

# Human Values in Water Education

Creating a New Water-use Ethic in African Cities



United Nations Human Settlements Programme



UN-HABITAT

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# Foreword



Since its inception two years ago, the Value-based Water Education component of the Water for African Cities Programme has proved itself as a truly path-breaking and innovative education initiative in Africa. The initiative is part of UN-HABITAT's support to African countries in the development of a new ethic for water governance in cities. It is unfortunate that a large volume of water abstracted and treated at a high cost is wasted due to leakage and profligate use in our cities. By complementing the technical and regulatory measures put in place to address this avoidable wastage, Value-based Water Education is a promising strategy in the transformation of the behaviour and personal attitudes of key actors in the urban scene, particularly in dealing with issues that affect everyday life in our cities.

It is worth noting that the Human Values approach was recommended as a water education tool for African children and communities by the Expert Group Meeting held in Johannesburg, South Africa from 30 April to 2 May 2001. The Expert Group, composed of international and regional experts on water education, curriculum development, and urban water resources management, observed that the introduction and implementation of the Human Values approach to water education through formal, non-formal and informal channels of learning, is a promising strategy to bring about a positive and lasting change in attitude and behaviour towards water at all levels of society, especially through the use of the curriculum. The relevance of the Approach to the education needs of African countries has been demonstrated by the overwhelming positive response and declaration of commitment to project implementation expressed by educational experts in the six pilot countries during the recently concluded training of trainers sessions.

This book is part of a series of water education publications to be released by UN-HABITAT. It contains regional and country reflections on the contribution of the Human Value-based Water Education initiative in meeting the national educational goals and objectives of the six pilot countries, and in creating a new water-use ethic in cities. The book also presents a summary of the process and experiences gained in the implementation of the water education initiative in African cities.

I am grateful for the valuable support provided by the Swedish International Cooperation Agency (Sida) in making this path-breaking regional initiative possible.

I hope the publication will inspire water education specialists and sector practitioners in Africa and in Asia where UN-HABITAT is initiating a similar programme.

A handwritten signature in black ink, appearing to read 'Anna Kajumulo Tibaijuka'. The signature is fluid and cursive.

**Anna Kajumulo Tibaijuka**  
Executive Director  
UN-HABITAT



Water supply does not run dry when it is drawn from  
the well of human values

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# Value-based Water Education: Project Overview

by Andre Dzikus<sup>1</sup>

## Introduction

Value-based Water Education (VBWE) is part of UN-HABITAT's Water for African Cities Programme. At its second meeting held in the Hague in March 2000, a High-level (Ministerial) Advisory Group, comprising responsible Ministers from the six participating countries<sup>2</sup>, adopted a resolution requesting the implementing agency to widen the scope of the Programme and introduce water education in the participating cities with a view to develop a new water-use ethic in African cities. The Advisory Group considered that the current water wastages in cities could be minimised by promoting water education in schools and communities within the urban context.

Extensive consultations were conducted by UN-HABITAT with education, water and urban authorities in the six participating countries with a view to developing a proposal for introducing water education in African cities. The resulting project proposal was submitted to the Swedish International Development Cooperation Agency (Sida) for funding support. An agreement between UN-HABITAT and Sida was concluded in March 2001 for the implementation of a water-related Environmental Education Project in six African cities over a period of 18 months.

The water education initiative in African cities has brought together for the first time, professionals from education, urban, and water and environment sectors to bring about a positive and lasting change in attitude and behaviour towards water at all levels of society. The broad aim of water education is to facilitate changes in behaviour and personal attitudes among water consumers and to promote better understanding of the environment in a water context. To achieve this, it is

important to develop capacity in schools and communities in order to optimise human potential, thereby empowering individuals to:

- Develop an awareness amongst boys and girls of water related environmental issues;
- Gain knowledge, insight, and skills necessary to analyse the issues and understand why men and women, boys and girls view and use water in the environment in particular ways;
- Examine attitudes, values, and behaviour in a gender sensitive manner regarding consumption of water in communities found within each city;
- Identify the underlying causes of current water related problems in the city;
- Support informed decision-making by the community that could affect the quality of their lives with respect to water;
- Participate actively in the sustainable management of their environment in a water context; and
- Evaluate and propose actions that will achieve effective water related solutions in support of water conservation.

## Programme Activities

The main activities under the programme include:

- Development of a Water-related Environmental Education Strategy for African Cities
- Establishment of Water Classrooms
- Schools Water Audit

<sup>1</sup> Programme Manager, Water for African Cities Programme, UN-HABITAT

<sup>2</sup> Abidjan (Cote d'Ivoire), Accra (Ghana), Addis Ababa (Ethiopia), Dakar (Senegal), Lusaka (Zambia) and Nairobi (Kenya)

- Water Quality Education
- Curriculum Development & Introducing Water Education in Pilot Schools
- Non-formal Education with Community Initiatives
- Water Health Care Education
- Information Exchange & North-South Twinning Arrangements

## Why Water Education?

There is a compelling case for creating a new water-use ethic in African cities. The African continent, with the lowest water and sanitation coverage of any region in the world, is experiencing an unprecedented pace of urbanisation. This has put enormous pressure on the continent's water resources. The growing numbers of urban residents, especially the urban poor, pay an increasingly high price for water and for the lack of this vital resource. They suffer more in impaired health from contaminated or insufficient water, and also lose more in diminished livelihoods and even lost lives.

Paradoxically, while the urban poor struggle for water, more than half the water abstracted and treated at a

high cost is wasted due to leakage and profligate use. There is a growing understanding that regulation of much of this wastage cannot be accomplished by technical and regulatory measures alone. These measures are necessary, and must be pursued with full vigour by water managers, but these are not sufficient by themselves. For these measures to be effective, they would have to be complemented by advocacy, awareness-raising and education initiatives.

In response to this, UN-HABITAT initiated the Water Education Programme in African cities<sup>3</sup>. The water education initiative is a strategic entry point to bringing about positive attitudinal changes among both water consumers and providers, and in the longer term, can help develop a new water-use ethic in society. Children and youth are the best ambassadors to bring about these attitudinal changes. Water education in schools and communities can therefore play an important role in bringing about a new water-use ethic in cities.

## Human Values Approach to Water Education

The introduction of the water education initiative was preceded by an Expert Group Meeting (EGM) convened by UN-HABITAT in collaboration with UNEP and the Stockholm International Water Institute (SIWI) in Johannesburg, South Africa from 30 April to 2 May 2001. The meeting, hosted and chaired by the Minister for Education of South Africa, Hon. Prof. Kader Asmal, brought together international and regional experts on education/curriculum development, urban development, water resources management and NGOs active in water education. The objectives of the meeting were to share information on ongoing water education in Africa; develop a broad consensus among all stakeholders with regard to the most effective strategy for introducing water education in African cities; agree on sharing of



*Children and youth are the best ambassadors to bring about attitudinal changes in water use and hygiene practices*

<sup>3</sup> The Water Education Initiative is being implemented in six cities, namely Abidjan (Cote d'Ivoire), Accra (Ghana), Addis Ababa (Ethiopia), Dakar (Senegal), Lusaka (Zambia) and Nairobi (Kenya).



*Prof. Kader Asmal, Minister of Education, Republic of South Africa, presenting a keynote address during the inaugural session of the Expert Group Meeting*

responsibility for project implementation by different partners; and develop an action plan for project implementation.

An important outcome of the Expert Group Meeting was the consensus recommendation to pursue a value-based approach to introducing water education for African children and communities.

The Expert Group noted that water education should aim at promoting a better understanding of water as a key social, economic and environmental resource and should facilitate the emergence of a new water management ethic on the continent. It observed that the introduction and implementation of VBWE through formal, non-formal and informal channels of learning, especially through the use of the curriculum, is a promising strategy to bring about a positive and lasting change in attitude and behaviour towards water, at all levels of society.

Value-based Water Education is an innovative approach that not only seeks to impart information on water, sanitation and hygiene but also inspires and motivates learners to change their behaviour and adopt attitudes that promote wise and sustainable use of water. The value-based approach to water education seeks to bring out, emphasise and stress desirable human qualities, which therefore help us in making informed choices in water resources management. Nurturing values such as honesty, integrity, tolerance, responsibility, sharing and caring, etc., particularly in children during their formative years, will result in caring and responsible

adults in the future. They, in turn, will lay the groundwork for character development of generations following after them.



*Nurturing of values such, as honesty, integrity, tolerance, responsibility, sharing and caring, etc., in school children, during the formative years, will result in caring and responsible adults in the future*

## What are Human Values?

Human values are those qualities of a human being which are desirable, respected, worthy, esteemed, dominant and which are sanctioned by a given society. They are universal and are the essential foundation for good character, which alone can foster the development of caring and responsible adults in the future. There are five core human values: truth, right conduct, love, peace and non-violence. These values can be further subdivided into their practical applications as shown in the table on page 4.

Different societies have different socio-cultural and value systems. The water education initiative has taken these into account through active participation by the countries involved. Participating countries have been encouraged to add local values relevant to their societies.



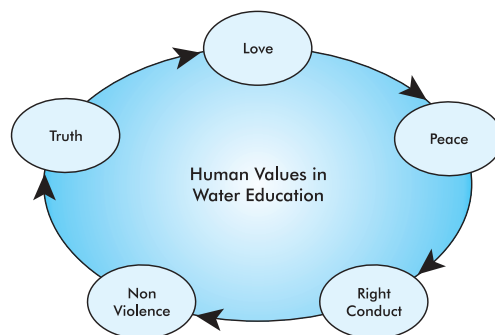
### Practical Applications of the Core Values

Truth	Right Conduct	Peace	Love	Non-violence
Curiosity	Cleanliness	Attention	Caring	Appreciation
Discrimination	Courage	Calm	Compassion	Appreciation of
Equality	Dependability	Concentration	Dedication	Other Cultures
Honesty	Duty	Contentment	Devotion	and Religions
Integrity	Endurance	Dignity	Friendship	Brotherhood
Intuition	Ethics	Discipline	Forgiveness	Citizenship
Memory	Gratitude	Focus	Generosity	Concern for All
Quest for	Goal Setting	Happiness	Helping	Life
Knowledge	Good Behaviour	Humility	Consideration	Co-operation
Reason	Good Manners	Individualism	Kindness	Equality
Self - analysis	Healthy Living	Inner Silence	Patience	Fellow Feeling
Self - awareness	Helpfulness	Optimism	Sharing	Loyalty
Self - knowledge	Initiative	Satisfaction	Sincerity	Minimum Natural
Spirit of Inquiry	Leadership	Self-acceptance	Sympathy	Awareness
Synthesis	Obedience	Self-confidence	Tolerance	Respect for
Truthfulness	Patience	Self-control		Property Service
Understanding	Perseverance	Self-discipline		Social Justice
	Proper Use of	Self-respect		Unity
	Time			Universal Love
	Protection			Unwillingness to
	Resourcefulness			Hurt
	Respect			
	Responsibility			
	Sacrifice			
	Self-confidence			
	Self-sufficient			
	Serving			
	Simplicity			
	Teamwork			
	Will			

Source: VBWE TOT Sessions

### Universal Human Values

These values mirror the fundamental values enshrined in the Millennium Declaration: Freedom, Equality, Solidarity, Tolerance, Respect for nature and Shared responsibility



## Examples of the Application of Value-based Approach in Schools

Lessons in book-keeping in Grade 9 inform children about the consequences of non-payment of water bills on the solvency of a water company.

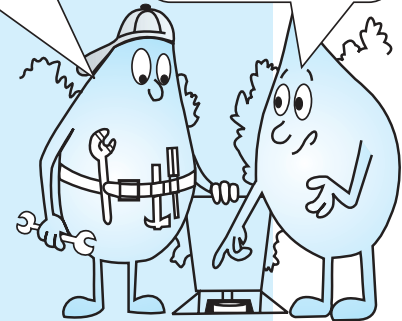
### 3.9 SUMMARY DATA 2 (Operating account)

Table 1 Operating account: income, expenditure and cash flow

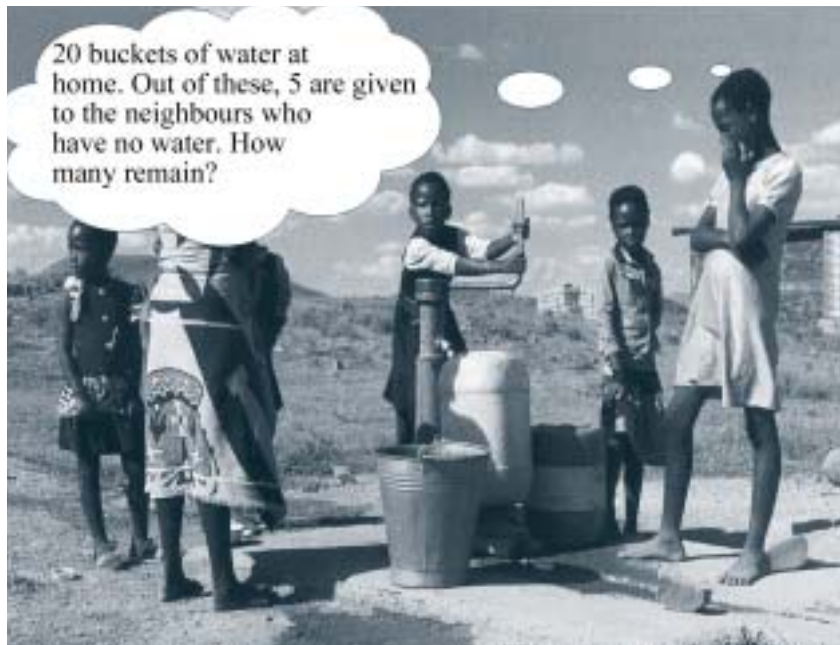
	(R'000)	1995	1996	1997
<b>Income (billed)</b>	<b>Nominal</b>		<b>R 412,453</b>	<b>R 488,881</b>
<i>Income (billed)</i>	<i>real</i>		<i>R 412,453</i>	<i>R 452,668</i>
	<b>of which Govt. subsidy</b>		<b>R 32,596</b>	<b>R 32,596</b>
	<i>of which Govt. subsidy</i>		<i>R 32,596</i>	<i>R 30,181</i>
<b>Expenditure</b>			<b>R 419,534</b>	<b>R 466,081</b>
<i>Expenditure</i>			<i>R 419,534</i>	<i>R 431,556</i>
<b>Surplus (deficit)</b>			<b>(R 7,081)</b>	<b>R 22,800</b>
<i>Surplus (deficit)</i>			<i>(R 7,081)</i>	<i>R 21,112</i>
<b>Bad debts (non-payment)</b>			<b>(R 28,610)</b>	<b>(R 34,490)</b>
<i>Bad debts (non-payment)</i>			<i>(R 28,610)</i>	<i>(R 31,936)</i>
<b>Net annual cash flow</b>			<b>(R 35,691)</b>	<b>(R 11,690)</b>
<i>Net annual cash flow</i>			<i>(R 35,691)</i>	<i>(R 10,824)</i>
<b>Cumulative net cash flow</b>		<b>-13,539</b>	<b>(R 49,230)</b>	<b>(R 60,920)</b>
<i>Cumulative net cash flow</i>			<i>(R 49,230)</i>	<i>(R 56,407)</i>

You still haven't paid last month's bill and I'll have to disconnect your supply!

You mean this is how much water I've used and how much I have to pay!!!



Simple arithmetic problems are introduced in the curriculum of Grade 3 to inculcate values of conservation, caring and sharing within a community.



Some examples of how human values can be integrated in school subjects are shown below:

Key Issues	Some Topics	Human Values
Environmental Sustainability	<ul style="list-style-type: none"> <li>• Water and Living Things</li> <li>• Hydrological Cycle</li> <li>• Pollution</li> <li>• Health and Hygiene</li> <li>• Watershed Management</li> </ul>	<ul style="list-style-type: none"> <li>• Stimulate in learners an understanding of the <b>interconnectedness of all living things</b> and their dependence on water</li> <li>• Instil in learners values of <b>conservation, respect for nature and discrimination between right and wrong conduct</b> with regard to watershed management (upstream and downstream issues)</li> <li>• Promote in learners values of <b>cleanliness</b> and <b>hygienic living</b></li> </ul>
Social Equity	<ul style="list-style-type: none"> <li>• Urbanisation and Water</li> <li>• Levels of Service Coverage</li> <li>• Per Capita Consumption Levels</li> </ul>	<ul style="list-style-type: none"> <li>• Inculcate in learners values of <b>caring and sharing</b> for water resources and sanitation facilities</li> <li>• Promote <b>a sense of consideration for others</b> and readiness to cooperate, and teamwork in community initiatives</li> </ul>
Economic Efficiency	<ul style="list-style-type: none"> <li>• Production and Distribution Costs</li> <li>• Wastewater Treatment Costs</li> <li>• Content of a Water Bill</li> </ul>	<ul style="list-style-type: none"> <li>• Encourage in learners a <b>sense of proper utilisation of resources</b> and avoiding wastage</li> <li>• Promote in learners prudent and honest behaviour, such as prompt payment of water bills, abstaining from illegal water connections, etc.</li> </ul>

## Programme Implementation

The Water Education Programme was implemented in the following stages:

### Sub-regional Workshops

To commence the implementation of recommendations of the Expert Group Meeting, two sub-regional workshops were convened. The first sub-regional workshop was held in Ndola, Zambia, from 26 to 28 July 2001. It was attended by senior professionals from the education and water sectors from Ethiopia, Kenya, Tanzania, South Africa and Zambia. The second sub-regional workshop was held in Accra, Ghana, from 17 to 18 August 2001. It brought together senior professionals from the education and water sectors from Cote d'Ivoire, Ghana and Senegal.

The objectives of the Ndola and Accra sub-regional workshops were to share the outcome of the Expert Group Meeting held in Johannesburg; conduct training of trainers by exposing educators and those involved in the implementation of the project to the concept of Value-based Water Education and its possible use through formal, non-formal and informal channels; and to develop country-level action plans for project implementation in the participating countries.

The two sub-regional workshops were structured to provide the participants with an overview of the process that led to the adoption of a Human Values Approach to Water Education and to expose them to the tools, techniques and strategies of introducing it in their

respective countries. Participants developed country-level action plans for implementation in the participating countries. Among the key activities outlined in the national action plans is the Training of Trainers (TOT) to create a pool of educators trained in techniques and strategies of incorporating VBWE in the existing school curriculum and in non-formal education.

### Development of Resource Material

Resource material for Value-based Water Education and a pedagogic guide for teachers were developed by UN-HABITAT with the assistance of an expert on VBWE and in close consultation and active participation of participating countries. The expert collected and reviewed current school curriculum and teacher training and learning resources from the participating countries and other parts of the world. The first draft report was then sent out to participating countries for review and comments. It is only after receiving feedback from the countries on relevance of the learning resources to their national education needs that UN-HABITAT launched the TOT.

### Training of Trainers (TOT)

UN-HABITAT, in collaboration with respective ministries of education in each of the six participating countries in the Water Education Project, conducted Training of Trainers (TOT) workshops on Value-based Water Education. The five-day TOT workshops were held in Abidjan (15-19 July 2002), Accra (22-26 July 2002), Dakar (29 July-2 August 2002), Addis Ababa (19-23 August 2002), Lusaka (9-13 September 2002) and Nairobi (14-17 October 2002). The workshops were officially opened by the ministers of education or their representatives and attended by high-ranking educationists, including directors of education, curriculum development specialists, inspectors of schools, subject specialists, and non-formal education (NFE) practitioners.

The number of participants per city were as follows:

City	Abidjan	Accra	Dakar	Addis Ababa	Lusaka	Nairobi
Number of Participants	36	44	25	57	25	37

The objective of the TOT workshops was to train curriculum development specialists, inspectors of schools, subject specialists, and non-formal education (NFE) practitioners in Value-based Water Education (VBWE) and techniques of mainstreaming it in national education. The trainees would, in turn, impart training of VBWE to primary and secondary-level teachers and community groups in their respective countries. The training programme catered to pre-school, primary and secondary levels of education. Non-formal water education was also included in the programme.



*Participants at the Training of Trainers (TOT) Workshop on Value-based Water Education held in Dakar, 29 July - 2 August 2002*

The specific objectives of the training included:

- To help trainees understand what human values are in relation to water education and how these values could contribute to a new water-use ethic in society;
- To help trainees integrate these values into school curriculum with special reference to water-related topics extracted from school syllabi of the six participating countries;

- To equip trainees with knowledge, skills and positive attitudes towards water education in schools and through community channels;
- To inspire trainees to develop attitudinal changes towards water use; and
- To help trainees become Value-based Water Education trainers in their respective countries.

## Workshop Proceedings

The trainings sessions were structured to provide participants with opportunities for active participation throughout the training process. The workshops began with an inaugural session in which key speakers delivered opening remarks and keynote addresses.

After the inaugural session, the training team from The African Institute of Sathya Sai Education (TAISSE) took the participants through the techniques and methodologies of integrating human values in water-related lesson plans. The lesson plans used during the training were developed by UN-HABITAT with the assistance of an expert on VBWE, and in close consultation and active participation of the six participating countries. The expert collected and reviewed current school curriculum and teacher training and learning resources from the participating countries and other parts of the world. The first draft report was then sent out to participating countries for review and comments. It is only after receiving feedback from the countries on relevance of the learning resources to their national education that UN-HABITAT launched the TOT.

After going through the techniques and methodologies of integrating human values in water-related lesson plans, the participants embarked on the development of their own VBWE lesson plans, based on their respective country formats. During the exercise, participants from the respective ministries of education developed lesson plans incorporating their local values. The lesson plans were then discussed and endorsed at the plenary session.

This was followed by preparation of action plans detailing next steps to be taken by the countries after the

TOT. The participants also expressed their commitment to mainstream VBWE in their national education in a workshop declaration, which was endorsed by all participants at the end of the training.

The TOT also provided the participants with the opportunity to develop their own VBWE lesson plans, which were discussed and endorsed at the plenary session. The plenary was also characterised by lively exchange of ideas on modalities of mainstreaming VBWE in national education.

## Output

The main outcomes of the TOT workshops include:

### Creation of National Teams of VBWE Trainers

The main outcome of TOT was the creation of national teams of VBWE trainers, who will, in turn, impart training of VBWE to primary and secondary-level teachers and community groups in their respective countries.

### Declaration of National Commitment to Implement VBWE

The TOT workshops demonstrated a high level of national commitment to mainstream VBWE in the participating cities. In a declaration, adopted at the end of each TOT workshop, the participants unanimously endorsed the mainstreaming of the value-based approach to water education in their respective schools and communities. They recognised the role that VBWE could play in creating positive attitudinal and behavioural changes in water use and expressed their commitment to mainstreaming it in their national education by June 2003, when the Water Education Project is scheduled to end.

### National Consensus on Next Steps

Participants developed time-bound action plans detailing how they wish to proceed with implementation of VBWE after the TOT. The main post-TOT activities include training of teachers in pilot schools, pilot testing in pilot schools, and continuous monitoring, evaluation and mainstreaming of VBWE in the entire school curriculum by June 2003.

## Country-level Activities

After the TOTs, the six participating countries embarked on the implementation of the above activities outlined in their action plans.

## Results Achieved So Far

The following results have been achieved:

- **Consensus on water-related environmental education strategy for African cities.** The EGM recommendation of using a value-based approach to introduce water education in African schools and communities was inspired by a number of reasons. From a purely practical point of view, the approach is particularly suited to Africa, as it does not require heavy investments in infrastructure, which few African countries can afford; it reinforces the rich cultural heritage of Africa where traditional knowledge and values on water conservation and equitable use have been passed down the generations; and it is also a proven approach that is already in practice in many countries around the world. The two sub-regional workshops also helped entrench the approach at both regional and national levels.
- **The interest the project has generated in the participating cities.** Water utilities, in particular, have realised that water education is a valuable tool in improving both their service delivery and customer/public relations. For example, in July 2001, Addis Ababa Water and Sewerage Authority (AAWSA) organised a water week for the first time with one segment dedicated to water education.
- **The project has also generated immense interest in cities currently not covered by the programme.** The strongest interest has been expressed by the cities of Johannesburg and Dar es Salaam which requested to join the programme. The requests were processed by UN-HABITAT and the Dar es Salaam Project is due to commence soon.
- **Enhanced network of education officials.** The programme has enhanced the network of

education officials from the six participating cities. The network is useful in the exchange of ideas and experiences between the countries with regard to the implementation of the water education programme.

- **Better collaboration between education and water sector officials.** The programme has strengthened the collaboration between education and water sector officials, and created the required synergy and cooperation in the implementation of the various components of the Water for African Cities Programme.
- **Impact of water education programme in the Asian cities programme.** Experiences gained from the implementation of the Water Education Programme in African cities has had a significant impact in the Water for Asian Cities Programme that was launched during the WSSD in Johannesburg, South Africa.

## Lessons Learnt

The following lessons have been learnt:

- Water education has been embraced by water utilities as a viable tool for improving service delivery and customer / public relations.
- Value-based Water Education is easily internalised in African cities due to the inherent nature of the values in African societies. The challenge is to reawaken these inherent values and apply this in the use and management of water resources.
- Project ownership in the participating cities has been self-motivated as demonstrated by their demands and interest in the project.
- Networking of children and North-South twinning has been extremely beneficial in exchanging information and ideas on the project.
- Collaboration and partnership between various project implementation partners, such as government agencies, international and regional

professionals, NGOs/CBOs, and the private sector has been instrumental in introducing water education in African cities.

- Networking of education officials from the participating countries is vital in ensuring exchange of ideas and experiences between countries. This will be enhanced through periodic consultations and reviews of progress in implementation of the Water Education Programme.
- Synergy and collaboration in the implementation of

the various components of the Water for African Cities Programme is enhanced by joint consultations between education and water sector officials from the participating cities.

- Effective consultations and involvement of participating countries in the development of resource material for VBWE enhance their sense of ownership of the materials. This will ensure the effective use of material by the countries in implementation of the VBWE programme.



# Mainstreaming Value-based Water Education (VBWE) in National Education: Tools and Techniques

## I. The Direct Method in Water Education

The main objectives of the Direct Method in relation to water education are:

- To raise the consciousness of students so that they acquire a heightened, integrated awareness of our dependence on nature – water in particular.
- To bring enjoyment, fun and laughter into learning about water management.

In this way, they would see the role that water plays in their lives and therefore come to value it more, and learn to appreciate water in terms of its uses and conservation.

The Direct Method appeals more to the heart than to the head and is, therefore, ideal for children in basic school. The Direct Method and its components have been used throughout the ages by humanity to teach, to inspire, to advise, to warn and elicit human values, which have been and are considered the rock on which all societies are built. For example, in the Christian Bible, the Moslem Koran, the Hindu Gita, the Buddhist Scriptures, the Jewish Torah, and the African Cultures and Traditions, the Direct Method has been effectively employed as an educational tool.

### The Direct Method and its Components

This method consists of the following components:

- Silent Sitting and Guided Visualisation – which leads to concentration
- Prayers and Quotations (also proverbs, verses and poems)

- Story Telling
- Group Singing
- Group Activities

### Silent Sitting

#### What is Silent Sitting?

It is teaching students to sit silently, quietly or still in a good posture so as to help them to concentrate and to focus their minds on a particular thing, which may be the lesson or an object.

It is in silence that intuition works, that wisdom flows and that truth is unfolded as we see in churches, mosques, courts of law, examination halls and in research laboratories.

What are some of the effects of Silent Sitting?

- It affects its practitioners in several ways which bring about peace and truth. It promotes harmony and contentment.
- It increases attention and appreciation for elements, especially water.
- It encourages introspective enquiry, for example why should they save water, how and when!
- It develops mental tranquillity, caring, sharing, peace and tolerance in water activities.
- It sharpens the intellect and helps examine the importance of, and to investigate into, purification and conservation of water techniques.

So in this component of Silent Sitting values of love, truth, curiosity, intuition, honesty, understanding, peace and non-violence are brought out.



## Prayers – Quotations (Proverbs/Verses/Poems)

**“Water is so common in our environment that we tend to take it for granted; yet of all the natural resources available to human beings, water is perhaps the most essential for virtually every human activity.”**

– Mrs Anna Kajumulo Tibaijuka,  
Executive Director, UN-HABITAT

Teach children to pray and give thanks for the gift of water first thing in the morning and last thing at night. This gift enables them to wash first thing in the morning; to drink; to cook; to fish; to swim; to drive machines; to water their crops and environment and to use toilets – because water is life ... protect it ... love it ... respect it.

Teach children to recite poems, prayers, quotations and affirmations that have elevated ideas about water, for example:

**“Water wasted is life wasted”**

**“Every drop counts”**

**“Water is life, don’t waste it”**

**“Water wasted is life wasted”**

**“Every drop counts”**

In this way, the good thoughts are recorded in the sub-conscious mind and are retrieved by the conscious mind, which then result in good water actions and habits.

The noble emotions, which are released in prayers for and about water, are antidotes for the abuse, wastage, disrespect and irreverence for water.

### What are the Effects?

Prayers and quotations have the following effects on their practitioners:

- They instil unity and harmony among water suppliers and users and bring about right conduct, co-operation, civic responsibility and non-violence.
- They establish true human ideals in water management in African cities.

- They promote love and respect for water.
- They develop the memories of students in all aspects of this important element – water.
- They improve concentration. Students develop curiosity, a quest for knowledge and enquiry about water.

The values brought out in this component of Prayers and Quotations are truth, tolerance, right conduct, peace and respect.

## Story Telling

As a teaching medium for illustrating the importance of water in creation, a story can elicit powerful emotions and inspire a desire in students to imbibe lessons on water. For example, there are 87 units relating to water in the Zambian school syllabi.

Stories about the magnificence, usefulness, sanctity and sacredness of water abound in African folklore. These stories pass on the wisdom of proper water utilisation and conservation. Stories also strengthen the hearts and minds of listeners. So we have to select, write and tell stories which help the students to practice the lessons they have learnt on water management.

### What are the Effects?

Story telling has the following effects:

- It kindles a passion for helping schools, houses and communities in water management. This develops right conduct, love and non-violence.
- It encourages a feeling of oneness with water since each of them is 75% water.
- It promotes patience and tolerance during water shortages. The UNFPA (State of World Population) states that by 2025 two out of three people in the world will face water shortages; and the World Health Organization (WHO) states that 5 million people in Africa die of unsafe drinking water per annum. Of these 3 million are children.
- It widens horizons of knowledge for research into the uses and conservation of water.

- It encourages an interest in water-related stories and brings out right conduct and truth.

In story telling we bring out truth, respect for others, love, peace and right conduct.

## Group Singing

Life is a song. Let part of the students' lives be filled with uplifting water songs in different languages. Let them derive joy, happiness and awareness of the importance and uses of this vital element in their lives.

The power of music is well documented. It is easier for children to remember poems and verses about water if they are made into songs.

**Water, Water, Water – Water fell on me (x 2)**  
**On the day of Baptism – Water fell on me.**

**Start the day with a water song**  
**Fill the day with a water song**  
**End the day with a water song**  
**That is the way to live.**

**Love is flowing like a river**  
**Flowing out from me and you**  
**Flowing out across the river**  
**Making all the water pure.**

## The Effects of Group Singing

- It promotes harmony and joy. By singing about water the students bring out the values of love, peace, truth and right conduct.
- It removes social barriers. If students sing different water songs in different languages they promote unity in the midst of multi-racial and ethnic diversity and cultivate truth, love, peace and right conduct.
- It develops love and devotion. Students develop love and respect for water.

## Group Activities

The essence of all human values is love and love ushers in a sense of unity, co-operation and shared joy.

In order to foster growth of love in students, water activities, which entail interacting with others in water projects, are vital.

Effective learning takes place only after a period of practice or involvement has been added to theoretical presentation.

Those activities that involve 'mutual help' in water projects will lead students to a shared experience to practice them.

## The Effects of Group Activities

- They give a better understanding of group water activities.
  - They awaken a stronger sense of civic responsibility in group water management.
  - They promote powers of discrimination between proper and improper management of water.
  - They develop discipline in so far as they minimise wastage or other forms of water vandalism and encourage right conduct and non-violence.
  - They encourage co-operation and team spirit in shared water projects.
- So right conduct, love and peace are brought out.

## Human Values Elicited in the Direct Method in Water Education

We have seen that several values are brought out in the direct approach because of its five (5) components of:

- Silent Sitting
- Prayers and Quotations
- Story Telling
- Group Singing
- Group Activities

Group Activities should be made relevant to local conditions such as capacity, availability of resources and constraints of the time-table.

This approach is C-C ('Child-Centred'). This involvement gives them a feeling of togetherness; of

belonging; of being part of the group or team, and, therefore, brings out the best in them, helping them develop good qualities and hopefully become good human beings.

### Suggested Projects for Students Participating in Water Education

- Water Posters
- Water Day
- Water Badges e.g.
  - ‘I Love Water’
  - ‘Save Water – Save Life’
  - ‘Water Wasted Is Life Wasted’
  - ‘Every Drop Counts’
- WTF-Water Task Force
- Water Clubs
- Water Brigade

Group activities should be made relevant to local conditions, such as capacity, availability of resources and constraints of the time-table.

## II. Integration Method

In the integrated method, the content and knowledge of the subject are intertwined with values. Values are inherent in all subjects. When the teacher is planning lessons, he / she has to apply his / her mind and find out which are those values and how they can be naturally interwoven in teaching. The teacher highlights the values inherent in the lesson. The teacher can also discover

values with the class; and highlight, emphasise and reinforce these values through a variety of teaching methods and activities.

For example:

**Mathematics** – The mathematics teacher aims at improving memory, logical thinking, precision and accuracy. Some of the values inherent in the subject are truthfulness, consistency, reliability, curiosity, a spirit of inquiry and discipline. The teacher can help in drawing out values if problems are centred on real-life situations. The teacher can integrate values into the wording of mathematical problems and develop short stories in the problems. Telling children about the qualities of great mathematicians would also be useful.

For example, in water education a problem can be worded as follows:

“Mr. Malinga’s family draws 20 buckets of water from the well daily. If 7 buckets are given to the sick old lady next door everyday, how many buckets will remain?”

Values such as caring, sharing, compassion, love and consideration for others can be emphasised.

**Science** – The study of science promotes the values of reverence and love for nature. This enables the student to respect the laws of nature and the Creator. Values, such as curiosity, spirit of inquiry, kindness to animals, patience, responsibility and endurance, can be emphasised. Children will develop a love for nature and gain an understanding of our absolute dependence on nature, so that any disregard for this dependence will lead to disease and death. For example, in water education, our dependence on water can be stressed. Disregard for our dependence on water has caused many diseases, such as cholera and diarrhoea. Millions of people, especially children are dying from these diseases.

# Contribution of Value-based Water Education to the National Educational Goals and Objectives in Africa: A Regional Perspective

by Victor Kanu<sup>1</sup>

This chapter has four primary objectives:

- Clarification of two concepts: human values; water education.
- Identification of national goals and objectives, and their associated problems.
- Demonstration of how human values can be integrated into water education (VBWE).
- The contribution, if any, of such an approach (VBWE) in meeting the national goals and objectives (pertaining to water) of the six participating countries in Water for African Cities Project.

## Human Values

It is best to start with three reasonable assumptions:

- Human beings, consciously or unconsciously, strive towards their well being – human excellence. This is their cherished goal.
- Human beings possess certain innate or acquired qualities (from their cultures and traditions, religions and constitutions, and their social and political organisations), which are desirable and worthwhile and which have been accepted as important and necessary in the pursuit of their goal. However, it should be borne in mind that the practical application of these qualities varies within cultures and from culture to culture.
- Because they pertain more specifically to humans, who have the capacity to rationalise, conceptualise, analyse, adapt and enforce them with accepted standards of approval and, also, because of the critical role that these qualities play in sustainable human development, we call them human values.

There are five core human values: **truth, right conduct, love, peace and non-violence.**

From the sum total of practical applications of the core values, experts from the six participating countries, namely Abidjan (Ivory Coast), Addis Ababa (Ethiopia), Accra (Ghana), Dakar (Senegal), Nairobi (Kenya) and Lusaka (Zambia), have identified and accepted as indigenous to their cultures and traditions and relevant to water education the following:

- Sharing and caring for the environment (e.g., avoiding water pollution).
- Sharing of information with others to widen and improve choices.
- Consideration for others, particularly those needing help.
- Discrimination between right and wrong conduct.
- Cleanliness and hygienic living.
- Respect for others' needs, for both men and women.
- Compassion and helpfulness for the needy, particularly for the vulnerable groups.

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- Responsibility of citizenship, importance for civic engagement.
- Readiness to co-operate, teamwork, community action.
- Self-reliance and resourcefulness (without being dependent on other's help).
- Proper utilisation of resources through efficiency improvements (e.g., by avoiding wastage).
- Prudent and honest behaviour (e.g., paying water bills, abstaining from illegal water connections, etc).

## Water Education

Water education is not just about water literacy (knowledge of the science of water, types, sources, uses, treatment, management and its associated problems, etc). These are, of course, important tangibles. However, water education is also about intangible things that are equally important. These include peoples' perceptions of water, the level of their consciousness towards water usage, awareness of their civic responsibilities towards water, cultural beliefs and practices. In short, it is about human values – about the community's sense of duty, the obligations members have to each other, to the use of water itself and to future generations.

The community's sense of duty ought to be strengthened towards the management of water and other

resources, which took billions of years to develop and, yet, which could be diminished or exhausted within a relatively short period of time.

There is, thus, a compelling need for the introduction of human values in water education as complementary to the existing technical and regulatory measures in water demand management. In this manner, water education will stand firmly on the twin towers of water literacy and human values.

## National Goals and Objectives

There exist many dissimilarities in the six participating countries in terms of size, water resources, water management styles, economic differentials, social and environmental norms related to water, etc. Yet their national goals and objectives are basically similar. They all have, as their main goal, the provision of adequate cost-effective and good water supply for all (the economic and social dimensions of water). In cognisance of the fact that these goals cannot be achieved in isolation, they have, as complimentary goals, maintenance of a good environment; avoidance of water wastage and pollution; prevention of vandalism and illegal connections; discouraging late or non-payment of water bills; non-tampering of water meters; prevention of water riots; eradication of corruption; and the enhancement of adequate sanitation and better hygiene practices.

In pursuit of their goals and objectives, the six cities have been using different strategies as leverages towards the realisation of their national goals. Water utility companies and NGO agencies, for instance, have been relying on water demand management strategies. In the formal channels of education, the curriculum of each



*Water and hygiene education is embedded in African traditional values of solidarity, respect for nature and shared responsibility*

country contains water-related topics that are, in the main, information-centred. Overall, these measures have not produced the desired results of reaching national goals and objectives. This is because of the absence of second tower that lays emphasis on the transformation of attitudes and behavioural patterns of water users and providers.

## Demonstration of Human Values in Water Education

The human values approach to water education uses two main methods:

1. **The Direct Method:** which consists of five components:
  - Silent Sitting / Concentration / Guided Visualisation.
  - Quotations, Proverbs, Poetry Related to Water.
  - Stories About Water.
  - Songs (Local / International) About Water.
  - Group Activities Relating to Water (This method can be used in formal and non-formal channels of education).
2. **Integration Method:** This method is more suitable in dealing with academic subjects in the school curriculum.

### Examples:

Subject	Integration Of Values
MATHEMATICS (Percentages)	Consideration for the scarcity of water; sense of economic use and caring.
ENVIRONMENTAL SCIENCE (Acid Rain)	Sense of curiosity and quest for knowledge; sharing and caring for the environment; and co-operation and service.
BIOLOGY (Transpiration)	Sense of giving and sharing; co-operation/teamwork and conservation.
CHEMISTRY (Chemistry and Water)	Sense of civic responsibility; duty and consideration for others; discrimination between good and bad.
GEOGRAPHY (Major World Physical Features)	Respect for nature; caring and sharing; co-operation; observation of rules and regulations.
RELIGIOUS EDUCATION (Rites of Passage and Change)	Self-reliance; appreciation of one's culture; purity and cleanliness.
PHYSICS (Bodies in Water)	Sense of discrimination and responsibility; concern for others; care, respect and reverence.

Value-based Water Education (VBWE) can also be extended to water management issues.

## Value-based Management Approaches, Underlying Human Values and Teaching Techniques

Some Key Water Management Issues	Value-based Dilemma	Value-based Solution	Underlying Human Values	Suggested Teaching Techniques
<p>1. <b>A social issue</b> Lack of safe water and basic sanitation facilities could be life-threatening to all – poor and rich alike. How could water and sanitation be made accessible and affordable to the poor in the cities?</p>	Am I willing to share the cost of providing water to the poor in the slums? This may mean that I will have to pay a higher price for water than I pay today.	Yes, I care for my poor neighbour. I am ready to pay a higher price for water when I am convinced this will help extend water supply to poor neighbourhoods. I will afford it by cutting down my entertainment expenses.	<ul style="list-style-type: none"> <li>• LOVE: Caring for and sharing with others.</li> <li>• RIGHT CONDUCT: Self-sacrifice; respect for others; service to others</li> </ul>	<ul style="list-style-type: none"> <li>• Story telling</li> <li>• Group activities</li> <li>• Prayer / quotation</li> </ul>
<p>2. <b>Another social issue</b> How to deal with corruption in daily life which ultimately affects sustainability of services in cities?</p>	Should I pay the high water bill every month or make a deal with the meter-reader, who offers to under-read it or tamper with it so that I can pay a flat rate which will be less costly to me?	Yes I will pay for the actual cost of water I consume. If I follow unscrupulous means, this will set a bad example for my children, whom I want to see growing up as responsible citizens.	<ul style="list-style-type: none"> <li>• TRUTH: Truthfulness</li> <li>• RIGHT CONDUCT: Honesty</li> <li>• PEACE: Integrity &amp; self-respect</li> </ul>	<ul style="list-style-type: none"> <li>• Group discussion</li> <li>• Role playing</li> <li>• Group singing</li> <li>• Prayer / quotation</li> </ul>
<p>3. <b>A conservation issue</b> How to deal with profligate wastage of water in households?</p>	Should I stop watering my gardens and washing my cars during summer months when scarcity of water affects the city? I can afford the water bill and I want my garden to be green and my car to shine even if it may mean less water available to others.	Yes, I should take every opportunity to conserve water, even if it means a little inconvenience to me and even if I can afford a higher water bill. Water is a gift of God, but it is given in trust to us. While we enjoy this gift, we have no right to waste this precious resource.	<ul style="list-style-type: none"> <li>• RIGHT CONDUCT: Proper utilisation of resources.</li> <li>• PEACE: Self-discipline</li> <li>• NON-VIOLENCE: Consideration of others</li> </ul>	<ul style="list-style-type: none"> <li>• Quotation</li> <li>• Story telling</li> <li>• Group discussion</li> <li>• Role playing</li> </ul>
<p>4. <b>An economic governance issue</b> How to promote the concept of water as a social and economic good?</p>	We are told that water is a gift of God. Then why are we asked to pay for water? Water in the river and in the wells, after all, belongs to everybody and should be freely available to all.	Yes, I have an obligation to pay for water I consume. Water is a limited resource, to be shared by many users. Each must pay according to his need and ability, to cover the cost of supply. Nothing is absolutely free in nature.	<ul style="list-style-type: none"> <li>• RIGHT CONDUCT: Respect for others' needs</li> <li>• NON-VIOLENCE: Awareness of responsibility towards common good</li> <li>• Readiness to co-operate</li> <li>• Fellow feeling</li> <li>• Sense of social justice</li> </ul>	<ul style="list-style-type: none"> <li>• Group discussion</li> <li>• Group singing</li> <li>• Prayer / quotation</li> </ul>



## Contribution of VBWE to Meeting National Goals and Objectives

That VBWE can, and will, make a contribution towards meeting the national goals and objectives in the six participating countries in the Water for African Cities is evidenced by the unanimous acceptance of the approach by:

- (1) The Expert Group Meeting that took place in Johannesburg from 30 April to 2 May 2001.

*"I hope that the recommendations of the Expert Group, contained in this report, will provide a practical framework for introducing Water Education in African countries."*

– Anne Kajumulo Tibaijuka, Executive Director, UN-HABITAT

- (2) The sub-regional workshops that were held in Ndola (Zambia), from 26 – 28 July 2001 and Accra, on 17 & 18 August 2001.

- (3) The Training of Trainers (TOT) workshops that were held in:

- Abidjan (Ivory Coast), from 15 – 19 July 2002
- Accra (Ghana), from 22 – 26 July 2002
- Dakar (Senegal), from 29 July – 2 August 2002
- Addis Ababa (Ethiopia), from 19 – 23 August 2002
- Lusaka (Zambia), from 9 – 13 September 2002
- Nairobi (Kenya), from 14 – 17 October 2002

VBWE has brought about a re-awakening of African cultural and traditional values pertaining to water as a scarce and sacred commodity. This ancient wisdom is now being blended with modern developments in Africa, so as to produce a harmonious synthesis of the traditional and the modern. Consequently, the participating countries were able to easily relate to VBWE because it is theirs and not something that is imposed. That VBWE is a major contribution to African educational thought and practice in the achievement of national goals and

objectives is seen in the speed and readiness of the participating countries in adopting pilot schools for the training of teachers and, subsequently, the mainstreaming of VBWE into the national curriculum by June 2003 and June 2004, respectively.

There is abundant empirical evidence of valuing water in the schools that have been using the Value-based Water Education approach and in the public sector, where magnificent awareness campaigns, orchestrated by water utility companies and NGOs, have been making steady progress towards the realisation of national goals and objectives. For instance, the wise use of water and execution of civic responsibilities have taken an upward turn.

## Conclusion

This highlights the fact that it is people who use water! People waste and pollute water; industry owners contaminate water; the wealthy monopolise available water at the expense of the poor and the less powerful; ignorance and misconceptions of the value of water – on the part of the poor – lead to wastage and result in unnecessary hardships. At the same time, institutional policing of water usage, to promote its efficient exploitation, has, on the whole, been costly and ineffective.

It is obvious, therefore, that the young, the adults, the rich and the poor alike, all need to be educated in the management of water. It is also obvious that imparting only formal knowledge on the physics and economics of water is unlikely to encourage a caring, sharing society with such responsible attitude to water usage as can be achieved through the incorporation of a human values-based component in the education curriculum.

VBWE is clearly an effective and indispensable tool in meeting the national educational goals and objectives in water management. There is a growing and heightened consciousness of shared values and shared commitment to VBWE.



## CHAPTER 4: COUNTRY PERSPECTIVES

## Ethiopia

by Hailu Dinka<sup>1</sup>

**Of all the men we meet with, nine parts of ten are what they are, good or evil, useful or not, by their education (Locke, 1695)**

That the process of education is concerned generally with the passing on of beliefs and moral standards, accumulated knowledge and skills to the future generation is a well established fact. This can be stated briefly as the nurturing of human personality and an investment in human capital. In essence, it is a recognition of the fact that society's cultural values and modes of life should be taught and must be learned, as only their understanding can lead individuals to truly inherit them. The process of assimilation of the experiences of earlier generations, whether useful or not, is at the basis of this task, and thus, the younger generation should be assisted by family, social environment and, more specifically, by the educational institutions that it attends. The formulation and attainment of any national educational objectives of the present society seem to conform to this statement. At the outset, the end of education is human growth, elements of which include new insights, flexibility, openness, hospitality to novelty, truthfulness, imaginative, creative, etc., which cumulatively constitute value development.

The subject of values entails ethical principles and this involves the concept of right and wrong, good or bad, true or false etc. The problem is that there cannot be universal agreement on these. Ethical principles generally include what in most societies are accepted as good or bad: Good, if actions involved coincide with what we consider within our moral values; bad, if we think the actions involved are contrary to our accepted moral principles (values). Most of what in Christianity are called the Ten Commandments seem to be acceptable to most followers of other religions. Many people seem to agree on such simple concepts, as "do not kill, do not steal, do not lie". But when it comes to issues of sustainable development and what it involves, most people seem to disagree. This could be due to opposing

interests, which hinder arriving at a universal definition of moral principles (values). Therefore, through debate and dialogue acceptable definition should be reached. Although this could be difficult to achieve, a compromise can be reached about what moral principles involve. Here a compromise does not mean much by itself, but abiding by the responsibility of accepting the compromise is important. For example, unsustainable consumption patterns of water involve ethical principles, but stopping unsustainable consumption of water implies sacrifices. Such compromises would involve commitment to present and future generations as well as sacrifices of material and financial nature.

**At the outset, the end of education is human growth – the elements of which include new insights, flexibility, openness, hospitality to novelty, truthfulness, imaginative, creative, etc., which cumulatively constitute value development**

It is a well-established fact that the planet earth, as the only home of mankind and in which all men are common citizens, has limited resources. Earlier generations everywhere, and specially those in the developed world, had been acting as though the earth's resources were limitless. But as time went on, with the subsequent population explosion, nuclear warfare, the pollution of the atmosphere, the poisoning of the earth's food chains and the increasing depletion of the earth's vital resources, like water, many people became aware that the injudicious exploitation of the resources of the earth would pose dire consequences for mankind everywhere. Among the responses of such awareness include intensified population control programmes as well as the creation of an office in Nairobi, designated to work around environmental protection programmes,

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a component of which is the conservation of water. Although one could conceive other possible water conservation schemes, the recent approach became – change the attitude and the moral principles of all men and women, young or old, through a human values-based water education. This will address the issues facing, humanity now and in the future resulting in the sustainable consumption of water.

## What are Human Values?

Various definitions of values are given in different literatures. Although an agreement may not be reached on one single definition, as discussed earlier, a common consensus can be reached. In general terms, values are desirable qualities in humans, of humans. They are the qualities humans exhibit and cherish. They are the qualities binding the society, the qualities that make civilisation, the qualities that distinguish human beings from other species. They are always in us, they are with us and around us in all situations. One could probably say they are universal; in other words, they are found everywhere. They go beyond political and cultural boundaries and civilisations. They are desirable qualities of character, such as honesty, peace, tolerance, diligence, responsibility, compassion, justice and respect, etc. Moreover, values are qualities and regulations that govern the existence of humans and civilisations.

## Why Human Values In Water Education?

Today, in the world in general and developing countries like Africa in particular, the population is growing at an alarming rate. As a report by UNFP indicates, the population of Eastern Africa will grow from 240.9 million (1999) to 426.2 million (57% increase), 170 million to 249.1 million in Northern Africa (69% increase) and 216.3 million to 382.5 million in Western Africa (57% increase) by the year, 2025. This means the increase in population for these three geographic areas of Africa is assumed to be 61% by the year, 2025. On the other hand, resources are limited and they cannot be increased to keep pace with this population increase. When it comes to water, the situation is debilitating. It is even depleting faster than any other natural resource. Many developing countries are today suffering from

drought, and are migrating from their home places in search of water / cultivable land. For example, there is a severe drought in rural Ethiopia today. More than 10 million people are starving, and there is a fear that the number could scale up to 15 million in the months to come if quick interventions are not made. This, as anyone could guess, has been caused by a shortfall of rain, traditional farming techniques and lack of conventional and technical knowledge in using irrigation schemes for farming in rural areas, as is the case with many developing countries elsewhere.

Scarcity of water is not only a phenomenon in rural areas, it also pertains to urban settings. Urban areas are, on the whole, better served with water supply while water needs of slum areas and poorer sections may not be met. Irrespective of the differences in access to water supply, lack of attention to water conservation has become a major problem in urban areas. Although many people may have technical and conventional knowledge to meet their demands for water, the misuse and wastage of water due to profligate use, unnecessary leakages, evaporation, etc., have not been overcome. Because of this, there is a need to change the attitudes and values of the individual water user through education, more specifically Value-based Water Education. Through Value-based Water Education people can exercise right conduct (abstain from illegal water connection), be honest and transparent, provide good leadership (exercise legitimate authority), avoid partiality in providing water services to the needy and be examples to others in managing water, be accountable (keep canals, rivers, streams etc. from pollution), etc. Moreover, Value-based Water Education can help in setting moral standards to alleviate unsustainable consumption of water. Such ethical standards and principles involve the acceptance of slogans, such as “water nowhere is a threat to water everywhere”, or “drought anywhere is a threat to affluence everywhere”. This is similar to such slogans, as “instability and terrorism anywhere is a threat to stability everywhere”. These slogans are significant for the sustainable survival of humankind. Among other things, lack of potable water and repeated drought would threaten the survival of humanity in the long run and, therefore, it has become inevitable to change the attitudes of water consumers, through value-based approaches taking water as an entry point.

Eventually Value-based Water Education approaches would help the individual consumer to:

- Develop a sense of duty and responsibility for the economic use of water.
- Develop a sense of accountability for the misuse and unsustainable consumption of water.
- To be aware that all human beings cause and contribute a lot to the scarcity and depletion of water and also to conserve it.
- Adjust the way he / she uses water in the family, in the surroundings and in the community he / she belong to.
- Understand the important statement that “water is life” and act accordingly.
- Enhance character development and promote self-governance in using water at any time.

## Future Possibilities and Options

The issue of the most invaluable natural resource, “water”, concerns all men and women alike, irrespective of spatial settlements, whether urban or rural, east or west, north or south. The conservation and management of water should, therefore, be seen as a joint venture and a partnership activity. Although this can be taken as a general consensus globally, it is at the national level that the bulk of the work should be done in terms of recognition of the impact of water-related problems, in terms of setting priority areas, to address the issue to the general public and citizens to enhance their water consuming values. National governments can use education as the best means for this purpose. The formal and non-formal education channels can be taken as the most possible ways of addressing water management practices and experiences. In the formal education, the curriculum can be taken as an option to introduce Value-based Water Education to the young generation by integrating contents and concepts relating to water consumption practices. For example, in the natural sciences, social sciences, and languages water can be treated as a topic and value-based approaches applied.

In mathematics, value-based approaches can be applied in exercises and problems. The same can be done in other non-academic subjects, like book-keeping, music and the arts. Besides, the non-formal education channel can be another potential means to introduce value-based approaches to adults and out-of-school children through basic education. The problems relating to water can be addressed to adults, as they are always concerned with their present situations and interested in solving problems they experience on a daily basis.

The civil societies can also play a pivotal role in water related issues. Civil societies, especially NGOs, can serve not only as stimulators and advocates but also in the actual implementation of decisions relating to water conservation. They run workshops, educational institutions and can address issues like lack of fresh water, water harvesting techniques, causes of contamination of water, etc., to the disadvantaged and the vulnerable groups. Civil societies can ensure the participation of people at all levels to complement the work of government departments. They can advocate the needs of the drought stricken and the voiceless majority. In general, civil society groups can contribute effectively to enhance moral standards in sustainable supply and consumption of water. NGO’s can do effective work by strengthening partnership with government departments, professional associations, teacher associations and labour unions that can also have vital roles in enhancing the development of ethical principles in water management.

Teachers, through their associations and clubs, can act with commitment and mobilise students. Moreover, all religions have to be defining forces in ensuring moral values in sustainable consumption of water. The private sector – though profit being its moving motive – has to be socially conscious by undertaking water friendly activities without sacrificing profit. Such social consciousness, whether in children or adults, can occur through education – the ultimate end of which is the development of a socially useful and ethically principled personality. In conclusion, human values-based water education is the best means, which puts an impetus on the attainment of national educational goals for developing an individual with accepted moral standards.

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## CHAPTER 4: COUNTRY PERSPECTIVES

## Ghana

## Introduction

There are undisputed facts that water is very essential to life. No form of life can survive without water. In short water is life, yet water is scarce!

The quality and availability of drinking water can affect our lives everyday, but most people take drinking water for granted, assuming that there will always be a safe and abundant supply of water. All parts of the country have water problems of some sort. Whilst some places have problems of contamination, others have problems of shortages.

## Traditional Value of Water

Traditionally when a visitor comes to our home, he / she is first given water to drink. This means the visitor is welcomed in peace. Thus water symbolises peace in our society. When a child is being outdoored, the head of the family dips his forefinger into water and drops it on the tongue of the child. The family head does the same thing with alcoholic drink and then makes these pronouncements: "If it is water, it is water, if it is alcohol, it is alcohol." The child, from that time on, is being taught to distinguish between water and alcohol. At the same time he / she is being asked to tell the truth all the time. In other words: "Let your yes be yes and your no be no."

## Sources of Our Water

In the rural set-up, water is drawn mainly from rivers, streams, ponds, wells and lakes. The fetching of the water is done with any container the person can lay hands on, thereby contaminating the water.

In our cities and towns, the main source of water is pipe-borne, which is supplied at great cost. But

by Ebenezer Charles Otu<sup>1</sup> and Faustine K. Klaye<sup>2</sup>

unfortunately some people misuse this facility. This has resulted in the wastage of millions of gallons of water. For example, taps are left running when the water is most needed; burst pipelines are ignored for hours before action is taken to remedy the situation; water hoses are used to wash cars and in the process they are left on the ground to go to waste; gardens are flooded with treated water because the hoses are left to run freely on the ground. Because of these, there is no continuous supply of water to all parts of the cities at the same time. For example, currently the people of Adenta, a suburb of Accra, get their water supply once a week whilst Ashalley-Botwe, another suburb of Accra, may be lucky if it gets water once a month.

It is in the light of the above that the Ministry of Education welcomes the UN-HABITAT's Value-based Water Education Programme, which will give a great support to the attempt being made to educate the nation against the wastage of water. The fact that the target groups for the programme are mainly the pupils and students in our first and second cycle institutions is gratifying, since they are the future leaders who will champion the welfare of the nation. If they are transformed then half the battle is won.

## Value-based Water Education

In broad terms, Value-based Water Education is teaching children to be wise water users. It involves inculcating in children good values in relation to the use of water. It is providing a foundation and a guide on which the child can develop acceptable societal values and norms towards the use of water. Value-based Water Education is an area of study, which fits naturally into most subject areas and topics.

It is in response to these facts (water is very essential, no form of life can exist without water, water is scarce)

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that UN-HABITAT recently instituted a strategy, known as Value-based Water Education, which will lead to the wise use of water with the hope that people's conscience will be appealed to, so that there is positive change in their attitudes towards the use of water.

Whatever cultural differences exist between different societies, the fundamental principles of Value-based Water Education underline good practices. The common values, which include truth, love, peace, right conduct and non-violence, are universal.

The concept of Value-based Water Education cannot be said to be entirely alien to the Ghanaian Educational System, in that much emphasis is already being laid on religious and moral education in our schools. Water-related topics are also found in our syllabuses. It is the integration of values into these topics that is yet to be

emphasised. This integration of values into the various subjects is going to reinforce the efforts of the education system in inculcating in pupils the right attitudes and values.

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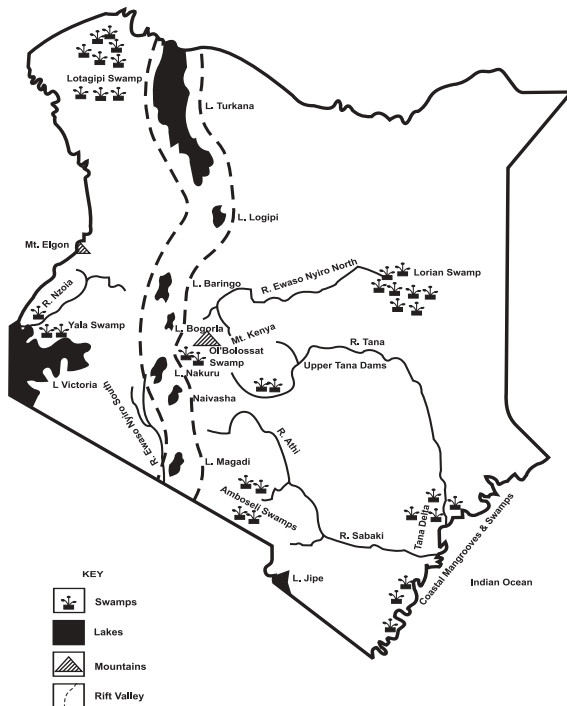
This is the reason why the Ministry of Education warmly embraces the introduction of Value-based Water Education Programme by UN-HABITAT. It is our fervent desire that this new concept, with regards to water education, will be pursued vigorously to its logical conclusion to the benefit of human kind.

## CHAPTER 4: COUNTRY PERSPECTIVES

## Kenya

By Gabriel Muita<sup>1</sup>

In Kenya the distribution of water varies from place to place. For example the lake Victoria basin and the highlands are wet and, therefore, have more water resources. However, north-eastern and eastern parts of the country are dry and, therefore, less endowed with water resources.



Syombua is 12 years old. She comes from the Iveti hills of Machakos in Eastern province of Kenya. She is in primary seven at Muthini Primary School, which is 5 kilometres from her home. She is supposed to be in school by 7.30 a.m. every morning.

Before she gets to school she has to attend to several domestic chores, one of which is to fetch water from a dry river bed two kilometres away. To reach the water table, she has to scoop some sand from the riverbed. Once the water table is reached, some little dirty water starts to seep to the surface. She has to wait for sometime for the water to collect and clear up. Then

she patiently draws water in little amounts using a calabash to fill her container.



Syombua then takes the water home. At home, the water has to be used for cooking, washing utensils, washing clothes, drinking and watering livestock. Syombua feels weary because of the tedious routine of fetching water daily. She also always gets late for school. As a result of what Syombua goes through, she values water so much. Although she loves to share it with her family members, she cautions them to use the water sparingly.

Kimutai is 12 years old. He comes from the slopes of Mount Elgon in Western Kenya. Kimutai's parents have constructed a tank for harvesting rainwater. His family also has access to water from the nearby river and spring. The members of his family use water for cooking, drinking, showering, cleaning the house and sometimes irrigating the vegetable garden.

Kimutai's family members view water as a God-given resource, which does not get exhausted. When Kimutai visited his aunt, who works in Machakos, he noted that the aunt bought 40 litres of water, which they would use for two or three days. His aunt's family uses the water sparingly. Kimutai is, therefore, expected to reduce the amount of water he uses for various purposes. Having

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had an experience with scarcity of water, Kimutai returned home with a changed attitude to water.

Although Syombua and Kimutai come from different parts of the country, they are exposed to the same education curriculum in which water education is taught. In addressing the issues of water, the UN HABITAT organised a contest on Value-based Water Education. The schools were invited to send in their entries. The submissions were to originate from value-based experiences on water in real life situations.

Kimutai and Syombua wrote essays. The messages in their articles addressed the following human values related to water:

- **Love** - Syombua showed love to her family by sharing with them the water obtained through hardship.

- **Non-violence** - Kimutai co-operated with the aunt's family through careful use of the scarce water.
- **Peace** - Syombua showed patience while collecting water from the dry river bed.

Apart from the essay, Kimutai wrote the following poem:

Along the slopes of Mt. Elgon  
 I flow freely  
 Down on the Kano plains  
 I flood and cover houses  
 I am water, I am life  
     On the Athi plains of Machakos  
     I hide myself  
     They seek for me all over  
     Women go to low lying areas  
     I am not there  
     They dig the soil to reach me  
     I am scarce  
     I am water, I am life  
 If you build a house for me  
 I will be available for your use  
 If you use me properly I will continually be available  
 for you  
 I am water, I am life.

Water is a life-sustaining resource. It must be used sustainably for now and for the future.



## CHAPTER 4: COUNTRY PERSPECTIVES

## Senegal

by Abdourahim Gaye<sup>1</sup> and Kaba Diakhate<sup>2</sup>

## Introduction

The current school curricula in Senegal do not include water education. Topics proposed in the curricula only take into account the cognitive aspects, even if needs and representations call for new approaches for what has been described as “life principle”. This paradox can hardly be justified since the Senegalese current living preoccupations with regard to water are crucial and multidimensional. It is, therefore, time to consider a change of paradigm that could be based on values.

## A Dangerous Consumption, at Times. . .

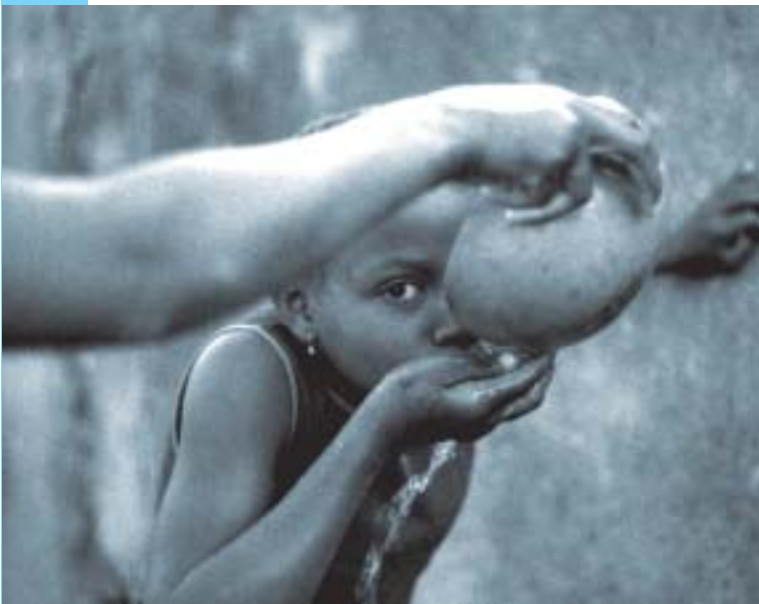
## First of All, a River: Symbol and Life

The river that gives its name to the country, Senegal, draws its waters from the Fouta Djallon Mountains and flows toward the Atlantic Ocean, over a distance of 1,700 km. From Saint-Louis, the first capital of French-

speaking country in West Africa, to Bakel, another Senegalese city, its waters flow through cities and villages, including two regional capitals (Saint-Louis and Matam) and two sub-regional capitals (Podor and Bakel).

Thus, thousands of Senegalese maintain some multiform relationship with this river: transportation, agricultural activities, drinking water and other relevant uses. The dams, recently built on the Senegal river, favour the irrigation of many hectares of farmlands and generate important production of rice and vegetables. The river plays a central role in the daily life of thousands of the riparian population, and this explains why it should be included in school curricula; realising its relevance countrywide and helping raise awareness is a very legitimate goal. Moreover, some riparian drink the water directly fetched from the river, without any treatment while, at the same time, lacking sanitation facilities. In doing so, they face a serious hazard, for it is well known that the river is used for the dumping of refuse; some use it for their laundry, for their bath, to ease themselves and ... to quench their thirst! There is an imperative for adequate education.

**The majority of the Senegalese population fetches water from wells.** The problem of providing safe drinking water is so crucial that a candidate to the presidential elections adopted it as a main theme for his campaign to the extent of being nicknamed “Mister Borehole”. Most wells do not have suitable covers, and the tools used to draw water are left on the ground all day long. The numerous users of wells are, thus, exposed



*Water is the principle of life. It is fundamental for all living organisms and nothing can replace it*

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<sup>2</sup> Inspector of Elementary Schools, Member of the National Committee for Curriculum Development, Inspectorate Department of Mbour, Senegal

to waterborne diseases. What about consumers who draw water from “seane”<sup>3</sup>?

**Eventually, the common canary.** Most Senegalese families have at home a canary from which the whole household drinks water. The hospitality requires serving a cup of water to any visitor as soon as he is offered a seat. The person bringing the cup must kneel down when presenting the water to the visitor, in sign of respect to both the water and the visitor. The whole family drinks water with the same cup, which is thrown several times into the canary all day long. If this is a sign of sharing, it can also be a tragic sharing of diseases.

## Senegalese Traditional Representations of Water . . .

In a hymn magnifying his mother’s concern, Youssou Ndour<sup>4</sup> sings: *Bu may tukki, nga tuur ndox*<sup>5</sup>. These words highly portray Senegalese representations of water. Indeed many Senegalese think that water can only be a source of blessing. In pouring water onto the doorstep of the house or the bedroom, one tries to protect the traveller against dangers and other difficulties awaiting him. This practice is systematised in some families, whether or not there is a traveller. It is this widely practised representation that leads women to pour water on the spot, where a child has fallen badly when he is making his first walking steps. They are convinced that pouring water (the blue gold) is a magic act to cast out any forthcoming evil.

Many examples like this can be found to illustrate representations of the Senegalese traditional attitudes toward water. In Senegal, people see water as one face of paradise and there is a belief that any person, who dies in water, goes straight to heaven. More important for us is the fact that water is given an idyllic picture, sometimes fantastic, and so it becomes a bit difficult to explore more venues. Water is “a source of life”, but it

can also be a source of conflicts and misfortunes. “The problematic (sic) of water takes a cornerstone place in principal debates on mankind’s future and rightly so: as a universal heritage, a common belonging to people all around the world, source of life, the blue gold is more than never before in danger...”<sup>6</sup> Is it not surprising that a water education programme is not implemented?

## For A Value-based Water Education . . .

In a world of globalisation and competition, marked by an alteration of our social values where we are all losing our reference points, the value-based education has become a priority. It may be the only way we can achieve Socrates’ ambition “to stimulate what is best in man: his heart better than his mind or his physical aspect”. The value-based aspects we should adopt are those, which make them “ideal-type”. As Alquie once said: “Value does not appear as the object of our desire, but as what should be the object of mankind’s desire.”

### But what does the word, value, mean?

The meaning, generally accepted, represents value as an absolute ideal, what mobilises us, calls us, and makes us commit ourselves. According to Kerlinger, value is “an organisation of beliefs, of relative options to abstract references or principles, to behavioural norms or living models. They (sic) express moral judgements, imperatives and preferences for norms and behavioural models . . .” A Value-based Water Education cannot be summed up in titles or topics padded out in others and cannot be taught as something anonymous like “earth rotation . . . roads and trails . . . the weather . . .”<sup>7</sup>. Water, as highly praised by Saint-Exupéry: “you are not a source of life, you are life”, deserves a special attention. The development of water-related modules could initially be based on the identification of core human values and

<sup>3</sup> “Seane” is a word in Wolof (the national language in Senegal) that means a shallow well, where you can draw water like from a pool

<sup>4</sup> Youssou Ndour is the most famous Senegalese singer

<sup>5</sup> From Wolof: “When I travel, you always pour some water...”

<sup>6</sup> From article written by Amady Aly Dieng on “Water, common patrimony of humanity”, from *Alternatives for the South*, vol. 3 (2001), Walfadjri No. 3116, 4 August 2002

<sup>7</sup> From official curriculum of Senegal, Decree 791165

related values likely to structure the prototype desired for our students. Core values (truth, love, peace, right conduct, and non-violence) and / or their related values should be the foundations on which objectives can be built. Given the present alternatives of defining the profile of our learners according to their future role in society, our objectives should include, in addition to “knowledge” and “how to”, “behaving and acting in a special way”. Schools must dare to transmit values, in spite of difficulties and divergent philosophical considerations. We believe, as Theodore Ndiaye (former member of the Executive Council of UNESCO) that “the strong demand on meaning, the strong search for identity and roots can only be equalled by the difficulties arising from a Value-based Water Education: knowing how to discard them, to mark them, knowing how to utter them, daring to transmit and communicate them to others, learning how to receive and put them into practice everyday.”

Senegalese current curricula can easily include the following topics related to water:

- In a first step:
  - I wash my hands after a meal; the collective washer
  - Safe water: the well, the creek
- In a second step:
  - water in the environment
  - nature needs water
  - water in my region
- In a third step
  - Flowing water: rivers and streams
  - The water cycle

The list is not a comprehensive one. While waiting for the introduction of Value-based Water Education in our curricula, these themes could be refined to meet the expertise to install in learners the respect for water, on a value teaching basis.

## CHAPTER 5

# Contribution of Education in Human Values to Non-formal Water Education

by Amin Gwaderi<sup>1</sup> and Pireh Otieno<sup>2</sup>

Through the efforts of organisations, such as UN-HABITAT, the world is increasingly becoming aware of the value of water in everyday life. This is particularly so in Africa, where the importance of water for survival is evident to a large section of the population, not only in the rural areas but in many large towns as well. Informal settlements, shantytowns and slums, which are an increasing percentage of the African urban scene, are especially vulnerable to the vagaries of water supply and usage. The problems of supply are organisational at the national level while usage is a personal and community issue. This does not however exclude the well-off members of urban society, who very often are far less tolerant of water deprivation but nonetheless can still be profligate in water usage.

The supply issues are generally engineering and economic concerns, which can be dealt with at the national policy level. Once supply in any form is assured, wastage and pollution can still confound healthy usage by the individual consumer. The quality of life in African society may well be directly measured by the availability of water and the effectiveness of its use. Community use of water, especially in the less industrialised parts of the world, is a good indicator of the existence, or lack of harmony, amongst the people comprising the community. Water scarcity is invariably associated with communal tensions.

The significance of water is that it is the single most important natural resource necessary for the survival of the individual human being and transcends boundaries of nationality, race, class, culture, economics and gender. This leads to an interesting comparison with universal human values, which also transcend all these factors. Furthermore, the pursuit for

enhancement of the quality of life goes hand in hand with the goal of adequate supply and equitable use of water by human beings.

If these factors are coupled with global concerns about the future of water as a finite resource to be husbanded through proper use, the need for water education is apparent, and concerns are rightly being directed towards appropriate methods of water education.

In this context, the United Nations' "Managing Water for African Cities Programme" is timely in so much as that for too long the question of water as a valuable resource, although frequently discussed, had not been on any global agenda for action. The initiative now being undertaken, with water education as its key plank, is a laudable approach of laying the foundations of a preventive rather than a curative solution to the problem.

The objective of water education through the formal education system will undoubtedly greatly encourage a sensible view of water amongst the educated population in the future. However, outside this segment of society is a large section, which is not accessible to formal methods of education. This section is not necessarily limited to the poor, although the poor are probably the majority affected. It also includes industrial, institutional and domestic users of water. For an entry point to this section of society, which—for the purpose of educational method—is the non-formal sector, one could return to consideration of the relationship between quality of life and values of people.

People may be said to enjoy a high quality of life if living is in harmony with the set of universal human values. Observance of these values in a society further leads to respect of the rights of individuals and concern

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for community welfare based on right conduct of the individual. Obviously any step that promotes the quality of life through the practice of positive human values is to be encouraged, particularly if, as observed earlier, the quality of life is directly related to the supply, and practice of the use, of water. Any such step requires a significant change in attitude by individuals to their personal lives, to that of their neighbours, and to their community. Only then will the concept of living in harmony to enjoy the use of the water available to them to the optimum reveal itself for the benefit of the whole community.

Non-formal water education is people related rather than being formally structured, and is often preceded by a change in attitude of the self, to life, and to the prevailing living conditions. The principles of this education, to be applied to achieve the behavioural change, are based on the universal human values of love, truth, right conduct, peace and non-violence. These are the principles that are particularly relevant to the community and can lead to harmony, sharing of whatever resources are available, and a willingness to care for other members of the community. Specifically, regard for truth and honesty, founded on love for peace and non-violence, are the cornerstones of right conduct. The successful observance of these values leads also to the enhancement of the quality of personal life, which includes more conducive interpersonal relationships, a stable neighbourhood and a reduction in physical insecurity.

This then encapsulates the purpose of Value-based Non-formal Water Education—it is the process of behavioural change through self-transformation which leads to an equitable and sensible use of water resources in a community.

There are well established learning tools which can be used to impart the practice and awareness of value-based education, such as are available at “The African Institute of Sathya Sai Education”, which is well versed in the methods of education in human values. Traditional tribal cultures frequently harbour all the virtues of the value-based system described, including respect for nature and shared responsibility. Unfortunately many of these, based on custom, have been eroded through

economic migration and the break-up of tribal community life. The process of reinstating these norms is a challenge facing many religious and educational organisations. Many have to relearn the principles themselves before attempting to communicate them to others. The process most often involves non-governmental and development organisations engaged with community based groups. However, organising for the implementation of what is often a major behavioural change requires further thought on the nature of the organisational methods applicable.

In the same way that the non-formal sector is outside the bounds of a formal education system, it is also outside the bounds of a conventional organisational method of transference of learning. ‘Conventional organisational method’ in this sense means the one based on the conventional ‘command and control’, ‘intervention and outcome’ structures of implementation. While a framework for implementation is obviously necessary, it must be integrated with the freedom of individuals participating in the process to exercise their creativity and contribute their individual talents and resources in a spirit of service to transform their attitude to each other, to the community, and to water in particular.

An effective way of initiating the process is through an assemblage of like-minded individuals coming together in an atmosphere of mutual trust to agree on the common purpose of determining a solution to the problems of usage of water in their community. The people engaged in implementation are primarily the individuals within a community, who benefit directly from this process but also include the authorities for supplying the water, non-governmental organisations, which facilitate the learning process, and health and sanitation organisations concerned with these aspects of water education. Each is allowed to contribute according to his or her perception of the issues involved and the group decides on the priorities to be included to achieve the agreed purpose.

In order for the education to be effective, all these disparate participants must recognise and accept the purpose of the process and the value-based principles, which will be observed in the course of the education. They must also acknowledge the value

of each participant to the overall purpose and accept a position of equity and trust, whereby no individual is higher in status to any other in pursuit of the overall goal. Once all the participants have embraced the values' principles, this will come naturally (although perhaps not without effort).

In other words, the principles of universal human values are applied to organise a value-based approach to water education! This approach ensures there is consistency in both the message and the manner in which it is delivered. It also clearly differentiates between the form and the function of an organisation. The concept is similar to the *chaordic* 'space free' organisational method so successfully used in the development of the international VISA credit card network and is particularly appropriate for a Value-based Water Education method requiring the harmonious co-operation of a group of participants, often with different backgrounds, and like the VISA system, is applicable globally.

That said, any organisation requires a clear understanding of the role of each of the participants in the overall movement, except these roles are predicated on function, based on competence to exercise that role rather than on status. It may be necessary to capture the

description of individual roles in a written statement for clarity of purpose. This is also necessary to develop the next step, which is that of agreeing to the guidelines for the practice, that is, the activities required to be undertaken for implementation.

This precept has become rapidly evident wherever non-formal education has been attempted. The most successful examples have been realised whenever the differences of 'them and us', 'teachers and the taught', 'experts and the masses' are dissolved in an atmosphere of mutual learning and caring for the results that emerge. It is particularly evident amongst the poor and socially deprived. It engenders respect and self-development in all participants, which has a lasting effect on individuals, their communities, and eventually the nation.

In summary it will be seen that the observance of universal human values can make a major contribution to water education through behavioural change and personal development of all participants involved leading to an effective people-centred education approach in a non-formal setting. This results in a lasting benefit for individuals and communities far beyond immediate concerns while at the same time constructively addressing the issues of non-formal water education.

## CHAPTER 6

# Human Values in Water Education: Application in Water Classrooms

by Åse Johannessen<sup>1</sup>

*Here I will elaborate on conceptual issues and approaches in water education, including water classrooms, the principles of the teachings and the role of teachers in such classrooms. I will also elaborate on some future possibilities related to water education. The text is aimed to inspire educators in other countries and contains personal views of my colleagues in the SWD team and myself.*

Swedish Water Development AB (SWD) has produced background material in the UN-HABITAT project, “Water Education in African Cities”, including a handbook for teachers and guiding material for organisers in establishing water classrooms. The Swedish team includes Sven-Erik Skogsfors (Project Manager, SWD), Brita Forssberg (Stockholm Water Company AB), Mats Kullberg (Ekosofia AB), Åse Johannessen (Stockholm University) and Åsa Axelsson (Stockholm Water Company AB).

## Water has a Hidden Role

Today, the need for clean water for drinking and sanitation has never been more pressing, and sustainable development is on everybody’s lips. But do most people really know what it is all about? What is needed to provide for clean water and sanitation while at the same time to walk the path of sustainable development for the benefit of coming generations?

Sustainable development is, in general, about not taking more from the earth than you can give back. Taking too much will undermine the earth’s “life-support system” that provides us with our basic needs, such as food to eat and clean water to drink (Costanza et al, 1998). In the life support system, water has an extremely

important role to play (Daily et al, 1999). Water is not only a commodity, such as drinking water and water for industry and irrigation, but also plays a hidden role, such as in ecological services, wetting of the land and being the bloodstream of the biosphere (Folke and Falkenmark, 1998). This is not the conventional view of water but an expanded one, showing the interconnectedness of people and the environment in an entire watershed. This understanding is crucial to achieve sustainable development.

## Teaching About Water and Life

In our work the expression, “water is life”, has been the guiding theme. It means that if we want to teach about ‘water issues’ then we must encompass all things related to ‘life’ as well. Therefore our work is firmly based on real-life situations, where economic and social considerations are made as well as environmental. This involves the whole spectrum from the smallest everyday situation to the biggest issues for several nations or even the whole of earth itself—plants, animals, and humans all interconnected.

## A Free Ride on a Scarce Resource

Water resources can sometimes be described as a “common-pool resource”, which opens up the possibility and temptation to free ride on that resource (Ostrom 1990). The challenge is to create incentives in people to share human values of common responsibility in order not to pollute or overuse the water resource. We want to change the behaviour of people so that they will be stewards of their own natural resources. In order to be

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stewards of the water resource, something more than just pure knowledge about the water cycle and related water issues is needed (Gunderson 2002). We believe that if you want to change the behaviour of people you have to integrate human values in water education.

Using basic human values, such as caring, sharing and respect as components in water education, provides an incredibly powerful tool for creating a holistic worldview of water. This will hopefully create incentives for water conserving activities in whole communities, perhaps even in the whole watershed, making people aware that they should care for, share and respect their water resource. If these values become the foundation for managing the watershed, then there is a considerably greater chance of achieving sustainable development.

## Understanding Interaction

As we see it, water education is not about learning scientific names, rather it is about understanding the interactions of people and nature and the mutual love and respect that has to be a guiding principle in such a system. That is also how we will transmit the importance of water issues, striking a chord in the beings and hearts of people, not only in their minds. Here the traditional knowledge has an important role to play, being part of the memory of a community, embedding long-term historical and cultural observations (McIntosh, 2000).

## Meet New Challenges

Apart from in some way creating a mutual love and respect for the environment, training learners in certain abilities will enable them to meet new challenges with flexibility, creativity and imagination and an ability to adapt to changing conditions with an open mind. This is needed in an environment that is non-linear, complex and unpredictable (Holling, 1978). There are no set recipes for this method, and I will give examples from the training planned for the water classrooms.

## What is a Water Classroom?

Today, we need to gain an understanding of the water resource and the human values connected to it. Water classrooms are physical places, where such an education can be developed and elaborated. A local organiser runs them, and they consist mostly of representatives from the water works and educational ministries working in co-operation.

Water classrooms are situated in a city and look like typical classrooms, with equipment that make simple experiments possible—the basic tools being a few plastic bottles and water. The idea is simplicity and thus it is better to start off in a simple manner using basic means.

## Water Classrooms are for Everybody

Water classrooms are basically for everybody. They are mainly designed for children in the formal or informal curriculum, but can also be used according to what the organisers intend for adults of the general public, politicians, entrepreneurs, etc. Everybody could learn about water! The timeframe of the teaching is flexible; it is possible to have one-day courses as well as full year courses where water is a theme running through several subjects of the normal curriculum.



*Visitors being shown around the Water Classroom at Delta Park, South Africa*



## Principles of the Water Classroom Teaching

The idea is to start in the learner's own reality, creating an understanding of the issue being taught. From that point onwards, larger issues can be explained, still with a firm connection to local examples that the learners know about already. Understanding is also created through experiments and activities. We firmly believe that if you want to remember something you have to experience it through hands-on activities in the real world. Understanding is also created through asking questions—learning how to ask questions is often as important as answering them.

Afterwards, it is important to summarise the applicability of the lecture, explaining why the subject is being taught and how they can apply it in their everyday lives. The whole experience will hopefully be an inspiration for local peoples' own initiatives in their communities.

## The Role of the Teacher

The role of the teacher in water classrooms is very important. We encourage teachers to take their own initiatives and be creative. It is preferred that the teachers feel free to draw upon many different educational materials, improvising and elaborating them to suit their local situation and purpose of teaching. We also encourage teachers to be active, using their own intuition to develop creative educational methods, for example using drawing, drama and puppetry. The teachers are encouraged to network with other teachers in other water classrooms and exchange ideas and inspiration. Also, the idea is to enable classes to share their water issues and solutions with other regions, and perhaps even countries.

## Inspiration as a Key

We believe that inspiration through play and imagination is the key to the minds of children as well as adults. First we want to inspire teachers in teaching the material with creativity, something which children have an intuitive

ability for. We also would like to inspire teachers to use fantasy, spirituality and joy. The purpose of teaching with joy is to create in the learners a sense of understanding of the surrounding world, while still maintaining the child's ability of feeling joy in making discoveries.

Inspiring curiosity in children is inspiring them to learn, and this fact has been an important part of traditional education. Education has long been based in the oral tradition, expressed as myths, stories and songs, fascinating its listeners; and who would forget such fantastic stories? This opens up the possibility of using myths and legends from all over the world, indeed a rich resource to draw upon, especially those of local origin. Drawing on imagination and fantasy, symbols of natural phenomena become a powerful educational tool allowing us to relate to them on a 'human' basis. For example, thunder becomes the 'voice' of rain; the river has feelings and 'spirit', and animals and plants 'talk' to us, explaining how to be good stewards of the natural environment.

## Local Initiatives - Across the World

In the future, there is a need to maintain and further develop water education with the help of local initiatives. In the best scenario, local examples and experiments can be elaborated and made into a uniquely designed water educational material for that region. Water education could, then, act as a base for community activities in a village or even in a whole watershed, inspiring a constructive dialogue between different stakeholders. There is also the possibility of connecting teachers and learners across the world, creating an understanding of the similarities and differences in water issues across different regions.

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