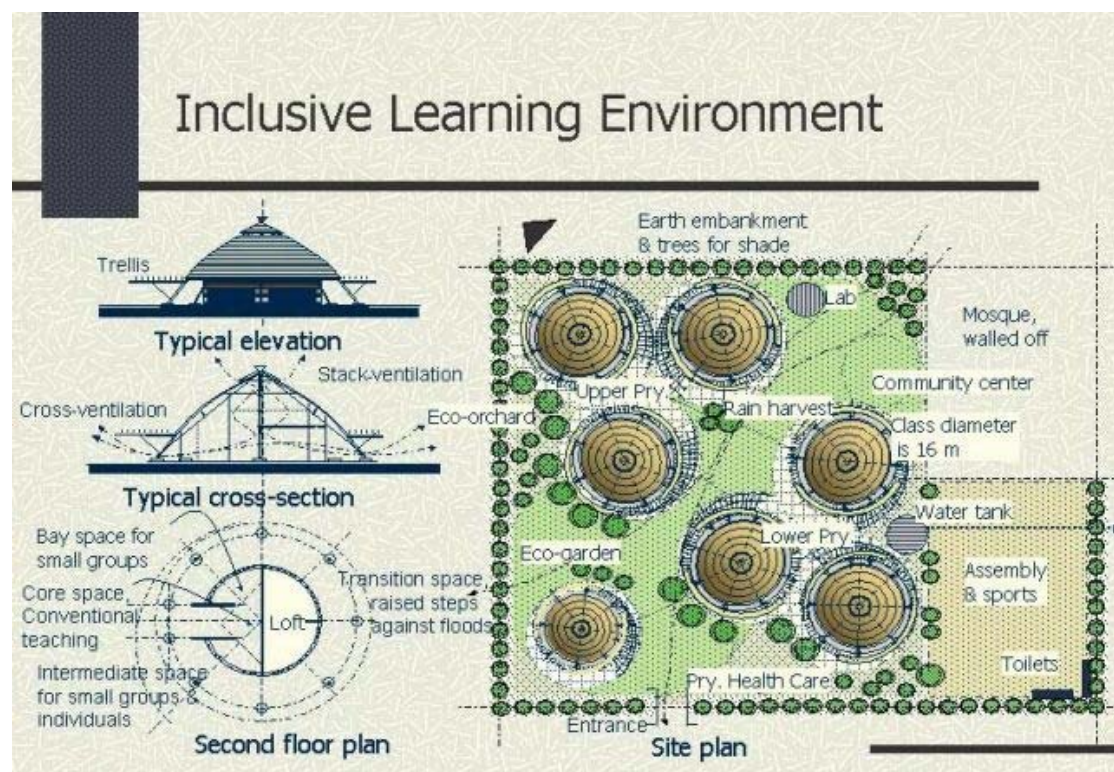


Fig 2. Sustainable and Inclusive School at Mukuru-Kayaba Slum that is designed with participation of Standard 8 school children

Hence, given the interrelatedness of aspects described earlier, the hypothesis here is that: *Creating Affordable, Safe, Healthy, and Environmentally Friendly Schools means, addressing in an inclusive way, underlying causes of poverty, safety, water, sanitation, education, health, and environmental problems, since it is simply not possible to resolve and deal adequately with each aspect in isolation*

Paradigm of Whole

Since the problems are interrelated, an integrated approach, focusing on the development of the whole child on the way to school, in and after school, may possibly be the best way forward. We distinct 3 main aspects of this whole development in WES and school planning:

- The School as a 3D-Textbook (Whole Learning) aims to integrate the school, school ground, learning programme, users, wider community and environment. The children learn via different learning processes across body, mind, and spirit;

- The School as an Eco-system (Whole Settlement) sees the school as part of a wider goal of child-friendly human settlement development. It aims (i) to integrate WES systems with the landscaping and climate (eco-garden, eco-orchard, rainwater harvesting, water filtering, tree nursery, solid/fluid waste management); (ii) it sees school architecture as a tool for learning sustainability principles (outdoor learning, leisure space, and sports);
- The School as a Tool for Community Development (Whole Society) aims to integrate social, cultural, and human resources with the learning programme.

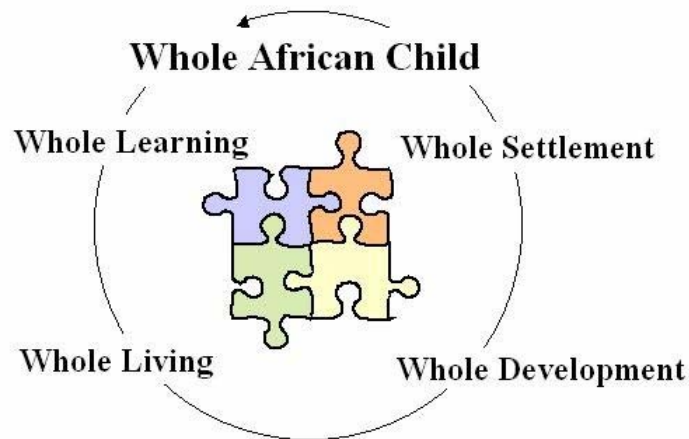


Fig 3. The whole African child, crucial to achieve a sustainable and peaceful future for Africa

The whole approach has implications how schools are planned and used. Planning school WES systems via school sanitation, hygiene-and environmental education in learning programmes is one, important, aspect. However, current practice in most sub-Saharan countries is their focus on the “software in education” i.e. education policy-and curriculum development, learning programmes, training, and educational materials, with the aims to increase enrolment, improve access and academic performance, and lower dropout rates. Hence, the “hardware in education” - school environment - i.e. school buildings, school environment is virtually ignored [World Bank, 2003; Dierkx RJ, 2003]. Hence, we need a more balanced and increased investment effort to water, environmental, and sanitation management and community-based school planning in sub-Saharan Africa.

Implications

Nairobi’s children face myriad challenges to become educated. Urban children face unique challenges that prevent many from even entering primary school. International advisory groups advocate for safe, healthy, and environmentally inclusive school environments, yet local authorities rarely implement these recommendations. The case described in this paper illustrate the feasibility of spreading information about sustainable development and the application of sustainable practices through community-based school design projects. This paper illustrates the potential of community participation in WES system and school planning. To make this happen, the following recommendations are offered:

- Develop pilot schools as best practices to increase understanding and use of such practices;
- Update guidelines, procedures, and norms for WES systems and school planning;
- WES system and school planning should be based on the geographical, socio-economic, and cultural context of areas. School advisors should be trained to assist with school planning;
- Develop a “culture of maintenance”: ensure maintenance becomes affordable and routine;
- Involve Parent-Teacher Associations, administrators, residents, small-business owners, etc.;
- Finance school expansion for increased enrolment in Kenya, and finance their refurbishment;
- Strengthen local building-and infrastructure research institutes: establish research agendas to conduct studies on traditional, appropriate, and new technologies and WES systems
- Build local capacity of the infrastructure and construction sector, research and science education. Promote effective links amid universities and private sector;
- Reduce disparities amid communities; guarantee that strategies protect the environment, promote eradication of poverty and stimulate small-scale enterprise development.

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