Human Values-based Water, Sanitation and Hygiene Education:

A Study of Teachers' Beliefs and Perceptions in some Southeast Asian Countries

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Author's Declaration

This is to certify that:

I. this thesis comprises only my original work towards the degree of Doctor of Philosophy

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Abstract

Human Values-Based Water, Sanitation and Hygiene Education (HVWSHE) is implemented in parts of Southeast Asia to raise students' social consciousness regarding the values inherent in water and to develop positive attitudes and ethical behaviours in students towards water. This study used a mixed-method to explore the beliefs and perceptions of a cohort of teachers regarding the principles (cooperative learning, educare, role modelling) and pedagogies (silent sitting, prayers, storytelling and music) of HVWSHE. Beliefs about other areas such as cultural (water in religions and traditions) and contextual factors (class size, time and workload) were explored from a teachers' perspective. This study also explored the teachers' beliefs about the impact of HVWSHE on students' attitudes and behaviours.

Initial analysis of quantitative data collected from sixteen teachers from Thailand, Indonesia and Lao PDR showed they had positive beliefs about the principles of HVWSHE such as cooperative learning, educare and role modelling. Teachers' beliefs regarding teaching pedagogies such as silent sitting and music had significant differences. Teachers' beliefs about the impact of HVWSHE on students' attitudes and behaviours also revealed that more than half the cohort of teachers was concerned about the assessment procedures for HVWSHE and to evaluate Human Values.

In-depth interviews of 14 teachers from Thailand and Indonesia revealed that the beliefs and perceptions of the cohort of teachers from Thailand were different from those of the cohort of teachers from Indonesia. Thai teachers believed that the HVWSHE principles and pedagogies were effective for developing pro-environmental behaviours. Interview narratives from Thai teachers revealed that they understood the theory behind HVWSHE and used socio-constructivist teaching approaches.

Interview narratives from Indonesian teachers revealed that although they were motivated by the training program they had conflicts with the use of silent sitting and they used music to a lesser extent. Story telling was the most preferred pedagogy. There was little evidence in their narratives that they understood the theory behind HVWSHE or used HVWSHE principles and pedagogies effectively. There is also lack of evidence of student centred teaching and learning in social contexts and feedback from students.

Interview narratives revealed that there was a major difference in the use of and attitudes towards silent sitting and prayer as teaching pedagogies between the Thai and Indonesian teachers. Thai teachers regarded silent sitting as a secular activity and viewed prayers as a means of thanking and respecting nature. Indonesian teachers viewed both silent sitting and prayers as a religious activity and saw prayers as an alternative to silent sitting. Consideration needs to be given to religious and cultural differences when HVWSHE is introduced into different settings.

More training and ongoing support could help strengthen teachers' self-efficacy beliefs and the significance of using the principles and pedagogies. The implementation of the principle of Educare may only be practical in cultures that believe that values are inherent in human beings. Teachers from cultures and a

religious background, such as Islam, that believe values are externally derived from scriptures and religious texts, are unlikely to use Educare.

Thai teachers' interview narratives revealed that interpersonal relationships between teachers and students and between teachers themselves as well as effective role modelling have contributed to implementation of HVWSHE in Thailand. Indonesian teachers commented on the strong student-teacher relationships and effective role modelling they observed during training in Thailand.

With regards to teaching the HVWSHE themes concerning values-based water in culture, traditions and religion, the use of water festivals may not be practical in countries and cultures, such as Indonesia, that do not have water festivals.

Key words: Teacher beliefs, Human Values-based Water, Sanitation and Hygiene education, Southeast Asia

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List of Abbreviations

ACCU	Asia /Pacific Cultural Centre for UNESCO
ADB	Asian Development Bank
APNIEVE	Asia Pacific Network for International Education and Values Education
ASP-ESD	Asia South Pacific-Education for Sustainable Development
EHV	Education in Human Values
ESD	Education for Sustainable Development
HVIIM	Human Values Integrated Instructional Model
HVWSHE	Human Values-Based Water, Sanitation, Hygiene Education
ISSE	Institute of Sathya Sai Education
IUCN	International Union for Conservation of Nature
PADETC	Participatory Development Training Centre
RECSAM	Regional Centre for Education in Science and Mathematics
SEAMEO	South East Asian Ministry of Education Organisation
SSE	Sathya Sai Education
SSEHV	Sathya Sai Education in Human Values
TOT	Trainer of trainers
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNHABITAT	United Nations Humans Settlements Programme
UNHCS	(Habitat) is the organization within the United Nations system responsible for promoting human settlements development worldwide.
WWF	World Wide Fund for Nature

Definition of Terms

Affective teaching and learning: Birbeck and Andre (2009) stated that affective teaching and learning can be defined as a situation where students are given opportunities to engage with both development and understanding of their own feelings, values, attitudes and motivation related to behaviours and actions as a professional citizen. According to them, the affective domain also includes engaging students through supporting their affective attributes for learning. The components of affective teaching are the transfer of knowledge through human values integration, and inspiring students and emulating examples of human values (Jumsai, 2003)

Beliefs: Calderhead (1996, p. 715) defined beliefs as "suppositions, commitments and ideologies", whereas knowledge refers to concepts and facts according to an individual's understandings. This study follows the definition that "beliefs represent the information he has about the object. A belief links an object to an attribute" (Fishbein & Ajzen, 1975, p. 12).

Educare: "Educare" is related to human values. The word "Educare" means to bring out that which is within. Human values, namely, truth, love, peace, right conduct and non-violence are hidden in every human being. One cannot acquire them from outside; but they have to be elicited from within. Educare means to bring out human values: "to bring out" means to translate them into action (Saibaba, 2001a)

Human values based Cooperative learning: Cooperative learning is defined as "a group that work towards a common goal" (Slavin, 1982, p. 7) and "help promote human values in the classroom as it helps more positive relationships among students. The process is similar as proposed by Slavin and Johnson" (Jumsai, 2003, p. 96).

Human values: UNHABITAT has defined human values as the "essential element of our human nature and are positive qualities that are shared among people throughout the world" (UNHABITAT, May, 2006, pp. 14-18). The five human values that are specified in the human values integrated instructional model are defined as those that take into account both the individual and the society they live in. The components of the five values are love, truth, peace, right conduct and non-violence (Jumsai, 2003).

Integration and elicitation of human values: These are defined as a teaching approach where teachers facilitate understanding in students through integration of values from the lessons and eliciting values from students regarding water issues.

The teaching method includes bringing out values through discussions and brainstorming and inherent values in the subject. Values integration and elicitation is facilitated through teaching pedagogies, which are informal and formal activities.

Perceptions: Teacher's perception is defined according to Bunting (1988, p. 146) citing B. Guralnik, who quoted from the Webster's dictionary. According to Guralnik, the word "perceive derives from the Latin 'percipere', 'per' meaning through and 'capere' meaning 'to take'". According to Guralnik the *Webster Dictionary* defines perceptions as: "to grasp mentally, take note of, recognise, observe, to become aware of, through sight, hearing, touch, taste, or smell". The

word perception is defined further from the above definition, interpreted by Bunting as that which implies the process of information processing of the mind, sense data and interpreting the data. Bunting stated that the "interaction between the environmental stimuli and the cognitions of the individual that results in the experience of perceptions" (Bunting, 1988, p. 168).

Teachers as Role models: In this study role model is conceptualised as teachers being facilitators to help students and being examples of the human values for students to be led.

Teaching Techniques/pedagogies: Includes techniques used in the direct methods (UNHABITAT & SEAMEO, 2007). They are silent sitting, prayers and quotations, group activities, singing and storytelling (Jumsai 2003, p. 176; UNHABITAT, 2005).

Chapter One – Introduction

Problems regarding water distribution, health, sanitation and hygiene are a major concern in South East Asian Countries. These problems are widely recognised with ambitious goals to address these concerns. For example, the main aim of the Millennium Development Goal endorsed in 2000 by a United Nations resolution was to "reduce by half the proportion of people without access to improved services by 2015, an additional 1.5 billion people in Asia will need access to adequate sanitation facilities, while an additional 980 million will need access to safe water" (United Nations Development Program & Asian Development Bank, 2003, p. 3).

In particular, Goal 7 of the Millennium Development Goals (UNHABITAT, n.d.) revealed the need and urgency to integrate principles of sustainable environment to alleviate a range of problems. The issues to be addressed included:

- 7a – loss of environmental resources;
- 7b – loss of biodiversity;
- 7c – reduce by half the proportion of people without sustainable access to safe drinking water and basic sanitation; and
- 7d – achieve significant improvement in the lives of at least one hundred million slum dwellers by 2020.

All the issues of Goal 7 are concerned with the conservation and preservation of water as well as solving issues which are of technical origin as well as social equity concerns. These different concerns are also reflected in the initiatives taken up by the UNESCO projects (2005, 2009) and the UNHABITAT for increasing education and environmental education for sustainable development.

However previous studies have identified a link between the successful implementation of innovative education programmes and teachers' beliefs (Chen, 2008; Czerniak & Lumpe, 1996; Lumpe, Haney, & Czerniak, 1998; Teo, Singchai, Hung, & Benglee, 2008). In some cases, new programmes have not been successful because teachers have held beliefs that are not aligned with the key principles of the programme (Czerniak, Lumpe, Haney, & Beck, 1999, Teo et al., 2008). The United

Nations Human Settlements program targeted the Millennium Development Goal by implementing Human Values Based Water education (HVWSHE) in the education sector in the South East Asian region. This study investigated teachers' beliefs and perceptions about the principles of the HVWSHE program as well as recommended teaching approaches. In particular, the study identified teachers' beliefs about the principles (cooperative learning, educare, role modelling) and selected pedagogies (silent sitting, storytelling and music) from the Human Values Integrated Instructional Model (HVIIM) and prayers from the *Facilitators and Trainers Guidebook* (United Nations Human Settlements Program (UNHABITAT, 2006).

1.1 The overall aim of the study

The overall aim of the study was to explore teachers' beliefs and perceptions regarding teaching processes for HWSHE and their perceptions of the impact of these components on students' attitudes and behaviours.

In order to explore teachers' beliefs for HVWSHE, the research had a number of specific objectives. They were to:

- explore teachers' beliefs regarding the use of HVWSHE teaching principles during the teaching processes;
- investigate teachers' beliefs regarding the effectiveness of selected HVWSHE teaching pedagogies;
- explore teachers' perceptions of the impact of cultural and contextual factors of HVWSHE;
- investigate teachers' perceptions of the impact of HVWSHE on students' attitudes and behaviours; and
- determine the alignment of teachers' beliefs with the teaching approaches recommended by HVWSHE.

1.2 Research Questions

The specific research questions for the study were:

1. What are teachers' beliefs and perceptions regarding the principles used in HVWSHE including cooperative learning, Educare, and teachers as role models?
2. What are teachers' beliefs and perceptions regarding the effectiveness of selected teaching pedagogies used in HVWSHE including silent sitting, prayers, storytelling and music?
3. What are teachers' perceptions of the impact of cultural and contextual factors on the use and implementation of HVWSHE teaching processes?
4. What are teachers' perceptions of the impact of HVWSHE on students' attitudes and behaviours?

1.3 Rationale for the Study

This study was necessary for four main reasons. The first relates to the scarcity of adequate clean water in many third world countries and the need to address this through education. The second involves the investment in education and whether programs are appropriate for broad dissemination. To date, there has been little research into the effectiveness of such programs – this provides the third reason for the study. Finally, the study examines whether a program developed for a particular cultural context is able to be adequately implemented in quite different contexts. Each of these reasons is further elaborated to highlight the significance of this study and its potential to inform further programme development in this field.

1.3.1 Water is a finite and essential natural resource

Humans value water because they need water and other resources they depend on also cannot exist without water (Van der Zaag, 2006). Environmental problems have a severe impact on the urban poor and developing nations. Three billion people in the developing world do not have access to adequate sanitation systems. As a result, fourteen to thirty thousand people, the majority children, die every day from water-related diseases (Gleick, 2000). The urban poor pay a heavy price in order to have access to water. Water and sanitation are both public health and environmental issues.

Fresh water resources are limited but reports by the United Nations on the state of rivers in developing nations show that many are polluted. These include the Lyari and Lari in Karachi, Pakistan, the Chao Praya River and numerous canals in Bangkok, Thailand and the Brantas River in the industrialised area of East Java and Indonesia. India has thirty one thousand towns, but only two hundred and nine of them have even partial sewerage systems. In China, both wastewater and solid wastes are discharged into rivers by large and medium scale industries. Because of these discharges, twenty per cent of freshwater resources in China are polluted. In urban cities like Chennai, in India, sewage flows to the River Cooum. As a result, oxygen levels are reduced and bacterial counts are high (Azariah, 1994, p. 228). The introduction and expansion of health, sustainability and environmental education programs such as HVWSHE is a significant response to these problems.

1.3.2 Investment in environmental education

The United Nations Human Settlements Programme (UNHABITAT) adopted HVWSHE in order to raise awareness for students and reinforce good character, morality and ethics to promote more equitable and better use of water and sanitation in Southeast Asian countries (UNHABITAT, 2006). UNHABITAT considered that human values are an "essential element of our human nature and are positive qualities that are shared among people throughout the world" (UNHABITAT, 2006, p. 16). As a consequence since 2006, The Society for Preservation of Water (SPW) in Thailand has been training teachers from Singapore, Malaysia, Thailand, Vietnam, Cambodia, Lao PDR, Indonesia, India, China, Nepal and Kazakhstan in HVWSHE (Society for Preservation of Water, 2008). Supported by training workshops, resource materials and training manuals from UNHABITAT and the South East Asian Ministry of Education Organisation (SEAMEO) HVWSHE is now in use or being introduced across southeastern and southern Asia. The spread of the program has occurred without evaluation and evidence to support its efficacy.

1.3.3 Effectiveness of values-based education programs

There has been little research on the implementation and effectiveness of HVWSHE and similar values-based educational programs and no previous research on the beliefs of teachers who are implementing HVWSHE. Taplin, Huang and Ng (2005),

Toh, Yeap, Ng and Isma (2007) and Ng (2007) explored the implementation of values-based education using the principles and pedagogies. Clark (2005) reviewed the implementation of Human Values-based Water Education (HVWSHE) in Africa and found that there were serious problems with teachers' understanding of the philosophy and practice of values-based water education and that teachers required continuous pedagogical support. All the above studies found that sustaining teacher motivation was a major problem. Both Taplin et al., (2005) and Clark (2005) reported teachers' initial reluctance and struggle when Education in Human Values was implemented. These studies point to the issues associated with broad dissemination, raising many questions about whether the HVWSHE program achieves its aims.

1.3.4 Transferability of programs

HVWSHE was developed by the founder of the Sathya Sai movement and has been promoted by the Sri Sathya Sai World Foundation, a religious organisation in the Hindu tradition. Adoption of the program by UNHABITAT has meant that HVWSHE has been introduced into countries with very different religious and cultural traditions to those in which it was developed. It is thus very important to explore teachers' beliefs about the influence of cultural and contextual factors on how teachers implement HVWSHE in culturally differing countries. This was achieved by surveying teachers from Thailand, Indonesia and Lao PDR and interviewing teachers from Thailand and Indonesia.

Teaching processes in HVWSHE have to target both the affective and the cognitive dimensions in education or else the end of education and aims of education to develop learners' ability to adjust and contribute to the social democratic process and environmental problems, are adversely affected. There must be significant focus in bringing the cognitive and affective domains together (Farley, 1981, pp. 7–9) in environmental education. In order that students gain awareness of the existing problems, HVWSHE focuses on integrated approaches for environmental education. This includes theme teaching, interdisciplinary approaches and collaborative learning.

The next section gives a brief overview of Human Values Education and HVWSHE. The teaching methods in human values education has been extended to water education and both are discussed in detail.

1.4 Structure of Thesis

There are eight chapters in this thesis. The first chapter is the Introduction, which comprises the rationale of the study, research questions and the significance and scope of the study. The second chapter is the Context of the Study, which provides the background of Education in Human Values Program and how it evolved into the Human Values-based Water, Sanitation and Hygiene Education. It elaborates on the different components of the Human Values Integrated Instructional Model and addresses the testing of the model and the issues that lead to the present research on teacher's beliefs with HVWSHE. Chapter three is the Literature Review, which provides an overview of the evolution of environmental education and the effectiveness of values-based education. This chapter then elaborates on the teaching principles and pedagogies for environmental education. The next section presents a discussion of belief systems and the impact of teachers' beliefs when new reforms are implemented. The literature review also addresses different aspects of water related issues present in today's urban societies such as the cultural and contextual aspects when dealing with HVWSHE. The literature examines studies of teachers' beliefs and educational reforms and teachers beliefs related to teaching and learning in classrooms. Chapter four presents the theoretical framework used for this study and how the different research questions address teachers' beliefs within this theoretical framework. Chapter five is the methodology that focuses on how the study used a quantitative and qualitative framework in the first phase of the study and then presented the larger qualitative method of enquiry about teachers' beliefs for this particular study of HVWSHE. Chapter six addresses the results and findings of the analysis of data from the questionnaires and interviews. The results of the demographic data are presented at the beginning before the results of the quantitative and qualitative data are presented, followed by the results of the interviews. Chapter seven comprises the discussion and conclusions for this study about teachers' beliefs regarding the HVIIM. This chapter discusses, synthesises and summarises, the significant findings of the four research questions. This chapter then discusses the

theoretical implications of the study and its limitations. This is followed by further recommendations for teacher practice and future research followed by a short conclusion.

1.5 Significance of the Study

This study will contribute to an understanding of how teachers conceptualise and apply the principles and processes from the HVIIM in their classroom practices in south-east Asian regions. An overview of teachers' beliefs regarding their use of the teaching processes will help teacher educators to modify or adapt their practices in these regions.

Exploring teachers' beliefs will lead to an understanding of teachers' individual experiences of using the principles and processes for HVWSHE. Teachers' input could provide an overview of teachers' attitudes to the overall implementation and how they feel about using the principles and processes. This study will highlight which aspects of the model teachers believe are the most beneficial to students. The findings will also contribute to the study of both HVWSHE and environmental education throughout the parts of the world, which have similar issues with water. The outcomes of this study can be used to improve teacher education by understanding the difficulties and the advantages when teachers use the principles and processes in their own classrooms.

1.6 Scope of the Study

This study was exploratory in nature. This is the first time a mixed method study has been made of teachers' beliefs about EHV and HVWSHE in Southeast Asia. The results can be used to understand teachers' behaviours and the constraints teachers face in dealing with water related issues. This study will help to: -

1. Develop better ways of using the HVWSHE principles and teaching pedagogies;
2. Fill in gaps and improve teachers' understanding of HVWSHE through provision of support groups;

3. Communicate ideas and strategies to administrative departments to provide support for teachers.

The study can be extended to teachers elsewhere in Southeast Asia where there are similar cultural and social issues.

Chapter Two – Context of the Study

2.1 Role of the Researcher's Background in the Study

The researcher was trained in the Education in Human Values program at the Institute of Sathya Sai Education in Thailand and holds a Diploma in Education in Human Values and an Advanced Diploma for Education in Human Values. The researcher worked as a volunteer administrator for the Institute of Sathya Sai Education from 2001 to 2007.

The researcher had four years of experience in teaching chemistry and biology with Education in Human Values using the HVIIM from 2003 to 2007 in the Sathya Sai School in Thailand. During these years, the researcher's personal experience as a teacher at the Sathya Sai School and as a student of the Institute of Sathya Sai Education helped transform her views in education. The integrated approaches used in learning when using Education in Human Values in the classroom and interacting with students was one of the important turning points to experience the learning of the heart along with the head and hands. The collaborative atmosphere and participative efforts of all teachers towards inculcating Human Values in student learning using the Human Values program and personally experiencing the love and peace in the school ethos contributed to the researcher's personal transformation.

The researcher was also involved in teaching integrated classes using the HVIIM for HVWSHE when it was first established in late 2006 in Thailand. The Researcher participated in the *Regional Workshop on Developing Curriculum Materials for Integrating HVWSHE* in Southeast Asian schools at SEAMEO INNOTECH, Quezon City in the Philippines in 2006 organised by UNHABITAT and ADB.

Education in human values (EHV) and human values-based water, sanitation and hygiene education (HVWSHE)

Education in Human Values started in 1969 in Andhra Pradesh, India when Sri Sathya Saibaba gave moral teaching to a few small children using storytelling, music and role-play to elicit values. This attracted a large crowd and many teachers were trained informally. Sathya Saibaba, an educationist, philosopher and Chancellor of

the Sri Sathya Sai University in Andhra Pradesh, India, developed the human values concept from these early experiences (Sri Sathya Sai World Foundation, 2007).

Between 1969 and the 1990s, Education in Human Values was an extracurricular activity known as Sathya Sai Education (SSE). SSE recognised five cardinal values: love, truth, peace, non-violence and right conduct as human **v**alues, which should form the basic principles for the foundation of a secular education system.

Between 1969 and 2000 informal classes in human values, then known as *"Bal Vikas"* ("Bal Vikas is a Sanskrit term which means 'blossoming of the child'"), were conducted in India after school hours or on weekends for students by volunteer teachers (Sri Sathya Sai World Foundation, 2007, p. 11).

By 1975, the number of teachers trained in education in human values had grown to 3500 and students who were trained in education in human values totalled 50,000. Due to its success, the programme was introduced outside India (Sri Sathya Sai World Foundation, 2007).

In 1970, the human values programme was introduced in the United Kingdom. In 1977, the Education in Human Values Foundation was established in the USA. A program of teacher training in EHV conducted in India resulted in 35,000 primary school teachers receiving professional development in this program by 1989. An estimated 20,000 public school teachers in one hundred countries participated in formal training seminars for the Sathya Sai Education in Human Values (SSEHV). Education in Human Values had been published in more than 20 languages in over 50 countries. In 1980, the Third World Conference on EHV established programs like the *"Ceiling on Desires",* (Sri Sathya Sai World Foundation**,** 2007, p. 8) which develops self-control in students. The program emphasised the best use of time, money and food. SSEHV conferences, symposia, and workshops were organised in many countries throughout the 1980s including the U.K. Malaysia, Indonesia, Mexico, USA, Africa, and Thailand. In 1987, the European Sathya Sai Educare (SSE) Institute was established in Denmark and teacher training began in Europe. In Thailand the Government signed a memorandum in late 2006 and by July 2007, twenty six thousand teachers had attended seminars on SSEHV in all thirty-six of the

country's Teacher Training Colleges and several thousand Thai teachers participated in weekend workshops (Sri Sathya Sai World Foundation**,** 2007, p. 45)

Marantz (1991) studied fourteen schools, sixty teachers, and one thousand, five hundred students from different backgrounds in New York, Chicago and San Diego, USA. Teachers found that SSEHV could be implemented successfully in formal academic settings in public schools. According to Marantz, teachers and administrators found that integrating human values was a unique experience. Kirti Singh, a teacher from Australia, also found positive impacts of SSEHV in an Australian study in which teachers reported that it gave them an immense opportunity to make a difference to students' character development. She also emphasised the importance of "being" and then "teaching". According to Singh (2007):

> My greatest insight was the understanding of the value of teachers and the great opportunities teachers have to make a difference….The knowledge that I gained helped me to develop myself as a better person as I really started understanding the importance of 'being' and then teaching. It instilled in me the confidence, motivation and perseverance to do anything. (p. 14)

2.1.1 What are the Human Values addressed in SSEHV?

Professor V. K. Gokak from India, who was educated in Oxford, was the first Vice Chancellor of the Sri Sathya Sai Institute of Higher Learning in Puttaparthi, India. Gokak (2007) formalised, explained and expanded on the five human values that were conceptualised by Sathya Saibaba. According to the review of the report in the Global Overview of Sathya Sai education, there are five key human values that make life worth living and excellent. The five values (Gokak, 2007) are defined as follows:

1. Love: Love is defined as a quality that is "kindness, caring, empathy and compassion";

2. Truth: The highest truth is defined as that which is “changeless in the past, present and future”. The search for truth is pursued through “discrimination, intuition and introspection”;
3. Peace: Peace is defined as that which requires the “capacity for introspection and self-awareness”. This requires practice and inculcates the capacity of equanimity;
4. Non-violence: Non-violence is defined as a state of mind that respects law and order and recognises unity within diversity. It reflects values such as “forbearance, morality and integrity”;
5. Right conduct: Right conduct is defined as the essence of all “codes of ethics, ethical behaviour” and moral conduct. “It is rooted and expressed in both attitudes and habits from early childhood” (Sri Sathya Sai World Foundation, 2007, pp. 8–9).

2.1.2 The Five Teaching Pedagogies

When implemented practically in education the philosophy of Human Values requires pedagogies which are “experiential, transformational and integral”. In the Human Values Program, teaching pedagogies encompass techniques that include activities for the “body, mind and spirit”. These are silent sitting, prayers, storytelling and music. These teaching pedagogies were formalised by the Sathya Sai Organisation after the implementation by Saibaba in informal value lessons he provided between 1969 and 1970 (Sri Sathya Sai World Foundation, 2007, p. 9).

Silent sitting helps develop and increase concentration and helps students calm their mind. Prayers reinforce students with positive ideals. Storytelling holds the imagination of students which provides them intellectual understanding and at the same time motivates students’ to learn. Storytelling also provides positive models for students to emulate and instils faith in students. If music and songs have positive lyrics in them, then using songs in classrooms provide elements of joy in their learning. Teachers’ teaching strategies and their role as an example are important (Sri Sathya Sai World Foundation, 2007).

2.1.3 Educare

Sathya Sai (2001a) contends that the term education has its origin in the Latin word "educare", which means, "to bring out that which is within". "Educare is related to human values". Sathya Sai added:

> Human values are hidden in every human being. One cannot acquire them from outside; they have to be elicited from within. But as man has forgotten his innate human values, he is unable to manifest them. Educare means to bring out human values. To bring out means to translate them into action. (2001, p. 151)

Srinivasan (2001) stated that real human values couldn't be taught but have to be elicited. This is a holistic concept and human values have to be understood as an inherent, intrinsic, complete interconnection between all aspects of creation. This includes the interconnection between elements in nature, the senses and human values.

2.1.4 Key Philosophies of Education in Human Values

The educational philosophy of EHV is practised through understanding the following ideals:

- That the unity of head, heart and hands in every action is the path to peace;
- That living the five human values – love, truth, peace, non-violence and right conduct will elevate children and society;
- That the combination of worldly and the spiritual knowledge will help students obtain their goals in life;
- That honouring their parents and serving their fellow man are students' first and foremost duty (SAI, 2000).

2.2 Establishment of Human Values-based Water, Sanitation and Hygiene Education (HVWSHE)

At a Ministerial meeting during the Second World Water Forum held in The Hague in 2000, it was declared that human values and human rights would become the basis for achieving the targets for water and sanitation (UNHABITAT, 2006). According to the report from the Ministerial Forum, water management will have to include values such as the dependence humans and living beings have on water termed the "life giving value" as well as social, economic, ecological, cultural and spiritual values. The task force which worked on the United Nations Millennium Project "identified Human Values and Human Rights as the basis for meeting the internationally agreed targets on water and sanitation" (UNHABITAT, 2006, p. 15). According to the report:

> Expanding access to water and sanitation is a moral and ethical imperative in the cultural and religious traditions of societies around the world and enshrined in international human rights instruments. Success in bringing water and sanitation to poor communities in the most difficult circumstances is due as much as to the qualities and personal motivations of the people concerned as it is to the technical ingenuity and the financial resources available, important as they may be. Many services run on a shoestring of hope by volunteers, religious groups, or dedicated, poorly paid officers succeed because they mobilise the enthusiasm and engagement of their communities, while other projects backed by extravagant budgets and massive expertise turn to dust in a bureaucratic desert that stifles individual and community spirit….The Millennium Development Goals themselves are built around a shared understanding of what we as human beings owe to one another and are informed of the principles of fairness, justice and the obligation of the individual to pursue the mutual good that characterises religious and ethical systems the world over. (UNHABITAT, 2006, p. 15)

Establishment of HVWSHE in African and Southeast Asian countries

Human Values-based Water, Sanitation and Hygiene Education (HVWSHE) is one of the significant initiatives taken up by United Nations Human Settlements Programme (UNHABITAT). UNHABITAT selected the African Institute of Sathya Sai Education as a resource Institution to help support the functions of teaching and learning necessary for the implementation of HVWSHE (UNHABITAT, 2005). The Institute of Sathya Sai Education in Africa has trained teachers in HVWSHE since 2002. HVWSHE is now implemented in twelve African countries (Sarkar, 2006). The African Institute of Sathya Sai Education, based in Ndola, Zambia specialising in Education in Human Values, implemented Phase 1 of Values-based Water Education (HVWSHE) with the support of the Swedish International Development Agency and UNHABITAT.

The South East Asian Ministry of Education Organizations (SEAMEO) supported Values-based Water Education and declared HVWSHE an innovative approach in education (UNHABITAT & ADB, 2003). In March 2004, ten ASEAN Ministers adopted the Declaration and Action Plan[1] on HVWSHE. The Society for Preservation of Water, established in Thailand in 2006 in partnership with SEAMEO and UNHABITAT has implemented HVWSHE and trains teachers for the Southeast Asian countries. The Mekong Region countries along with India, China, Nepal and Kazakhstan were also involved in the project (Sarkar, 2006). According to Benoza (2006), HVWSHE can tackle issues that are relevant to the problems prevalent in the region. UNHABITAT published two books in 2006: "*A Facilitators & Trainers Guidebook*" for HVWSHE (UNHABITAT, 2006) and the "*SEAMEO Resource Package"* for HVWSHE, which are used as resources for training and as a resource for both teachers and teacher trainers (UNHABITAT & SEAMEO, 2007).

[1] Declaration and Action Plan on HVWSHE:
http://hq.unhabitat.org/content.asp?cid=2970&catid=5&typeid=6&subMenuId=0
http://www.adb.org/Water/Operations/2007/Third-SEAWF/5B-Values-Based-WS&Hygiene-Education-Avi-Sarkar.pdf.
Education Ministers from ten countries endorsed support for the Millennium Development Goals and the related target mandated to UNHABITAT to bring access to water for at least half the population which has no access to sanitation and safe water. The Ministers attending the 39th Asian Ministers of Education Organization (SEAMEO) council conference, declared their support to promote regional cooperation on values-based water education. Countries included are Brunei, Cambodia, Indonesia, Laos, Singapore, Thailand, Vietnam, Malaysia, Myanmar and the Philippines.

Water education raises the students' level of consciousness with regard to their emotional attachment to water. According to Kanu (2005), the human values approach encompasses the obligations citizens have towards one another and to future generations with regard to the use of water.

Kanu (2005) the Director of Institute of Sathya Sai Education in Africa, stated:

> From the point of view of the Human Values approach, 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 people's perceptions of water, the level of their consciousness towards water usage, awareness of their civic responsibilities towards water, cultural beliefs and practices in relation to water. In short, it is about Human Values – about the country's sense of duty, the obligations members have to each other, to the use of water itself and to future generations. (pp. 344–347)

2.3 Definition of Human Values

Jumsai (2003, p. 58) defined the Five Human Values in academic settings as follows:

1. Love: The value of love inspires the person to have compassion for all;
2. Truth: People who are truthful have wisdom and understand that they search for higher truth;
3. Peace: People who have peace are calm and are able to keep their emotions under control. Their emotional quotient is high;
4. Non-Violence: When all the three values of love, truth and peace are present then the value of non-violence is inherent in the individual's nature. They are able to love and respect people, animals, and to extend this love and respect to everyone in the world;
5. Right Conduct: The above four values provide an awareness in the learner of the need to translate their thoughts into right action. People who follow right

conduct are selfless and think of others and society before they think of themselves. They are ready to help.

2.4 Development of the Integrated Learning Concept

The Human Values Integrated Learning Concept

Dr. Art Ong Jumsai developed the Human Values integrated learning concept in 1987 (Jumsai, 2003). The Human Values integrated learning concept takes into account the learner's mind, the reception of stimuli from the environment, interpretation and information from the environment and the role of Human Values in the learning process.

The integrated learning concept developed by Jumsai (2003) is an important aspect of HVIIM and has been implemented for the Education in Human Values program and for water education in Thailand.

Reception of stimuli from the environment

Jumsai explains the functions of the conscious mind and its interaction with the subconscious mind. This is presented in Figure 2.1 below. This understanding is important for implementation of the Education in Human values program.

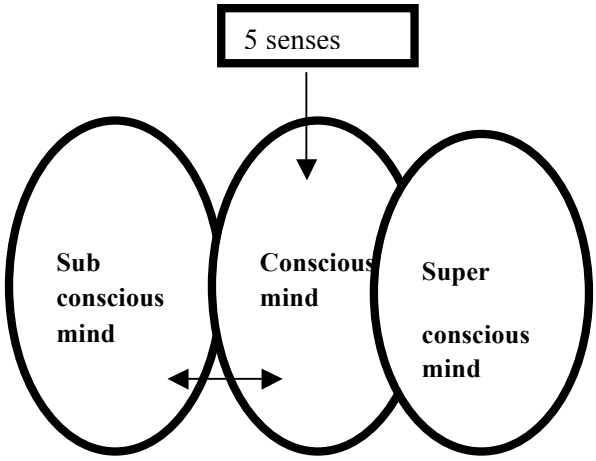


Figure 2.1: Modified from The mind concept of learning in detail (Jumsai, 2003, p. 48)

The learner and the five senses

According to Jumsai, our interaction with the world is through the five senses such as seeing, hearing, smelling, tasting and touching. If the learner is without these five senses then learning cannot be transferred to the learner and so it is important that teachers analyse how learning takes place using the five senses. Although the brain may receive the stimuli it is not automatic for awareness to take place in the conscious mind. Jumsai elaborated that even if the learner listens to the teacher talking his or her mind does not necessarily attend to the information received and the learner's mind could wander away. In order that awareness takes place, the conscious mind must be able to focus on the stimuli received from the environment. After all, the sound that the learner receives is a vibration of air, this air vibrates the ear drums and this is converted to nerve currents and sent to the brain. The information that the learner receives is encoded in some way but the same sound is interpreted in many ways by different learners. The important point to note is how the learner interprets this learning to become meaningful when he or she listens to the teacher.

The conscious mind is part of the mind but there is the unconscious mind which we are not aware of. How to use the unconscious mind to make learning effective is an

important aspect for instructional practice. According to Jumsai, the unconscious mind consists of the subconscious mind and the superconscious mind. It is in the subconscious mind where the memory is stored and where the information of our past experiences is stored and behaves like a computer.

Jumsai explained that the subconscious mind stores information of the past, automatic functions of the body and also feelings and emotions. According to Jumsai, the function of the subconscious mind

> … is the sum total of our past experiences…when we are working at the subconscious level, our actions are based on programs that have been installed there…the animal feelings of survival and procreation are dominant in our actions. (Jumsai, 2003, p. 47)

Jumsai considered that when learners receive information, the information is encoded in a certain way and the learner has to decode the information that he or she has received. When stimuli are received from the five senses, in order that the individual interprets the stimuli, he or she retrieves the data from the subconscious mind. The conscious mind is aware and understands the received stimuli. This awareness is stored in the subconscious mind and in the memory. He confirmed the impact of the subconscious mind by highlighting the experiments conducted by Professor Anthony. J. Casper in 1984 at the Institute of Child Health and Development at the North Carolina University. According to Jumsai, Casper's experiments in 1984 revealed that emotions of a pregnant mother and the different music she had listened to were recorded in the subconscious mind of the unborn child. This will impact the child after its birth (Jumsai, 2003). According to Jumsai, Dr Helen Wambach used hypnosis and drew out the subconscious information that was recorded in the past without leaving any minute details (Wambach, 1978). According to Wambach, the human memory does not lose information unlike what current information processing theory states and the collections of experiments she conducted are recorded in the book *Reliving past lives* published in 1978 (Wambach, 1978). Similarly the subconscious minds can be reprogrammed by seeing, learning or reinforcing new information and can be reprogrammed. The review of literature

from psychology provides an insight into understanding how the information is processed in our mind

Information processing theory

According to Jumsai, although information theory has addressed issues relating to the learning process, it is not enough to explain how the mind functions. According to Jumsai, it addresses only a part of the learning process**.** The information process theory has shown that there is a long term and a short-term memory. Studies from psychology inform us that long-term memory is activated only if there is a connection with real life experience in the individual.

Quoting the work of A. I. Abrams (1972), Jumsai stated that meditation or the art of concentration enhances memory (Jumsai, 2003). There are more studies which now show that information processing in the mind is connected to both cognitive processing and emotional cues. However, Davou (1993) highlighted the work of Carl Rogers in 1980 and argued that learning involves the whole personality which includes cognitive, emotional aspects. According to Davou, the information that enters our mind travels through different cognitive subsystems and every subsystem would either take the information or the information is lost. This is debatable because Wambach (1978) stated that all information is stored in minute detail and is not lost. According to the information processing systems, some of the information which passes through all the subsystems reaches the long term memory and is stored permanently. Davou stated that cognitive processes can be blocked by emotional processes. Davou stressed that there is evidence from cognitive psychology that when an individual does not find meaning in the information they receive they try to generate meaning if they have to retain it. Students according to him should be taught strategies to organise and process information in a more adaptive way so that their short term memories are free from worries and help students work. Similarly, Campbell (2006) drew from the contemporary works from brain research and explained how it contributes to our understanding of the habits of the mind. Campbell stated that emotion and thought are connected and the learning environment must be safe and give motivation. Learners seek awareness regarding their own emotions and they make efforts to understand the emotions of different

people. This understanding can be enhanced through reading of both verbal and non-verbal cues as well as reflective thinking (Campbell, 2006). The emotional disturbances have an impact on student learning and their decoding information.

Jumsai stated that light or sound received by the eyes and ears are just energy and to understand what an individual sees or hears depends on how the individual decodes the information. From his personal experience, Jumsai narrated an episode on how the mind processes information. Jumsai went to France at the age of nine. His French companions could not communicate with him because Jumsai did not know how to speak French. It was then that they started to swear at him, as they were angry when they did not receive a response from him and so Jumsai just smiled. A month later when Jumsai began to understand the meaning of the swear words he was angry. Using this example, Jumsai illustrated that stimuli the mind receives may not be easily understood by the conscious mind unless the conscious mind receives similar data to decode the information from the subconscious mind. Jumsai uses this concept to explain why some students are violent and use abusive language and how students' personal experiences are stored in their subconscious mind.

Unfortunately the negative experiences that are stored in the subconscious mind create emotional changes in our minds. To avoid this and help train the learner's minds, Jumsai stated that when learners' minds are filled with good values then they become more peaceful. Children should be taught to interpret the stimuli from the environment in a positive way. Jumsai stated that when students serve everyone with love and compassion they soon become peaceful. Training students in the art of both self-control and acts of compassion will help students to be strong emotionally. They are then able to concentrate more than before. The conscience within the learner will start teaching them and guiding them to act the right way and this is the superconscious mind that is activated. Both knowledge and understanding will be gained intuitively. This can happen only if learners are able to raise their conscious minds through prayers and meditation. According to Jumsai intuition is above thinking process and this can happen only if the mind is completely calm and has no thoughts. Intuition is not bound by time or space and hence it provides knowledge of the past and the future. The conscience will also come from the superconscious mind where the conscience now dictates what is right or wrong. According to Jumsai the

superconscious mind is the intuitive mind that facilitates both the understanding and gaining of knowledge without using the conscious mind. This faculty of the superconscious mind has to be tapped in order that learners are able to make use of their maximum potential. The learner then becomes his or her own teacher (Jumsai, 2003).

The Human Values Integrated Learning Concept

When the Human Values Integrated Learning Concept is applied, there will be a connection between the learner and his or her own higher self. Drawing from Kessler (2000) *The Soul of Education: Helping Students find Connection, Compassion and Character at School,* Jumsai emphasised the need for learners to be taken into experiences of *"learning, loving and serving"* (Jumsai, 2003, p. 53).

A very significant aim of Human Values Integrated Instruction is to inspire the learner to transform. Jumsai considers that when a teacher is calm and peaceful, and is an example of Human Values, he or she will transmit a message that has unity of thought, word and deed. According to Jumsai inspiration cannot be achieved through the five senses, but only through the sixth sense, which he says, is the sense that transmits the Meta message. When the teacher speaks, only a small part of the teachers' message is transmitted through speech as the transmission of the main message is non-verbal because the teachers' looks, facial expression, actions and thoughts contribute significantly to the meta-message that he or she conveys to the learner. Thus when the teacher speaks with unity of the head (thought), heart (conscience) and hands (action and speech) then the teacher transmits 100% of the message because she or he not only communicates with the five senses of the learner but also through the sixth sense which will touch the heart of the learner. It is at this time that the learner becomes calm, the conscious mind is raised towards the superconscious mind and this has an effect on the sixth sense which inspires the learner. This is what Jumsai calls the Human Values Integrated Learning Concept.

Figure 2.2 shows the learner and the learning process.

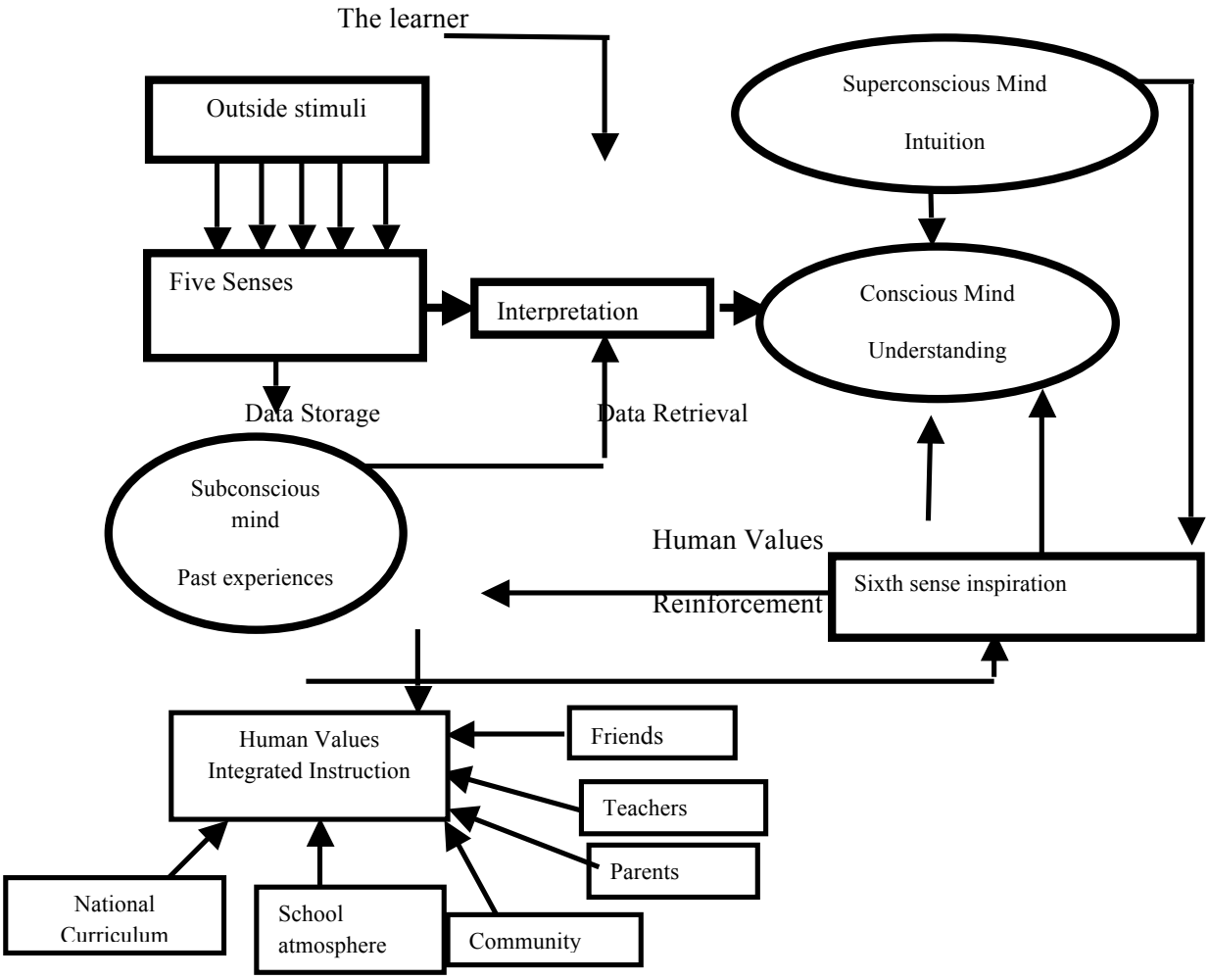


Figure 2.2 Relationship between the Learning Process and the Human Values Integrated Instruction, modified after Jumsai (2003, p. 57)

Figure 2.2 is used here with permission from Jumsai who developed the model. The figure is also available from the *Facilitators and Trainers Guidebook* for HVWSHE (UNHABITAT, 2006, p 17). The model becomes an important aspect of the National Curriculum; Human Values Integrated Instruction benefits the school atmosphere, community, parents, teachers and students as shown in Figure 2.2.

When the Human Values Integrated learning concept is applied through subjects and school activities where teachers, parents as well as the community are involved, the learners are able to store not only knowledge through subject matters but also their direct experiences with the values such as love, truth, peace, non-violence and right

conduct. Jumsai (2003) stated that Human Values must be integrated in all subjects and they should be taught in an inter-disciplinary and intra-disciplinary way. When learners fill their minds with human values, their subconscious minds become less emotional and they are able to discriminate between what is correct and not correct.

Jumsai (2003) emphasised the sixth sense, which is a concept not generally recognised in Western cultures. This may not be applicable in normal classroom teaching and learning where the intuitive concept is not accepted as an important aspect of the learning process. This study does not focus on the intuitive aspect, but on the use of integrated approaches as significant factors for helping the learning process.

The integrated approach aims at students' affective, cognitive, and psychosocial domains. Psychosocial development includes both emotional and social development. In this study HVIIM can be understood to include the affective domain of students (social and psycho-social), the cognitive domain (knowledge and information) and human values (five values).

2.5 Components of the Human Values Integrated Instructional Model (HVIIM)

Jumsai (2003) developed the Human Values Integrated Instructional Model as provided in Figure 2.3 below, which adopted the integrated learning concept as a major component. The model incorporates the five human values, the integrated learning concept, teaching principles and teaching pedagogies. HVIIM has been used for Education in Human Values in the Sathya Sai School in Thailand since 2003 and was implemented for HVWSHE between 2006 and 2007.

The HVIIM provided in Figure 2.3 targets the affective domain and helps students understand the interconnectedness of the self and the environment. When students are taught academic facts along with their relationship with the environment this will be reflected in their words, conduct and behaviour (Jumsai, 2003).

The principles and the teaching pedagogies of the Human Values Integrated Instructional Model are used in the classroom for HVWSHE and a detailed description is provided below. The Human Values Integrated Learning Concept is applied as the underlying concept for all activities.

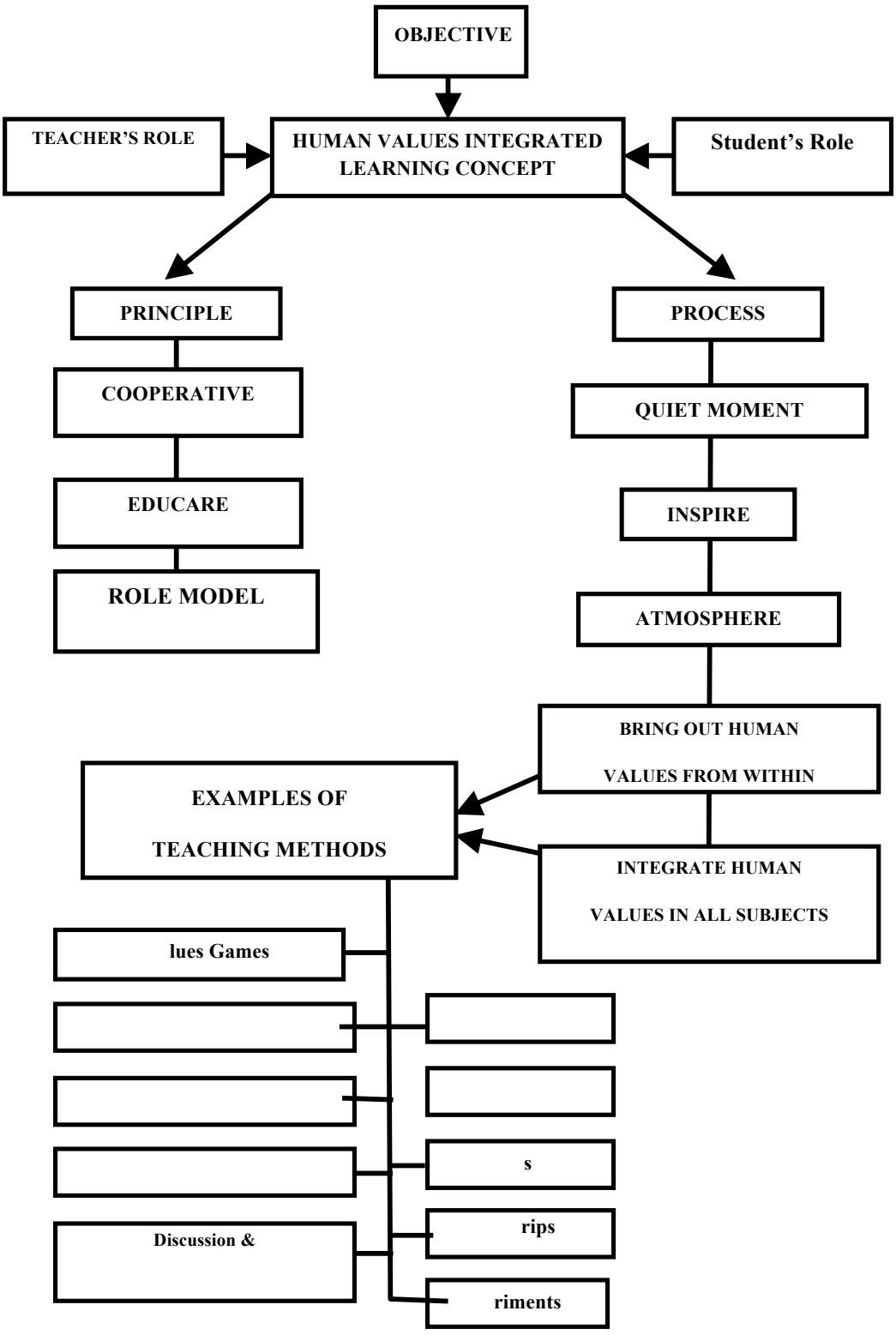


Figure 2.3 Human Values Integrated Instructional Model (HVIIM) modified after Jumsai (2003, p. 266)

The Human Values Integrated Instructional Model was implemented in water education after it had been implemented in the Education in Human Values program.

The following sections on the principles and pedagogies are summarised from Jumsai (2003) and the SEAMEO Resource package developed for HVWSHE.

2.5.1 Principles used for HVWSHE

Cooperative Learning/Collaborative Approaches

Cooperative learning is one of the major principles in the model. Lessons using theme teaching and collaborative approaches are conducted and these are termed integrated lessons (Jumsai, 2003). During classroom discussions and assessments, affective objectives are given equal importance with cognitive outcomes (Jumsai, 2003). When teachers use the teaching pedagogies, they have to observe the students' reactions and responses to evaluate changes in their behaviours and attitudes (Jumsai, 2003).

Educare (Integration and elicitation of human values)

Educare was conceptualised by Saibaba (2001b) as that which "involves the deep understanding of the knowledge that springs from within and imparting it to students" (306). According to Saibaba the teaching strategies used in Educare have to lead the students to understand knowledge and values latent within them. Educare involves drawing out, eliciting, latent values, which are part of the affective domain, from students. Education is related to the head while Educare is related to education of the heart (Jumsai, 2003, p. 192).

Jumsai (2003) claimed that many academic subjects have inherent values that exist in them as a natural quality. Students do not have to be told about the values inherent in water but these values can be discussed and, like the students own latent values, can be elicited through participative discussions and shared experiences during projects.

According to Jumsai there are two ways that human values can be brought out from within the learner. These are through integration of human values into lessons, elicitation of human values from students and from values inherent in the subjects.

Integration of Human Values

Teachers can integrate human values in their lessons and draw out the values that are inherent in a subject. When students are taught, for example, the chemical formula of water and how water is formed they are also given information about the inherent values that water has. Students can think about the answers and teachers are then able to facilitate a discussion. Topics like pollution can be enhanced by citing examples of values that students are able to understand such as the benefits of water, how it serves as a medium to travel, sustains life such fish and is a source of livelihood. Human values such as respect, and care for water can be integrated during these teaching sessions. Most integrated lessons take multidisciplinary approaches (Jumsai, 2003).

Elicitation of Human Values

Teachers can lead students through questioning to explore and reflect on their values. According to Jumsai (2003) the content of lessons through education in human values is very important to guide students' awareness. For example, teaching mathematics may involve words that may not reflect good values. As an example Jumsai quoted from the experience of a mathematics teacher. In the lesson, the teacher used a standard book, which had a problem that stated: "A farmer had ten cows. Seven cows were stolen. How many cows does the farmer have now?" (Jumsai, 2003, p. 231). According to Jumsai, students may not understand that stealing is wrong as it appears in this example as a normal occurrence in life. Such learning moments can instead be used to teach human values. Otherwise the stealing would remain in the subconscious minds of the students and it would be used as a norm for future interpretations.

The main benefit of HVWSHE in environmental education in general is the development of pro-environmental behaviour in students: "How to encourage children and develop in children a sense of relationship with the environment, which may translate into pro-environmental behaviour" (Littledyke, 2008, p. 254). Such changes can only take place if teachers are able to "educate pupils into the methods and ideas of science so that they can use science to interpret and understand the world" and at the same time

> critically analyse ideas and the application of ideas of scientific validity; to critically evaluate the social and environmental implications of scientific ideas…and affective features of learning…to foster a sense of interest, enjoyment and excitement in learning in science; to include a sense of beauty, respect, reverence and awe in approaches to the environment and understanding our place in the universe. (Littledyke, 2008, p. 259)

Littledyke (2008) highlighted that both reason and emotion are interconnected through the neural pathways and that both self-restraint and compassion should be the main foundation for students' understanding of environmental issues. According to Littledyke, students will then care for the environment through emotional motivation.

In classroom teaching the contents can be arranged following the ideas suggested by Quisumbing (2001). According to Quisumbing (2001, n.d.), there are three levels of teaching for the affective domain: the facts level, the concepts level and the valuing level. At the *facts level*, the teacher presents information. This level does not require students to connect with their higher levels of thinking. The next level is the *concepts level* where teachers teach the ideas and principles and guide students

> …to assimilate facts and classify them and relate these to theories, principles, and laws. If the knowledge acquired is understood and applied, skills are developed. While the concepts level involves the use of cognitive abilities, it does not guarantee the ability to solve problems and make choices. (Clarke & Agne, 2007, p. 31)

The third level is the valuing level:

> This entails the student's thinking, feeling and acting processes as she/he finds the connection of what she/he has learned from the facts and concepts level to her/his personal life and experiences. It helps the students crystallize concepts learned and relate them to her/his personal life and experience. There is a personal meaning experienced from the subject area. (Quisumbing, 2007, p. 31)

According to the SEAMEO resource package, the values-based lesson must include both the

> …concept to be developed in the lesson and what the students need to infer from the discussion…the values to be communicated should be anchored to the points for discussion and the views elicited from the students for the values integration to be purposeful. (UNHABITAT & SEAMEO, 2007, p. 30).

As teachers teach subjects through EHV they bring out latent values from the content of the subject and from the students themselves (Jumsai, 2003; Seetharam & Seetharam, 2005). Students are guided and facilitated to discover their relationship with the environment around them and with the issues pertaining to their school subjects (Jumsai, 2003). Students are not taught but questioned through introspection, discussion and reflection on the issues around them and how they can value the environment (Jumsai, 2003).

Role Modelling

Role modelling is an important principle in HVWSHE. Teachers serve as role models by providing the required knowledge, attitudes, skills and resources in water education. Teachers have to engage students through constructive approaches by leading the learner through reflective practices (Jumsai, 2003). In addition the teachers must practise awareness of environmental issues by developing the right attitudes. As students practise and gain awareness they themselves become role models for the younger students. According to Jumsai (2003) teachers have to speak from their heart, and believe in what they say. Jumsai (2003) found that 27% of participants in his study reported that the teacher's influence was the most effective factor for creating change in students.

> Teachers should learn to speak from their heart and touch the hearts of the students. To speak from the heart, the teacher must practice what she/he is teaching. Thus, it is necessary to speak from experience rather than repeating what is written in the text books. (Jumsai, 2003, p. 221)

2.5.2 Selected Teaching Processes in HVWSHE: Teaching Pedagogies

The teaching pedagogies used for HVWSHE are silent sitting, prayers, storytelling and music. These enable character development in the students and sustainability of the values they hold.

Silent sitting

While group activities and reinforcing good habits through positive quotations are similar to other teaching methodologies, there are two techniques which are characteristic of HVWSHE. One is silent sitting, which is compulsory for learners and is a major component of HVWSHE. It helps students' understanding and increases their awareness of the environment around them. Jumsai (2003) and Taplin et al. (2005) have reported that the exercise of silent sitting or silent reflection has helped to calm the mind and enabled students to concentrate better. The use of silent sitting and visualisations help students to focus (Jumsai, 2003).

Prayer

Prayer is not one of the components of HVIIM. It is however used as a direct method as recommended in the *Facilitators and Trainer's Guidebook* (UNHABITAT, 2006). Prayer is used in schools with Education in Human Values to help students learn the values of gratitude and respect. It is also a sign of collective unity among members of the school. Prayer helps students to transform their minds. In conducting prayers, the values of gratitude and respect are held in shared moments among learners. According to Jumsai, where prayers are not used in classrooms, "quotations, positive affirmations, poems or some elevating and positive thoughts of the day can be used" (Jumsai, 2003, p. 178). Prayers and silent sitting were identified as the second most effective factor after good teachers for promoting positive changes in both attitudes and behaviours in students (Jumsai, 2003).

Storytelling

Stories stimulate students' thinking through values clarification and discussion will help students develop a capacity to discriminate. Concepts such as sustainability, preservation and environmental change can be explained through stories, discussions, role-plays, exhibitions and the like. Stories with good morals and examples of wisdom from the past can help to make teaching interesting for the students (Jumsai, 2003; UNHABITAT & SEAMEO, 2007).

Storytelling about environmental disasters and human history informs students of past and present contexts and provides them with a connected feeling to time and history. Teachers integrate or elicit human values by relating real life stories on dignity and sanitation from various parts of the world where there is very little access to water. In HVWSHE students are encouraged to understand history, past events and the wisdom that is embedded in cultures, traditions and spiritual practices related to water education from all societies. Older students need reliable information on water use and conservation, while younger students require stories that help develop their imagination and love as well as an admiration for nature through poetry and field walks.

Music

In HVWSHE, students are encouraged to compose their own value songs and make their own musical instruments. Teachers can also provide them with opportunities for singing, poetry writing and group composition relating to the environment.

2.6 Human Values Interdisciplinary Integration

A Human Values integrated lesson is taught in classrooms using interdisciplinary integration through a theme shown in Figure 2.4.

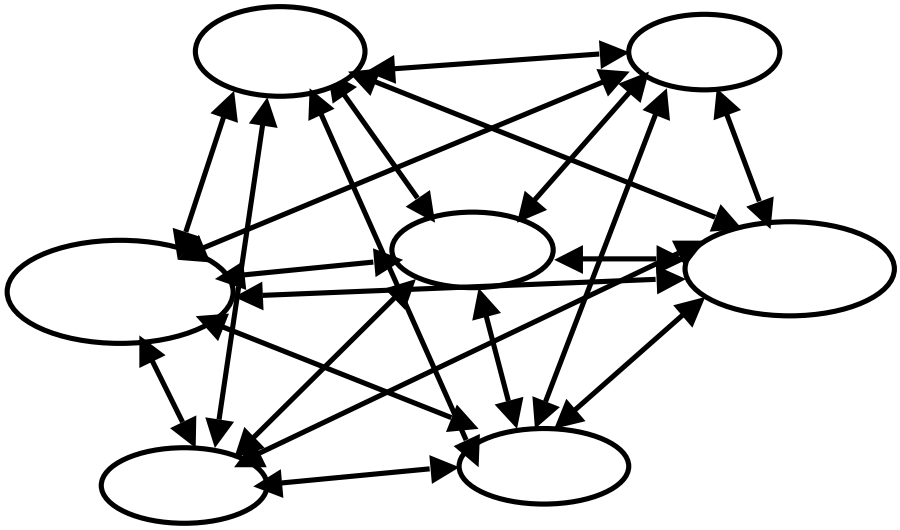


Figure 2.4 Theme Teaching (Jumsai, 2003)

Water issues are taught through cross-disciplinary curricula where all the teachers from different subjects work together. According to Jumsai (2003) human values are taught using an interdisciplinary method where students play a significant part. Students help in choosing the topic and when they learn about what they are interested in they become active learners. The first step is asking students to decide on a theme. Students then decide the topic after some discussion. Teachers facilitate the whole project or theme through discussion and meet people who may help with the project or theme. During the student-centred approach students may come up with new ideas and suggest a revised plan. It is important for teachers to be flexible in such matters (Jumsai, 2003).

Integrated lessons for HVWSHE that include inter-disciplinary teaching approaches are conducted weekly in Thailand. Teaching approaches are student-centred and students are consulted for their ideas. Teaching is facilitated according to the students' interests. Human values based cognitive-affective teaching uses an integrated approach targeting students' cognitive-affective dimension using the five human values either through elicitation, integration or a values clarification process. Issues, events and problems relating to the environment are all contexts where human values can be elicited or integrated.

2.7 Testing the Human Values Integrated Instructional Model in Thailand

Jumsai (2003) tested HVIIM in Anubal Lamnarai, Thailand on grade 5 students from July to September 2003 for one hour per week. Students, parents and class teachers conducted evaluations of the application of the principles and processes of the model through self-evaluation. The methods of instruction investigated included music with human values, silent reflections, discussion of human values and academic topics in the form of themes. Cooperative or collaborative learning was encouraged. Only the class teachers of both the treated and control group were aware that the action research involved testing HVIIM. Students and parents were not aware of the objective of the project (Jumsai, 2003).

The treated group consisted of 29 students, 10 parents and 27 teachers while the control group consisted of 32 students, 18 parents and 27 teachers. Evaluation of student behaviours by teachers showed that students in the treated class improved by 33.8% and the control group by only 3.2%. Sixty two per cent of the parents from the treated group reported that the students scored higher marks. Only 25% of parents from the control group replied to the questionnaires and analysis of their replies showed that these parents believed that the students had poor results. The students' evaluation of the program did not correlate with the results of either the parents or the teachers. Jumsai explained that this was because the questions were too difficult for students to answer (Jumsai, 2003).

The components of HVIIM have not been tested in classrooms other than by Jumsai who developed the model. More evidence based research and critical examination of the use of the components of the HVIIM is required to understand how it impacts student behaviour and attitudes. A better understanding of how HVIIM works may be achieved through longitudinal studies and teacher narrations but it will take time to understand how the HVIIM principles and pedagogies impact on student attitudes and behaviours.

2.8 Evaluation Process for HVWSHE

When projects are organised for HVWSHE, there are many different ways that learners are evaluated. To evaluate learners during projects teachers are required to

observe learners at all times and note their observations. Teachers prepared a checklist for observation, which had to be related to the stated objectives. The observations include behavioural changes, human values observed, questions asked by learners, learners searching for answers and children sharing information (Jumsai, 2003).

2.9 HVWSHE teaching and learning process

Figure 2.5 illustrates the conceptual framework derived for this study from the review of HVIIM and the contexts taken for this study.

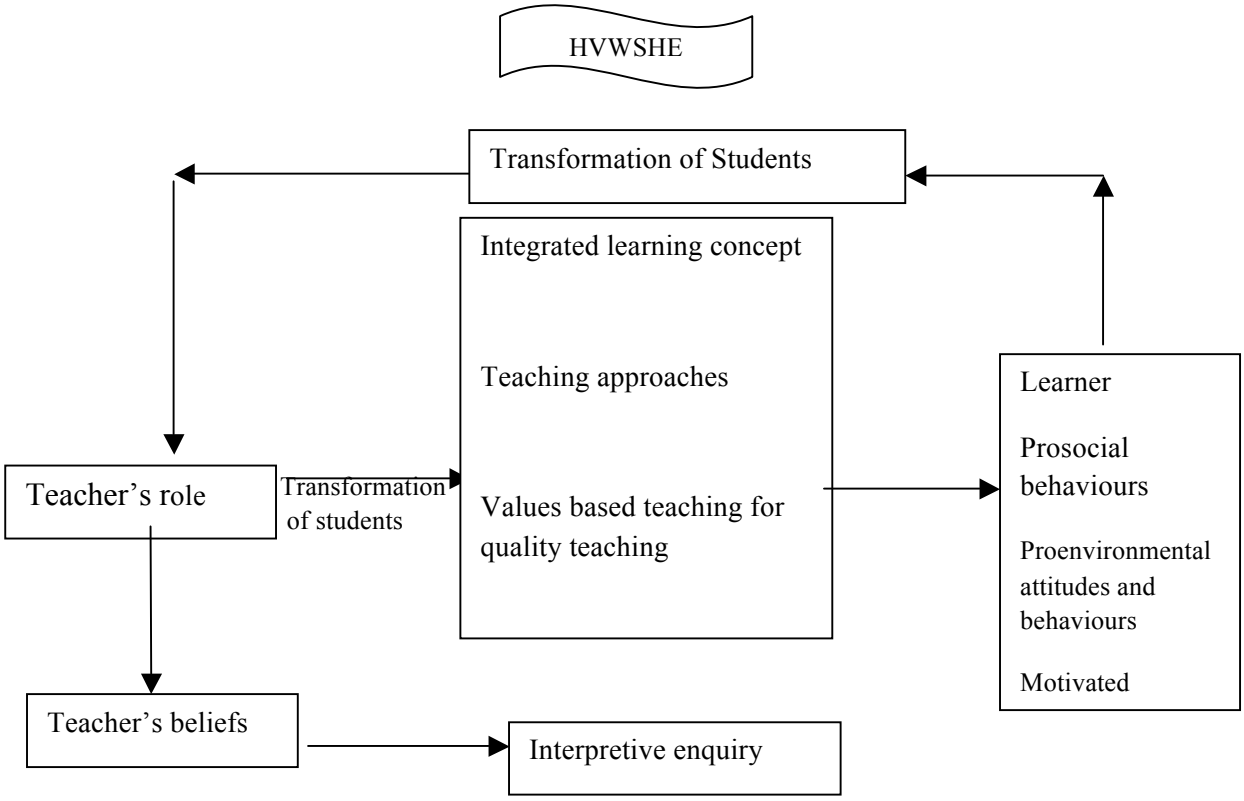


Figure 2.5 Conceptual framework derived from review of HVIIM

There are factors that impact teachers' beliefs and these beliefs will impact their teaching practices. Teachers who intend to use HVIIM have to change their teaching approaches and use the teaching principles and pedagogies as required by HVIIM. The different factors that impact teachers' beliefs are provided below.

Conceptual understanding of the integrated learning concept

Teachers are trained by the Society for Preservation of Water and are introduced to the HVIIM components provided in Thailand. The components of the model are important because they include three aspects. First is the theoretical component which is important as it focuses on the learner's mind and how to develop the student to interconnect with the environment. If teachers believe that they are able to help focus on the learner's mind and motivate them through the different pedagogical approaches then teachers are able to apply HVIIM. This will require teachers to know why they use the pedagogies and for what purpose. If teachers seek to develop

and help transform students to become better citizens the integrated learning concept is a tool to facilitate such a development according to Jumsai (2003).

Teaching approaches

Teachers' teaching approaches are very important in targeting the success of HVIIM. Teachers' use of HVIIM requires that they use both constructivist and socio-constructivist approaches through student centred learning. The reviews of studies in the literature review section have explained problems and some success stories about the implementation of these approaches. They require a complete change of teaching approach from teaching through a fixed teacher-student traditional teaching approach to didactic teaching approaches. This requires teachers to use the principles of the HVIIM effectively and develop students' understanding by providing students with opportunities to work together, solve problem issues and engage in discussions. These formal and informal engagements require that teachers do not explain but inspire and guide students through the different levels of understanding by providing students with tasks to solve and accomplish.

Values-based teaching for quality teaching

HVIIM has been successful in the academic curriculum in helping students to transform and is now used for water education. It is crucial that teachers themselves become role models to emulate the values by sharing and learning from their own peers so that students understand why these values are important and the importance of networking for achieving a common purpose. One of the most important factors noted was the teachers' role in impacting student learning which is discussed in detail in the Literature Review. Unless students are engaged in the pedagogical activities and are motivated to work together HVIIM will not be used successfully in classrooms.

Values-based teaching for environmental sustainability

This requires teachers to develop students' pro-environmental behaviour through transformative methods. Teaching for environmental sustainability requires that teachers understand why the principles and pedagogies are important and how to use

them effectively. Teacher's use of the principles and pedagogies and their beliefs will have to be based on the fact that teaching for environmental sustainability will require them to see unity in diversity where human relationships are concerned and the protection and conservation of the environment as their ultimate goal for HVWSHE. To summarise, teachers lead students to become independent learners and develop pro-environmental behaviour using student centred approaches.

This study aims to explore teachers' beliefs regarding HVWSHE through an interpretive enquiry. Teachers' beliefs can be explored through their narratives and it will help unfold their experiences. The study aims to look at teachers' teaching patterns and whether they regard the teaching pedagogies and principles as important tools to achieve the aims of HVWSHE. The study also explores whether teachers consider the cultural and traditional practices of water as important and how they use it in classroom teaching. The review of literature has also shown that teachers face obstacles such as time, large class size and lack of resources and sometimes teachers have pre-conceived beliefs which they bring to the training classrooms which need to be challenged and revised so that they are inspired to accept and accommodate HVIM for achieving a larger purpose.

Chapter Three – Literature Review

The previous section provided an overview of the implementation of HVWSHE and the HVIIM in Thailand and other countries. This section presents an overall view of the problems faced by environmental professionals while targeting issues with environmental education and the problems faced by educationists to deal with sustainability issues. This section then emphasises why teachers' belief systems have to be explored regarding the implementation of HVWSHE.

The next section elaborates on the strategies taken to improve capacity building through values-based education in order that there is sustainability and protection of the environment (UNESCO, 2005). The review of environmental education for sustainable development is important in this study because according to reports by UNHABITAT & SEAMEO (2007), the growing urbanisation in Southeast Asia has meant a greater danger to health for the urban poor and the improvements cannot be made by technical solutions alone.

In order to facilitate the understanding of why the affective dimension is important, this review includes reports from International organisations and the prevailing practices related to creating awareness in students. The literature emphasises the crucial need to look at teachers' beliefs regarding innovative reforms for HVWSHE by discussing some of the studies relevant to practices in HVWSHE.

The final section of the literature review elaborates teachers' beliefs with HVWSHE and critically discusses the transferability of programs in regions where contextual and cultural factors impact teachers' implementation of HVWSHE. When programs such as values-based water education are implemented widely in regions which have different cultural backgrounds enriched with multi-religious thinking, the success of these programs finally depends on teachers who implement them in classrooms, and their beliefs are important. This study highlights the importance of the role of teachers in classrooms and their significant contribution to water education.

The researcher found it important to draw out literature from environmental education for sustainable development because of the resonance the issues with HVWSHE had with environmental education and the reasons why the HVIIM was incorporated into water education.

Five important factors impact the teaching and learning processes for environmental education, which have similarities with HVWSHE. They are:

- Values clarification is seen as a process required for developing an environmental ethic and analysing issues in the environment (Tilbury, 1995);
- Issues with the environment in the form of facts, data and concepts that involve memory (Quisumbing, 2001; UNHABITAT & SEAMEO, 2007);
- Teaching pedagogies which stimulate teaching through storytelling, music, art etc. for stimulating students towards developing pro-environmental behaviours and attitudes (Jumsai, 2003; Marsden, 1997; Palmer, 2008; Parsons, 2000; Taplin et al., 2005; Turner & Freedman, 2004; UNESCO, 2010);
- Student-centred learning for water education (Eames et al., 2006; Jumsai, 2003; Kaliannan, & Chandran, 2010; Ng, Teoh & Tan, 2007);
- Socio-constructivist approaches (Eames et al., 2006; Ng, Teoh & Tan, 2007);
- Teachers have to provide self-reflective tools for values education (Quisumbing, 2001; UNESCO-APNIEVE, 1998; UNESCO & Earth Charter International, 2007).

Water education not only connects all aspects of the environment but also includes the relationships between man and the natural surroundings through human values education and the responsibility we have towards the environment.

The overview of the evolution of environmental education is discussed in detail in the section below.

3.1 An overview of the evolution of environmental education

This section presents a brief overview of the evolution of environmental education and the problems related to environmental education at present. Studies have undermined the role of teachers' beliefs in developing awareness in students for environmental education because teachers' play a major role.

A review of the evolution of environmental education and its establishment in schools is considered important because initially it was thought that science education played a major role in impacting environmental issues. It was assumed by educational systems during the early 1980s that environmental degradation was linked to scientific problems and teaching through science subjects would help resolve students' understanding of environmental issues (Gough, 1997).

One of the first definitions of environmental education was formulated by Stapp et al. (1969) who defined environmental education as education that "aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work towards their solution" (Stapp et al., 1969, p. 34). Schleicher (1989) stated that Western European countries faced environmental degradation in the early 1970's and both conservation of nature and pollution control were the main issues during the period during 1976–1977. According to Marsden (1997) and Palmer (1998) environmental and nature study evolved in schools in the 1890s.

Marsden (1997) reflected that environmental education emerged during the same period in England, Australia and the United States, although there were differences in interpretation and emphasis on how it was taught. They stated that in the early 1890s elementary science lessons also integrated moral and spiritual lessons. Lovelock (1979) and Naess (1973) emphasised that both scientific and spiritual perspectives are important to the understanding of relationships which are more ecologically interconnected. These different trends were in fact a response to the rising need for an environmental ethic to protect and conserve the environment during the industrial revolution. The Asian regions were going through scientific development at a slower pace. There were limited reports of the status of teaching regarding environmental education (Bhandari and Abe, 2000) and the review of literature covers more on environmental education that was initiated in the West.

In response to the different issues about rising environmental degradation, the *'First Intergovernmental Conference on Environmental Education'* was held in Tbilisi, USSR in October, 1977 where sixty UNESCO member states along with representatives of the NGOs met up to establish a formal and non-formal education for environmental education (UNESCO, 1978). The history and development of the

use of the term environmental education emerged from the discussion at the International Union for Conservation of Nature conference (IUCN) in Paris in the 1940 (Palmer, 1998). The IUCN conference then led to the founding of IUCN in 1949, and in 1965 the term environmental education was used in the UK and then in several other conferences (UNESCO biosphere conference, Paris; Founding of Environmental Education in Europe (CEEE) (UK) and the United Nations conference on the Human Environment in Sweden in 1972) (Palmer, 1998).

Although the need to have environmental education as a separate discipline in schools was a pressing issue in the 1900's, environmental education was actually established because environmental degradation increased (Gough, 1997). Gough stated that educational policies of recent years established by Education Ministries have taken environmental education as a priority but not for Ministries who have taken science as the priority (Gough, 1997). The summary of the Tblisi report recommendations informed that environmental education should be a lifelong process; it should be interdisciplinary and as a whole of education approach should be taken where the inter-relationship between human and natural systems should be emphasised (Palmer, 1998).

The report by the official government's inspection of schools in the U.K. stated that the investigation of 682 primary schools and secondary schools revealed that 17% referred to environmental education, 2% of schools had a policy for environmental education and 1% had undertaken an audit (Palmer, 1998).

Very little research has been focused on the importance of teachers' roles and their understanding of issues related to the environment when they taught science. Even if school policies had implemented the need to teach environmental education, teachers lacked the essential understanding to cover environmental issues with science education.

An example is the study by Littledyke (1997) of managers and teachers in Gloucestershire, UK which revealed that while science was an important aspect of the National Curriculum and had a prominent role, environmental education had less priority. The survey showed that while 96.2% of schools had developed policies for science, only 27% had policies for environmental education. This study conducted in

the U.K surveyed 120 science teachers from randomly selected schools and identified four types of science teacher attitudes towards environmental education. The first group were confident science teachers who held a conventional view of science and considered science to help solve environmental problems but did not consider deeper questions about the relationships within the ecological systems and the ethics based competencies. Littledyke (1997) found that teachers who were less learner centred showed less interest in science and had negative attitudes to science. They gave less emphasis to the process of science. These teachers did not have a critical view of science teaching and held no views about the impact of science on environmental problems.

The survey results also emphasised that teaching in science had progressed while environmental education was still in its early developmental stages. The lack of resources, time and an emphasis on specific core subjects in the National curriculum, had priority which pushed environmental education backwards, although the idea of a cross-curricular emphasis was acknowledged (Littledyke, 1997). Littledyke (1997) concluded that environmental science requires knowledge of science to draw out both the causes of environmental problems and the inter-relationships within ecological systems.

Littledyke argued from his review of science education, that the importance of teaching science had been more towards content along with an assessment based approach with very poor focus on the process and inquiry-based approaches. The other problem that Littledyke pointed out was that the prominent rise of the science curriculum had separated important aspects from nature, resulting in negative perceptions which can lead to destruction of the environment (Littledyke, 1997). This study highlighted the fact that even if students learnt through scientific approaches, they may not be able to help in solving environmental issues because they learnt science in isolation. They did not experience an understanding of inquiry-based approaches nor how teachers' perceptions are important because their confidence, knowledge and motivation affect the overall impact of the program.

The implications of the above study for HVWSHE are similar to that of environmental education. The teaching for water education had to go beyond the science discipline because water issues pervade social, cultural and political

phenomena. The lack of ongoing training and support of teachers for HVWSHE was reported after the workshops (Clark, 2005). The study by Littledyke indicated that teachers had poor conceptual understanding and mixed feelings about teaching science. Incorporating values-based education and student centred approaches are additional tasks that teachers have to incorporate in the overcrowded classrooms in Southeast Asia. The study of teachers' beliefs through understanding teachers' experiences in classrooms regarding the implementation of HVWSHE, could highlight the problems and the positive impact of HVWSHE.

In the analysis of reports conducted from thirty-six countries in the Asia Pacific region Bhandari and Abe (2000) found that environmental education has been implemented through innovative approaches in schools as late as the 1990s. Although teachers were interested in environmental education and were aware of the problems occurring in the environment, various factors such as a rigid curriculum, conventional teaching, lack of proper infrastructure, unclear concepts and lack of information, impacted the teaching of environmental education in the Asia Pacific region. According to Bhandari and Abe, poverty, population size, and lack of access to information were the other problems facing environmental programs in these countries. Other problems were the assessment procedures that catered for mainstream disciplines and did not accommodate interdisciplinary curricula and values education (Bhandari & Abe, 2000). These trends resulted in hardly any information of a formal environmental education program in regions of Asia and so the review focused more on the trends in the West.

During the search for developing better programs that looked at students' attitudes and behaviours, Schleicher (1989) stated that studies of environmental education considered only students' perceptions and experiences rather than targeting necessary behaviours. Hungerford and Volk (1990) addressed the need for environmental education to aim at the development of student' behaviours for citizenship education because problems with the environment grew and the school curriculum then did not emphasise affective development but was more focused on rationalistic thinking only. They drew the criteria for good citizenship from the objectives of the Tblisi conference in 1977 at the educational conference titled

"Environmental education: A component of Sustainable development" that took place in Jomtien in 1990, involving 1500 delegates from 100 nations.

Some of the key points retrieved from the review of research by Hungerford and Volk included the following important requirements that were basic to the holistic needs of learners: 1) an awareness and sensitivity to the total environment and its related problems and issues; 2) basic understanding of the environment and its issues; 3) feelings of concern for the environment and motivation for participating in environmental movement and protection; 4) skills for identifying and solving environmental problems; and 5) active involvement at all levels in solving environmental issues. These variables were termed empowerment variables and the first variable which is environmental sensitivity was normally not associated with formal education (Hungerford and Volk, 1990). It can be concluded that research on teachers' beliefs regarding affective learning for environmental education during this period was limited, as the affective dimension of students was not stressed nor was the importance of the teacher's role considered significant for environmental education.

The research reviews generally reflected that teachers who were motivated to teach environmental education reported their sensitivity when they directly came into contact with environmental degradation, and their motivation to solve these issues. Teachers' direct experiences and their motivation were seen as an additional advantage to develop students' pro-environmental behaviours and an additional emphasis on the significance of role models in environmental education (Hungerford and Volk, 1990).

The second issue was related to how students were taught environmental education. Two curricular strategies that were most used were the *issue investigation and action model* and the *extended case study model*. In the issue investigation and the action model, students investigated issues, chose issues of interest, developed surveys and scientifically analysed them. According to researchers (Hungerford and Volk, 1990) this kind of problem-solving approach in environmental programs is missing in instructional practices. The result is that students' understanding of issues remained at the awareness level and not at learning the skills level. In addition, environmental education included programs where students targeted a single issue instead of several

connected issues in reality. If students have to develop pro-environmental behaviours they have to go beyond gaining just knowledge and awareness and it is the process based learning that will bring ownership and empowerment to students (Hungerford and Volk, 1990). These factors are still discussed in the field of environmental education for sustainable development after so many years because of the complexity of the problems associated with changes in society and the failure to adapt the required strategies in school systems.

It was in the mid-1990s that teaching environmental education through a holistic process and targeting the affective dimensions of students was considered important (Fien, 2001; Tilbury, 1995). Tilbury (1995) stated that education *in* the environment relates to student-centred learning and experiential learning where students do hands-on fieldwork and increase their awareness of the environment. Education *about* the environment relates to the facts and to the head, while education in the environment relates to the heart.

Education *for* the environment, which is equally important, takes a holistic approach by incorporating "political elements" and "issue-based pedagogies" (Tilbury, 1995, p. 207). The first two help to develop understanding, appreciation and concern while the third instils deep responsibility in students. Education for the environment, according to Tilbury requires participatory and an inter-disciplinary kind of learning which is holistic and "incorporates critical education goals within an issue-based pedagogy" (Tilbury, 1995, p. 207). To ensure these objectives are fulfilled, "education will have to encourage students to be hands on, encourage process as integral to the learning process" (Hart, 2002, pp. 1246–1247). Although environmental professionals started focusing on the affective needs of students there was no focus on teachers' roles or how they were to target the affective dimensions.

The teacher's role in creating awareness became more significant when teaching for the affective domain was important. From reviews of studies, Littledyke (2000) concluded that a curriculum was needed to develop an awareness that encompassed beyond personal interests and motivation to learn science which helped sustain the earth as well as the interests of society. A revised modern thinking was crucial. Littledyke recommended that effective science teaching addressed purpose, values and implications of science activities and affective dimensions which helped inspire,

excite and bring a sense of wonder and curiosity in students so that they respect living things. Further to this, Littledyke stated that neuroscientists emphasised that logical processes as well as emotions work together during thought processes in students.

For affective learning, reviewers argued that analysing what shapes pro-environmental behaviours cannot be conceptualised in a single framework (Kolmos, 1996; Norlund & Garvill, 2002; Stern, 2000). Jensen (2002) from the Danish University stressed that the definition of pro-environmental behaviours from his review of the model used in studies included personal actions, which are directed only at certain behaviours for improvement of environmental problems, and did not include indirect actions such as personal attitudinal changes of the individual. Hence the definition does not provide a complete conceptualisation of the idea and an explanation of what is pro-environmental behaviour. These discussions however did not culminate in formal programs that had specific pedagogies and principles for targeting students' attitudes and behaviours because a number of intervening factors made it complex to understand what best practices to undertake. Research studies during this period did not emphasise teachers' roles or their beliefs but instead argued the conceptualisation of pro-environmental attitudes and behaviours.

There was further emphasis on how best to deliver information to students and why the field of science education did not cover the requirements needed to develop pro-environmental behaviours. According to Jensen, knowledge about a particular issue taught using a scientific approach to solve a particular problem may not help in the long run, because students see the issue in isolation and only understand how to technically solve it but they do not know why or what caused it and what strategies are required to solve them. Jensen pointed out that when students used the knowledge content through traditional methods it may have an impact by leaving a gap of issues such as the choices people make and their living styles (Jensen, 2002). These issues led to understanding that environmental education should be more holistic, values-based and interdisciplinary through curricular reforms, and teachers' teaching approaches were given more emphasis.

The main reason for a lack of change in the implementation was because of resistance in teacher actions when the changes in curricular reforms were

emphasised (Jenkins, 2003). Hilderbrand (2007) stated that not all teachers believed that values education could be integrated in science education. Reiss (2007) also argued that there were several researchers who emphasised the need to take into account students' views for new science courses and pedagogies. A review of studies during the period 1978 to 1984 by Stevenson (2007) reported that there were negative effects on learners because of the passive assimilation of facts in traditional approaches to schooling for environmental education. It can be understood from the review that teachers' approaches to teaching and how they deliver the content is important to target the affective dimensions. However, what teachers deliver in classrooms depends on what they believe in teaching in classrooms and how they organise their lessons for HVWSHE. With water issues, it became essential to integrate student centred approaches in order that a better water ethic could be developed (UNHABITAT, 2005; UNHABITAT & SEAMEO, 2007)

Large projects such as those undertaken by UNESCO (2009), set priorities for educational systems with collaborative networks and learner centred approaches and values-based learning for sustainable development. The pilot tests conducted for education in sustainable development in Asia reported positive impacts. A recent example is the report of a pilot test conducted in primary schools in Lao PDR by the Participatory Centre (PADETC) which introduced integrative concepts and sustainable educational approaches. It revealed that the success of the academic performance (20–30%) was due to well-constructed lesson plans and learner centred approaches being incorporated in schools. This project saw an increase both in confidence in students and in teacher motivation. The reports did not elaborate whether these strategies may help students in the long term if used in classrooms and the practicality of using it in schools. HVWSHE has been extended in schools as part of the curriculum and therefore the practicality of using appropriate strategies for long term benefits may solely depend on teachers' beliefs about how the new reforms are to be implemented.

The need to research teachers' beliefs regarding the principles such as cooperative learning was stronger from the evidence derived from reports of other organisations. The Asia/Pacific Cultural Centre for UNESCO (ACCU), Japan and the Chinese National Commission UNESCO (2009) reported that the ACCU's ESD projects

were successful because the projects used learner centred approaches and interdisciplinary networking within subject areas. Also a collaborative partnership between ministers, sectors and school with communities helped in fostering learning through discovery for all those involved in these activities (UNESCO-Bangkok, 2005). It was through these collaborative activities that a sense of self-esteem, empowerment and hope were found to emerge (UNESCO-Bangkok, 2009). These positive insights highlighted the changing roles of teachers and an emphasis on their teaching approaches for HVWSHE.

The integration of specific values and field visits has shown some degree of success. Some of the activities used for ESD include field visits to the World Heritage sites, group discussions and forming environmental protection teams UNESCO-Beijing, (2009). In addition, instead of teaching random ESD topics, schools have emphasised learning core values known as *four respects which include: – Respect for All, Respect for Cultural Diversity, Respect for Nature and Respect for Science.* The reports do not provide enough details about how teachers incorporate these into their lessons and what kind of impact these core values had on students.

However, the report stated that challenges faced in the Asia–Pacific region were mainly due to the problems related to expanding and practically implementing environmental education to incorporate activities related to education in sustainable development. Taking these issues into account, the implications for HVWSHE are many. First, students are important future proprietors for leading the goodwill of environmental needs. The reports highlighted the fact that cooperative techniques, values education and implementation of different pedagogies have shown some positive trends in environmental education. The research into teachers' beliefs of these different principles and pedagogies for HVWSHE would highlight the benefits and constraints they face when implementing HVWSHE.

With HVWSHE, Clark (2005) found that while there was much support for the program there were serious problems with logistical support, teacher training and academic guidance in Africa.

He found that despite intensive workshop training many teachers

> had not fully internalized the VBWE philosophy and practice…since the process of internalising is more complex than may be readily understood by the newcomer more time should be given in the initial training of the trainers to the underlying philosophy of VBWE and its pedagogical fundamentals. (Clark, 2005, p. 37)

Clark concluded that as well as requiring more administrative and financial support the project required pedagogic support and "continuous academic guidance from groups and individuals such as those who have pioneered VBWE" (Clark, 2005, p. 38). Looking at the problems faced by the African counterpart with the HVWSHE, it was important to review teachers' beliefs regarding water education because of the different geographical, cultural and social backgrounds teachers come from in the Asian regions. If values-based education is a medium to sustain and solve water issues, then it is important to understand teachers' perspectives of student responses regarding water issues and what teachers believe about the new reforms.

The next section discusses how new pedagogies and teaching strategies have helped in building capacity for sustainable development and the significance of using innovative ways for formative development in students. The section also discusses the constraints that teachers face during the implementation and why researching teachers' beliefs is important.

3.2 Teachers' beliefs regarding reform based practices for environmental education for sustainable development

In order to build capacity in schools for sustainable development, there are many efforts taken up by the Southeast Asian regions with HVWSHE. The report from SEAMEO (2007) stated that HVWSHE can be integrated easily into the existing curriculum and it creates a lasting impact on students through character development. In addition the practice has proven to be effective but there has been hardly any research from teachers' perspective on the implementation of principles and pedagogies for affective learning for HVWSHE. Taking these issues into consideration, the literature reviews teachers' beliefs regarding implementation of new reforms in schools and why research on teachers' beliefs needs to be considered for the implementation of HVWSHE.

3.2.1 Teachers' perspectives regarding new innovations in environmental education

There are many constraints when teachers have to include new reforms, and their beliefs regarding the implementation are important. For example when integrated science was implemented in Hong Kong, the study by Ko and Lee (2003) examined teachers' views and the constraints they faced as schools tried to integrate science for teaching environmental education. From quantitative analysis of two hundred and fifteen teachers of integrated science Ko & Lee (2003) concluded that teachers scored high on their intention to teach environmental education but low on actually teaching it. The reason was because most of the teachers agreed that students should be taught "for" and "in" the environment but they had to rely heavily on textbooks. Teachers stated that the integrated science syllabus was not aligned to students' relevance of daily life while environmental education had limited content. In addition to this, although teachers thought that integrated science could help in integrating environmental education, the syllabus lacked activities that were connected to bring personal meaning into students' lives.

In addition to the above problems, results also revealed that teachers of integrated science perceived obstacles such as constraints with time and size of the class compared to their personal obstacles. Integrated science teachers used methods that used less time such as lectures and experiments while 27.4% of teachers did not use role-play, computer assisted technology or field trips (Ko & Lee, 2003). With HVWSHE, it implied that teachers had to go beyond text book teaching, and there were barriers with time for integrating values-based learning. These findings imply that teachers' motivation and beliefs are significant to developing programs and they face the burden of the impact the new innovations that are brought into classrooms.

The training of teachers for HVWSHE has emphasised that teachers teach through interdisciplinary methods for water education and has shown positive impact for water education (Ng et al., 2007). A study by Bleicher & Kirkwood-Tucker (2004) explored nineteen elementary science and twelve social studies student teachers' perceptions about integrating science and social study curriculum units in Southeast Florida, USA. Findings revealed that team-teaching helped students to be better organised and have a better depth of knowledge of content along with positive

attitudes. The study confirmed that team teaching have helped in the success of interdisciplinary teaching (Bleicher & Kirkwood-Tucker, 2004). However, many schools in Asia enforced teachers to cover the syllabus and continue to use traditional approaches of teaching and this issue is a barrier for the implementation of HVWSHE.

Driver, Asoko, Leach, Mortimer and Scott (1994) stressed that student learning of science has to include both personal and social perspectives to interpret science learning in formal academic learning. A number of projects have shown positive impact when environmental education was taught through collaborative approaches and use of varied pedagogies (Eames et al., 2006; Johnson, Johnson-Pynn and Pynn, 2007). However, there are limited studies that show the impact of teachers' beliefs regarding the implementation of group interactions compared to traditional approaches for water education. A study conducted in Colorado highlighted the significance of using specific teaching approaches.

Dienno and Hilton (2005) tested the application of constructivist learning in environmental education for a week with high school students in Colorado to investigate students' attitudes, their perceived knowledge gain and their interest in environmental education. The total sample consisted of 54 biology students; 36 students from grades 10–12 were exposed to constructivist teaching and 18 students as a control exposed to traditional teaching methods.

Experimental students were taught using student-centred, collaborative and problem-based learning while the control group was taught using lectures and structured teaching approaches without collaborative work (Dienno & Hilton, 2005). A mean difference of 4.27 was seen between the pre-test and the post-test scores for knowledge gain in the constructivist group compared to the traditional group. Similarly the constructivist group had greater attitude change with a mean difference of 0.27 compared to the traditional group, which had a smaller mean difference of 0.17 for the pre and post-tests. Dienno and Hilton stated that teaching with constructivist approaches had beneficial results because the students gained knowledge and attitudes while traditionally taught students did not gain as much (Dienno & Hilton, 2005). The reason for the gain in knowledge according to the researchers was because students from the constructivist group were divided into

three or four students per group and they remained together during the task oriented activity. Although the tasks were the same for the control group they were taught only through traditional methods which were only through classroom lectures and limited informal classroom interactions. The experimental group had group presentations which were facilitated by teachers. Students from the control group could only study in classroom settings while the experimental group could interact and involve in field work outside classroom.

This study has implications for water education because group interactions in the above study helped students to build motivation and scaffold their prior knowledge on non-native plants in the above study. However, the study used a new teacher and this may not be possible in the normal classroom settings. Another limitation was that the study was conducted short term and may have engaged students with the presence of a new teacher with both groups. This was the reason according to the researchers that there was no significant difference for both engagement and enjoyment factors. The experiences that students gained in this short term study cannot be confirmed to give a lasting impact on student attitudes and empowerment for personal motivation.

Despite this evidence that implementation of collaborative work among teachers and students has helped learning possible through constructive approaches (Dienno & Hilton, 2005; Driver et al., 1994) the fact remains that unless teachers' beliefs are aligned to the aims and goals of the innovative approaches, the innovations that are introduced may not be successful.

The section below presents teaching practices used for environmental education and how these principles and pedagogies have pedagogical implications for HVWSHE.

3.2.2 Teaching Principles and Pedagogies for environmental education

The different principles (cooperative learning, educare and role modelling) and pedagogies (silent sitting, prayers, music and storytelling) used in some academic settings are emerging as essential strategies for increasing awareness in students for environmental education. These different strategies are discussed in detail so that a

broader understanding of their impact on the success of environmental education can be explored, together with their benefits and implications for HVWSHE.

Cooperative learning

Some of the earlier researchers who reported on cooperative learning activities in classrooms are Slavin (1980) and Johnson and Johnson (1993). Slavin (1980) reviewed over 28 primary field projects conducted over two weeks in both secondary and primary classrooms in the U.S.A and found there were several benefits from cooperative learning. Slavin (1982) reviewed cooperative learning in classrooms including student teams, achievement divisions, team-games tournaments, team-assisted individualisation, doing jigsaws, learning together, and group investigation. She found positive effects on students' self-esteem, interpersonal relationships and intergroup relationships. These important aspects are related directly to students' affective development of values, attitudes and emotional growth. Roehrig & Kruse (2005) argued that with reforms such as inquiry based learning there is little evidence that teachers are using curricular and pedagogical strategies that align with practices.

From an earlier research study related to cooperative learning, Johnson and Johnson (1999) reported that teachers have to follow certain structured procedures to ensure there is effective student achievement through cooperative learning methods. Results from Johnson's (1989) meta-analysis of more than one thousand studies that aimed to understand the differences between students who were taught using cooperative learning methods and who did not, indicated that students who used cooperative methods had a higher level of learning outcomes compared to traditional roles where teachers used competitive methods. Yet, there are limited studies conducted on whether teachers' believed that using structured procedures helped student learning in environmental education for both cognitive and affective development.

To effectively implement cooperative learning in classrooms teachers will need long term planning because teachers need special skills to articulate, collaborate and develop their teaching skills (Johnson and Johnson, 1999). The first level includes teachers promoting cooperative learning 60% of the time. At the second level teachers will need collegial support groups, task forces as well as sudden decision

making situations for effective implementation of cooperating learning. At the third level the cooperative team links up at administrative levels for effective implementation. The responsibility for implementing cooperative learning for HVWSHE is mainly with teachers and if teachers did not believe that it works in their classroom they may not use cooperative learning in their classrooms.

Johnson and Johnson (1999), Linkson (1999), Jumsai (2003) and Taplin (2002), emphasised the importance of cooperative learning for helping students develop reflective capacity and decision making skills which are important for developing networking skills in students for HVWSHE. Dörnyei (1997) and Lovat (2005) stressed the need for teachers' having teaching skills that include cognitive, affective and conative capacities relevant to students' learning competence. These skills are not easily attained, as seen from the review of Clark's (2005) study of HVWSHE in the African contexts, and a continuous support is needed from teacher trainers.

There were also reports of the problems with teachers integrating the concepts in the lesson plans when they integrated HVWSHE in their classrooms (Clark, 2005; UNHABITAT & SEAMEO, 2007). If teachers' beliefs are explored on their thoughts and narrations (Fang, 1996) about why they do not like to use cooperative learning it would help in understanding why their beliefs are resistant to change.

Regarding teachers' skills, Bandura's theory stated that unless teachers are skilled they may not be motivated to implement the required strategies and this added further reason to explore teachers' beliefs regarding their thought processes and opinions of implementing values-based cooperative learning. According to Lovat, Toomey and Clement (2010), teachers may need to be aware of their own affective capacities when they implement cooperative learning because students' social skills and moral consciousness depends on the teacher's capacity to inspire and bring these networking skills among students through teachers' own modelling as well as the bonding between teachers and students, and students themselves.

Teachers struggle initially to adapt to new changes that impact their beliefs and fears in their classrooms. Cronin-Jones (1991) examined teachers beliefs about implementing a curriculum based on group learning in the USA. This case study of two teachers was based on a twenty–lesson curriculum package in two different

contexts of the science curriculum. Teachers' beliefs were studied in the presence of participant observers. Marcy, one of the participants, originally did not feel that group work was important. The unit plan was intended for 1400 minutes of class time but she used only 282 minutes for small group work while implementation required 465 minutes of group work (Cronin-Jones, 1991).

When asked why Marcy did not use it, she replied:

> I don't like group activity. Part of that has to do with the noise levels. If a lesson said do group work, I tried to think of a way to do the work individually. (Cronin-Jones, 1991, p. 241)

After the study she was asked whether she would change any of her beliefs and she answered:

> Yes. Now I will have more group work because I found out the kids really enjoy it and I got used to it. (Cronin-Jones, 1991, p. 241)

The study also reported that Marcy simply chose preferred instructional strategies and left out instructions that aimed at students' problem solving and attitudes.

The study emphasised that cooperative learning takes time because of the different adjustments teachers have to make. Herreid (1998) elaborated on the barriers to cooperative learning in teaching sciences. Herreid commented that a few of reasons were because the faculty of science in the late 1990s used only traditional methods and teachers feared that they had to revise their teaching materials and sometimes the barrier was because teachers felt the lecture method was good enough. Another barrier was how to evaluate student outcomes using group grades and the large classrooms that stress teachers. Herreid reported that students felt that cooperative learning became a barrier because they have adjusted to the lecture methods and fear the new approaches to learning as they go to the higher classes, and one of them is the lack of social skills. An additional issue is that administrative departments do not want drop-out of class size and question the new methods if it becomes a problem to students. Despite these reports there are positive views by other researchers. Jumsai

(2003), Taplin (2005), Osterman (2010), Lovat (2005) and Carr (2010), emphasised how dialogue and communication helped in positive and diligent learning.

The implementation of cooperative learning has shown several benefits such as development of pro-social behaviours, increased knowledge management and adoption of skills to communicate. However, from the studies reported above, it can be derived that teachers' beliefs in their own self efficacy and their own skills to implement the principle and for values education at the same time, are important for HVWSHE and is an important area that has to be explored.

Studies by Chawla and Cushing (2007) and Arnold, Cohen and Warner (2009) asserted that even if cooperative learning helps in knowledge enhancement, the presence of role models and discussion of values through critical reflections has a significant impact in environmental education. The next section discusses the importance of exploring teachers' beliefs regarding role modelling in classrooms for water education and how important the principles of role modelling and educare are for the impact of HVWSHE.

Role Modelling and Educare

Both role modelling and the development of values are interrelated and these principles are important for environmental education. Yet there are no studies on how teachers' role modelling has impacted environmental education from other teachers' narrations. Bandura (1976) postulated the social learning theory which stated that learners are able to understand behavioural changes through direct reinforcement of positive and negative behaviours. Bandura (1986) stated that modelling helps to convey the structure of behaviour which gives practical benefits. According to Bandura, learning through direct experience will help an individual understand the consequence of their actions but modelling can help transformation in large numbers just by observing. Direct experience is helpful in refining and perfecting one's skills rather than starting from the beginning which modelling can provide in the form of a cascading effect to large number of individuals (Bandura, 1986). The other factors were development of positive relationships for effective networking through cooperative learning methods (Dörnyei, 1997) and reflective learning through role modelling (Lovat, 2005). With new reforms such as these,

teachers' resistance to change is an important issue. According to Roehrig & Kruse (2005) teachers who least used reform based practices, used contents more through traditional teaching practices and low levels of curricular implementation. Yet, studies have reported the positive impact of teacher inspiration and relationships with students and student transformation because teachers believed in the program and have gained positive experience through the impact of the transformation of students themselves for academic learning, but not for HVWSHE (Dasoo, 2010; Jumsai, 2003; Taplin et al., 2005).

From Lovat's (2005) statements on values education it can be deduced that all three principles of cooperative learning, role modelling and values integration have to be integrated if the criteria for values education are to be fulfilled.

> Values Education will be building on any factual knowledge (about values) to develop in students the kind of communicative capacities, interpretive skills and powers of negotiation that are at the heart of a social conscience, and, moreover, the reflective and self-reflective growth that is the foundation of a personal morality. Similarly, the criterion of relevance will serve to ensure that values education is always connected with the real contexts and concerns of the students. Furthermore, the criterion of supportiveness will underpin the credibility of the values educator as being someone who practises what they preach, and is a credible and authentic model of the care, respect and love they are proposing as the basis of personal morality and social citizenry. (Lovat, 2005, p. 9)

Although role modelling has been given importance in some studies of environmental education there are not many studies that examine teachers' beliefs about what constitutes an effective role model for environmental education. Chawla & Cushing (2007) found that committed people who protected the environment, motivated young adults. A major factor was role models such as teachers who had an impact on students. Arnold, Cohen and Warner from Canada stated that parents, experiences outdoors, friends, role models, teachers, youth groups and conferences were all important influences (Arnold, et al., 2009). The study revealed that role models (teachers and other significant adults) acting as examples and providing

resources and information were among the significant factors that contributed to a group of young people becoming environmentally active. Teachers' beliefs regarding themselves and others as role models for water education is not a researched area and finding what they felt about this principle and its impact for water education will support the teaching of HVWSHE. If teachers had low motivation and did not believe that they were important role models for students, their interest in developing themselves will have an impact on the implementation of HVWSHE.

The next section highlights why teachers' beliefs regarding the implementation of teaching pedagogies are important for environmental education, and discusses the implications for HVWSHE.

3.2.3 Teaching Pedagogies for environmental education

Reviews of some studies related to the implementation of pedagogies for environmental education are elaborated below.

Implementation of silent sitting in classrooms

Silent sitting or silent reflections is a pedagogy that has been used to elicit awareness in students for their natural surroundings. However, very few studies have explored this area from the perspective of teachers' beliefs regarding water education. The section below provides an overview of some activities that are used for helping students develop awareness for the environment and teachers' beliefs regarding the practice essential in the multi-religious backgrounds of Asian regions for HVWSHE.

Asia Pacific has shared cultural and spiritual values which could help develop harmony and peace in the regions (UNESCO-APNEIVE, 1998; UNESCO n.d.). The sourcebook used by the United Nations organisation for developing awareness in students for learning to live together peacefully and to attain transformation through positive experiences, include silent reflections and sharing experiences within groups so that students can discuss issues related to the topic of concern. UNESCO (n.d.) proposes that students' inner peace can be sought when the mind, physical behaviours, speech, increased awareness in action and contented living are targeted, and they are trained using specific methods. In order that these aims are fulfilled, the

students' spiritual needs, their self-knowledge and their ability to resolve inner conflict, are important. To understand peace and non-violence students will have to deal with their own spirituality which is rooted in their individual self and is not religious oriented. The present education has failed to bring this aspect to the fore, which otherwise opens students' potential for realising the values deep within them and should be considered as an open mental activity (UNESCO, n.d.). In Asia there are various regions that believe that silent sitting helps in bringing awareness in learners and this has been incorporated into HVWSHE. However, it is necessary to understand whether teachers' beliefs have a consensus in using this pedagogy.

Another study conducted in a school, by Ward (2001) stated that reflections helped students connect their personal experiences. An interview with teachers revealed that through meditation or silent sitting, students are able to seek their own spiritual lives during quiet moments. Two teachers who were interviewed felt that meditation and reflection were important as they allowed students to sit still and provided them with time for reflection. Another teacher used these moments to relax in a quiet place and reflect and visualise using the Montessori philosophy, to inculcate a sense of wonder and to practise awareness of all things in life (Ward, 2001). Bryza (2005) highlighted the positive effects of self-reflections. According to Bryza, self-reflective development helps us "set and monitor our life goals" (Bryza, 2005, p. 28). The effectiveness of silent sitting must show strong evidence that there is a positive development of attitudes and behaviours in students. Unless teachers believe that this pedagogy is effective they may not implement it. Although there is evidence that tackling values' awareness in learners is effective if silent sitting is implemented, there is limited evidence of positive reports of teachers' beliefs regarding the implementation of silent sitting or silent reflections in classrooms in Asia for HVWSHE, except for the implementation of silent sitting in classrooms for academic education (Jumsai, 2003; Taplin et al., 2005).

Herreira (2007) reported on the positive effects of the use of silent reflections during the projects implemented by the Earth Charter. Herreira recommended silent reflections as an important practice for sensorial conscience because students are more able to connect with nature by comparison with adults. The reason is because students are not as capable of expressing themselves orally and are able to use their

sensorial expressions better to connect with nature. According to Herreira when there is silence without speaking, this enables profound attention. In Asian regions, with overcrowded classrooms and the stress on academic work, it is not easy to implement HVIIM without an initial struggle (Taplin et al., 2005). It is an under-explored area and exploring teachers' beliefs regarding silent sitting will help accumulate information about whether their beliefs are aligned with the practices for HVWSHE.

The cultural implications of implementing silent sitting in a multicultural background such as Asian regions are questionable. Environmental values are in the form of accumulated cultural norms derived from the strong spiritual, religious and cultural backgrounds in Asia, and are unique to specific races. The exploration of ancient philosophies revealed that environmental values are derived from spiritual practices (Leavitt, 2003). Leavitt (2003) pointed out that many holy places are present in Japan such as the Tsukuba Mountain with unique spiritual influences.

The implications of implementing silent sitting or silent reflections in schools is not new to teachers from specific societies in the Asian regions such as Japan, Thailand, India, Burma, Vietnam, Cambodia where Buddhism and Hinduism have been practised and integrated in the lives of relevant societies, rituals and natural environmental settings. However, the integration of such practices may not be relevant to societies such as Indonesia or societies where meditation is not practised in their own cultures, and its relevance for water education is an important factor to be researched from teachers' perspective. This makes it more important to find how teachers feel about implementing silent sitting in their classrooms and whether they believe this strategy has an impact on student attitudes.

Another pedagogy that is practised in non-secular schools is prayer and with the incorporation of prayer in HVWSHE as pedagogy, teacher's perspectives are an important area to be researched. The next section discusses prayer as pedagogy for environmental education.

Implementation of prayer in classrooms

Prayers are practiced in several schools in Southeast Asia as part of the pedagogy used in classrooms. The implementation of prayer is unclear in terms of its use for developing pro-environmental behaviours and there has been very little research about the use of this pedagogy for education and its implications for ethical decision making.

According to Bonsaint (2006, p. 28) prayer is formative and is a "profound human and spiritual expression". Bonsaint also stated that prayer makes an individual aware of their thoughts and emotions. Bonsaint stated:

> The practice of prayer refers to the direct link that is meant to exist between time spent in the prayer and the activity that follows it. Together, these two moments of the soul guide the unique unfolding of a spiritual life and gradually transforms the one who prays. (Bonsaint, 2006, p. 29)

Prayer is used as a direct method and a teaching strategy for HVWSHE by the UNHABITAT (2005) and is an under researched area in water education. This pedagogy has been associated with personal fulfilment as explained by Bonsaint (2006). Prayer is also used by the organisation called Religions for Peace which is the world's largest representative multi-religious coalition as a collective activity used to prompt good will for the earth. This organisation propagates prayers as a vehicle to transform violent conflict, human development and protect the earth. The organisation known as Religions for Peace includes a World Council of senior religious leaders from various religions, six regional inter-religious bodies and the global women of faith network and global youth network. The official Catholic aid agency known as the Catholic Agency for Overseas Development for England and Wales also use prayers as a formative activity for protecting the environment. The different cultures of the East use prayer to thank and protect the environment (Abrams, 2000). However, it is not clear whether all the different cultures in Asia use prayer as an activity and whether teachers actually believe that prayers help in protecting the earth. For example in China where communism is practised widely, there are societies that do not believe in external spiritual gods or deities. In HVWSHE, if teachers do not believe that this activity helps students' attitudes they

may not use it in their classrooms. An exploration of this pedagogy would help understand whether teachers from different backgrounds perceive that this pedagogy is important to be implemented in classrooms and if so, what were the factors to motivate them for further implementation in classrooms.

One important pedagogy used for water education is storytelling and this is discussed in the section below.

Implementation of storytelling in classrooms

There is an increased interest in bringing storytelling into classrooms for environmental education but teachers' beliefs regarding the implementation of this pedagogy has not been researched from the Asian regions.

Some positive evidence is reported regarding this pedagogy and yet the implementation in classroom learning for environmental education is not supported as much. A recent development is Fien, Cox and Calder module written on ideas by Gough, Kumar Fien in Learning for a Sustainable Environment (UNESCO, 2010). This module emphasises that storytelling has been regarded as crucial for students to gain an awareness of the environment because it holds the attention of students as they learn the concept, attitudes and skills, and is considered a significant activity for student engagement with the natural world. In addition, storytelling enhances students' understanding of multicultural learning, democratic perspectives, knowledge on social issues and economic changes (Combs and Beach, 1994; Demircioglu, 2008). Storytelling can help students gain indigenous knowledge and explore other ways of knowing and future problem solving (Australian Curriculum Corporation, 2005). Again, the impact of storytelling has enormous potential and using this in classrooms in Asia may not be effective unless teachers believe in their potential for a better water ethic.

Marsden (1997) emphasised that by carefully observing nature and enjoying the aesthetics of nature, the student would be able to respond to being humble. Marsden reviewed the work of Friedrich Wilhelm August Fröebel, a German pedagogue who established modern education by highlighting that children possess particular needs and requirements. According to Marsden, the moral teachings of Fröebel are

noteworthy for environmental education because of the moral values they have for environmental education. Marsden quoted Fröebel's work found in a booklet entitled *Little Rhymes of Tiny Mary*, from one of the CPRE-sponsored *"Save the Countryside"* exhibitions of the environmental campaign that included verses such as:

> And as they went to school each day
> It made the children titter
> To see her stop upon the road
> To pick up someone's litter
> (Froebel, 1782–1852; as cited in Marsden, 1997, p. 16)

Parsons (2000) emphasised that stories stimulate students to nurture the power of imagination and help them question the situations of the future. Parsons also noted that characters in a story help students to have imaginary relationships and share their experiences.

Orlando (2006) emphasised storytelling as an educational tool and stated that it benefits student learning by introducing oral patterns, listening skills and conserving a

> sense of wonder about ourselves…storytelling and verbal sharing appeal to our need to understand: to belong and predict…it communicates information…it reinforces a sense of order and justice…we learn to predict outcomes. (Orlando, 2006, pp. 151–156)

Similarly, Staden and Watson (2007) stressed the power of storytelling as a tool to foster cultural diversity especially when traditional indigenous stories are integrated into classroom learning. According to Staden and Watson, storytelling helps in cognitive development in learners. It helps to grasp words and science concepts through pedagogies such as play, drawing and acting. However, there is limited research as to whether teachers actually believe that they have the time, resources and motivation to implement them in their classrooms. If they do, it may again depend on what resources are available to have best impact on students.

There are no studies that set criteria on the choice of stories for water education. However, for early childhood education, Tarr (2008) pointed out that John Dewey's

1926 and 1930s work highlighted the connection between an organism and the natural world which is a result of direct experience. According to Dewey (1934) the sensorial impressions such as sound, texture, colour, movement, smell and proportion will provide the gateway to comprehend the qualities of the natural world we experience and thus enhances developmental processes. The sample included two early childhood professionals and 28 children in Sydney, Australia and this was specially done with the understanding that students have little exposure to nature. There were five workshops conducted by the researchers and one of the outputs was to use story telling which provides contextual scenarios and help students relate to their immediate environment. Story telling helped students to engage themselves in the stories with interest and the children reflected the characters and qualities, which was evident in the students' verbal discussions with each other as observed by the researchers. The other two activities that engaged students were music and art but the limitation in this study was that the professionals were not skilled enough to use music in their classes. The benefits reported by the early professions through a survey questionnaire were that students had a better understanding of the natural world and the professionals could develop new techniques through these workshops. In addition they identified how natural world elements can be incorporated into the program. They also had an increased interest in storytelling and tools to guide social behaviours in students because of the content of the stories. The implications of these reports indicate that teachers may need to be skilled to bring critical inquiries and analytical thinking into classrooms and whether they have the competencies necessary for motivating students for a better water ethic. These reasons make it imperative to explore teachers' beliefs regarding the implementation of storytelling for HVWSHE.

Although these various reviews report positive evidence of this pedagogy, teachers' beliefs regarding their motivation to implement story telling in classrooms in Asia is an under-researched area and specifically for water education. There is very little evidence of teacher reports from Asia except from the regions in the West on the pedagogical practice. First developing countries have large class sizes and an enormous workload in classrooms. Teachers' beliefs may differ depending on their situation in their classrooms and a pedagogy which involves time and resources

could be a barrier. The other issue is the choice of storybooks that teachers use and their significance for water education.

With secondary students, simple stories may not help them build analytical skills or inquiry based learning. A study by Gupta and Singh (n.d.), highlights the importance of teachers' skills in organising the contents which are age appropriate. In primary schools, students learn through "hierarchical integrative" learning where earlier stages of concepts and attitudes are incorporated in the later stages and the values that they learn impact their future learning (Gupta and Singh, n.d.). However, for students after primary school their age-related activities may differ. The study by Gupta and Singh (n.d.) on students in years 6, 7 and 9 using the content in Food Force II, aimed at key learning areas such as teaching humanitarian values, crisis management and improving analytical abilities. Group A was actively engaged in the activity through the use of technology while group B were provided a lecture on urban issues while Group C was given books to read. Group C learnt at a slow space while they performed in isolation and could not share their knowledge. A questionnaire was provided to all students and it was found that students who played using technology were more eager to learn. This shows that inclusion of interactive activities or technology will help students learn faster. Exploring teachers' beliefs may open up information on how they use this pedagogy and whether their use helps in supporting the new reform.

Teachers' choice of content is important when they choose materials for HVWSHE. Another study conducted by Agelidou (2010) confirmed that bridges are connected between science and art, logos and mythos, past and present as well as rational and mythological thinking. These bridges as Agelidou stated, develop an interdisciplinary approach as well as develop global thinking. Storytelling also enhances analytical thinking and a new ecological culture. Agelidou argues that storytelling should consider age-related activities and should excite student interest and this can be done in such a way that environmental storytelling activities should help solve environmental problems. This can be done by active pedagogical techniques, concept mapping, field study, case study and values clarification methods. Teacher beliefs may provide more information on what kinds of materials they choose for water education and provide information whether it helps students

develop a better water ethic. The above studies imply that using storytelling for water education requires training in how these pedagogies can be used.

The HVIIM incorporates music which is also used for eliciting awareness in students of their own emotions and surroundings and is discussed in the section below.

Implementation of music in classrooms

Music is another pedagogy that has been widely acclaimed in the studies below to help develop affective learning in students. Studies of teachers' beliefs regarding its use for water education are limited. Again, this area has very limited scope in academic curricula as very few schools incorporate music as a part of the curriculum in the Asian regions. The studies reported here are more from the West and it highlights/ the benefits of music generally for environmental education.

Parker (1990) stated that "the music that young people hear will likely select the values and standards of aesthetic experiences that will either limit or fulfil the human potential" (Parker, 1990, p. 24). According to Turner and Freedman (2004) music has intricate connections with the natural world and has a significant role in environmental education. Music inspires students and can be used as a tool to simultaneously inform them about the environment, develop sensitivity to the environment and to immediate socioeconomic issues. Although using music as a tool is a non-scientific approach, Turner and Freedman emphasised that music contributes to the development of empathy and bridges learners to the real world and to conflicts in nature. According to them:

> Music can also serve as a point of connection between humans and the natural world… in these ways music can also inspire environmental action and advocacy while also helping to foster empathy for the natural world. (Turner & Freedman, 2004, p. 45)

Schellenberg (2005) and Myers & Scripp (2007) advocate that music contributes to cognitive procedures in learners and helps in developing problem-solving skills and socio-personal development. In addition, Schaus (2007) emphasised the importance

of music in contributing to cultural sensitivity and how the use of music can enhance unity in multicultural learning communities.

However, despite the benefits of such reports, implementation of music in values education in China is not very successful because of changes in values in China due to globalisation and commercialism (Ho, 2006). As a result of these changes the student's values are formed from the hidden curriculum. According to the researchers the need to re-examine the meaning implied by the lyrics depends on the teachers. According to the teachers, these issues depend on the Chinese authorities that are in charge of which values have to be emphasised (Law, 2006).

Research on teacher beliefs regarding the implementation of music in the Asian regions and the impact it has on water education and students' attitudes and behaviours, is limited. Both Taplin et al. (2005) and Ng (2007) reported that students were motivated when using music for academic education, but imparting music education requires skills.

An exploration of teachers' beliefs may reveal findings about whether they believe that music can help build positive attitudes and whether their beliefs are aligned with those of HVWSHE teaching practices.

The next section discusses the effectiveness of values-based education programs.

3.3 Effectiveness of values-based education programs

Values-based education has been used in environmental education to help foster awareness in students. Reiss (2007) stated that values education can be used broadly in two different areas. One is for personal empowerment while the other is to help students gain values to help society and build community spirit. The aim according to Reiss (2007) is to help in building autonomy, wellbeing and bring elements of justice in one's surroundings. Although HVWSHE has been implemented in their own regions in Southeast Asia, a hub of different religions and cultural practices, teachers' beliefs regarding their approaches to values-based water education may have different implications for each community. Added to this, if the HVWSHE concepts are not clear and require time to adapt (Clark, 2005) teachers may lose motivation and require continuous guidance.

Large organisations have implemented certain values and principles but research of teachers' beliefs regarding the impact on students' attitudes and behaviours are limited. For example, John Fien from the Australian school of Environmental Studies emphasised the notion of care and compassion for understanding peace and for non-human nature (Fien, 2003). Eight values were proposed as a result of discussions by the Earth Charter which formed the basis of ten years of international intercultural and interfaith dialogue after Rio and is part of the 16 principles in the Earth Charter (Fien, 2003). The values associated with Ecological sustainability are *interdependence, biodiversity, living lightly on earth, interspecies equity* and for social sustainability are basic *human needs; intergenerational equity, human rights* and *participation.* The actual success of the pedagogical implementation depends on teacher skills and their beliefs in the use of these pedagogies, or else the implementation of HVWSHE will be unsuccessful.

Some of the organisations have implemented criteria for both curricular needs and pedagogy. An example is the United Nations Educational Scientific and Cultural Organisation–Asia Pacific Network for International Education and Values Education source book (UNESCO–APNIEVE, 1998). In the case of integration of values such as peace, the guidelines included integrating the cause and effects and different forms of conflict as well as religious, ethical and philosophical bases and their historical sources. The sample lesson plans included teaching pedagogies such as group activities, reflection, interactive, shared experiences. The main activity for a lesson on spirituality includes playing soft meditative music, guided visualisation and sharing of ideas. Other activities include journal writing for helping students reflect and reinforce their ideas (UNESCO, 1998). The teaching and learning strategies include experiential learning, storytelling, values education, enquiry learning, appropriate assessment, future problem solving, learning outside the classroom and community problem solving (UNESCO, 1998). These different strategies have to be taken up ultimately by teachers in classrooms and their motivation is important. Although many projects have been implemented according to the UNESCO reports, the differences in culture, religious practices and spiritual orientations have an impact on how the different pedagogies are implemented and may not be as easily extended to daily classroom teaching unless teachers themselves have personal relevance to them.

Another important criterion for the success of HVWSHE is the knowledge teachers have of the significance of the pedagogies and principles for water education. The implementation of new reforms which involves different societies may depend on how shared groups interpret them because languages in different societies may impact their understanding.

Other organisations that include development of certain specific values have been found to be successful in the development of values such as respect, care and peace in an individual's attitudes. The Earth Summit which is the United Nations Conference on Environment and Development held in 1992 was a meeting of participative consultations of all kinds of international organisations, held in Rio de Janeiro, Brazil. The outcome of this meeting was an establishment of Agenda 21 which promulgated the principles for sustainability for the 21st century (UNESCO-Earth Charter International, 2007).

Of the sixteen principles, Principle 1 included: 1) respect earth and life in all its diversity; 2) care for the community of life with compassion and love; 3) build democratic societies that are just, participatory, sustainable and peaceful; 4) secure earth's bounty and beauty for present and future generations.

In 2007, the UNESCO in cooperation with Earth Charter International discussed what values were inherent in sustainable development in the areas of learning which will encourage good behaviours. Several good practices were selected and they included:

- Promoting learning more than teaching;
- Concentrating more on the construction of meaning than on communicating the message;
- Promoting the mutual transformation of teachers and learners;
- Focusing on local knowledge and community based decisions and actions;
- Orienting learning more towards the process than product;
- Use constructing and participating methodologies ;

- Use of multiple methods and integrative approaches: writing, arts, drama, debate, scientific analysis;
- Context specific and action oriented;
- Ongoing experiences that can also offer lessons learned.

Teacher training must provide special support to bring the affective dimensions into educational objectives and lesson plans so that they are able to balance these objectives with knowledge management. For example, the above criteria stated that teachers have to promote learning more than teaching. If teachers follow traditional approaches to teaching and do not involve students, then they may not have the opportunity to involve students as seen in several studies stated above. For example, unless students are involved and their motivation in turn impacts teachers and brings about the transformation in both teachers and students, the aims and goals of promoting HVWSHE may not be achieved. Barriers such as time and lack of resources may also cause constraints while the major barrier is lack of training.

Principles such as role modelling and integrating values in the lessons are the starting points for bringing about change in students and an awareness of social justice as well as conservation values. Values and principles promoted for developing sustainability by the world's three major conservation groups: The World Conservation Union (IUCN), the Worldwide Fund for Nature (WWF) and the United Nations Environment Program (UNEP), are social justice values and conservation values. The United Nations Decade of Education for Sustainable Development (2005–2014) in cooperation with the Earth Charter compiled good practices of the projects implemented by the Earth Charter which had a successful impact in their own countries (UNESCO–Earth Charter International, 2007). Countries such as Mexico, Spain, Brazil, Earth Scouts from the USA, Australia, Portugal, and youth from Mexico, Sao Paolo, Queensland, India Florida and Seychelles were part of the working team. The activities used included pedagogies that were more reflective such as silent reflections, debates, storytelling, brainstorming sharing ideas through participatory activities, role play and audio visual programs.

When teachers are required to implement the principles and pedagogies, teachers' beliefs may resist change. Pajares (1992) stated that teachers' early experiences

influence their beliefs strongly, especially from personal and socio cultural perspectives. Teachers, in their own communities have beliefs that provide structure, order and shared values, the reason being that beliefs carry emotional dimensions and resist change. With water education, teachers have their own cultural practices and the values that they have inherited from the community, race and families they come from, in turn form their own attitudes. Teachers' beliefs thus accumulated, maintain attitudes and behaviours which will resist change (Pajares, 1992) and their beliefs through their narrative practices may help support the impact of HVWSHE.

The implementation of values education comes with different kinds of challenges which are related to the training level and at the level of curricular implementation. The report of good practices as mentioned by the Earth Charter also included lessons that were learned during the project implementation (UNESCO & Earth Charter International, 2007).

Teachers from Mexico, Spain, Granada, Madrid and Barcelona felt that some of the problems they faced were lack of social recognition of teachers' work and in service training of teachers, lack of support from the administration and students' families, teaching fragmentation, pressures from the Ministry of Education to comply with the curriculum and decentralisation of educational competencies to independent communities. Other problems were lack of resources and specific training to respond to requirements of work in the classrooms, and help for new challenges that came with the implementation of these innovations. Teachers from Portugal reported that teachers needed more training and needed to promote knowledge sharing if such projects are to be successfully implemented. The report from the youth in Mexico reported that the underdeveloped area was in the assessment procedures that help to measure the qualitative and quantitative impacts of the Earth Charter project and this was solved by modifying the module after each training session and the provision of support materials provided by the facilitators (UNESCO & Earth Charter International, 2007).

In Asia, Sombath Somphone, the executive Director of the PADETC reported that some of the success factors are the inclusion of volunteer teachers from the community, integrating value concepts such as balancing head and heart: competencies, ethics and social responsibility in the curriculum and identifying real

life evidence based learning. The sharing of teaching tools among teachers also influenced the success of the program (Somphone, 2009).

ESD reports from the Sri Lanka High Commission for UNESCO (SLNCU) in collaborative efforts with the Ministry of Education (MOE), established a project called ASP–ESD clubs in Sri Lanka which selected 42 ASP schools. The project included increasing awareness in reduction of water and electricity consumption in schools and the inclusion of values such as peace and cultural diversity. However, until 2009, the report stated that the principals and teachers have not been trained and that future plans include teacher training to promote core values such as peace, respect for others, positive thinking, learning to live together and non–violence, and the assessment for such projects is yet to be established.

There are studies on environmental education in the West which showed evidence that students' emotions have a major role in reconnecting with the environment around them.

A study by Kemple and Johnson (2002) and Reis and Roth (2010) advocated that emotions have an impact on reconnecting one to the environment. In their study, an environmental educator (Nina) who had long-term success with the environmental education of six thousand students, stated that the data collected from school and non-school settings proved that exploring emotional aspects helped understand more about environmental ethics. The success of environmental education depends on how much impact the teachers have on students and for how long. The lack of resources, time and teachers' personal burdens may be permanent barriers to implementing HVWSHE in Southeast Asia and teachers' beliefs could impact the success of reforms based implementation.

In Asian regions the role of assessment for affective learning for environmental education does not exist in schools because this discipline is not incorporated in the mainstream education according to the report by Bhandari and Abe (2000). It is important to look at whether teachers mentioned the role of assessment for water education because HVWSHE training includes the concept of formative and summative assessment (UNHABITAT & SEAMEO, 2007). If these procedures have been implemented in the Asian regions, teachers' beliefs regarding assessment may

be explored through their experiences with water education. The role of values-based assessment for environmental education is discussed below.

Assessment of values-based environmental education

There are mixed views regarding the effectiveness of values-based education relating to assessment procedures. Ratcliffe 5and Hilderbrand (2007) critically argued that not all teachers consider science education to integrate values in their teaching. Ratcliffe and Hildebrand indicated that interviews of teachers in a study conducted by Levinson and Turner (2001) showed evidence that when teachers from both science and humanities backgrounds were asked their opinion regarding engaging students in discussion based on social and ethical aspects in their teaching, there were divided opinions. Half of the teachers were not ready to embrace the discussions of social conflict in their classrooms. Findings from this study showed that there was evidence that teachers' pedagogical beliefs had an impact on new reform implementations.

The review of studies by Ratcliffe and Hilderbrand has significant impact on the use of HVWSHE. The report stated that if teachers and students were given time to reflect their own value stance and to reason out critical arguments, there may be a positive impact. Furthermore, evidence from the review of studies claim that when teachers were provided with assessment based teaching using summative items there was more evidence of reasoning and the provision of teachers to integrate student outcomes. According to the report, students who are provided with structured instruction using the SOLO taxonomy could perform better and showed significant differences.

If HVWSHE is to be implemented and teachers were to adapt strategies to include an assessment of student outcomes in their classrooms, teachers may or may not take the assessment seriously as reflected in the reports by Ratcliffe and Hilderbrand (2007). Reports by Ratcliffe and Hilderbrand state that there are difficulties for science teachers in modifying their pedagogies to integrate values explicitly and the inclusion of summative and formative assessment in classroom tasks. On the other hand, Stevenson (2007) argued, that environmental education has to inform learners to improve the quality of life on the planet, alleviate exploitation and avoid social

injustice; the notion of providing credentials to students is not effective. The reason for this is because it teaches students to excel in individual achievements with no collective responsibility when environmental agendas refer to cooperative learning and participatory approaches (Stevenson, 2007). As a result, Stevenson argued, students remain passive spectators and are recipients of the knowledge of others rather than being rational thinkers and, instead of allowing learning and knowledge to go hand in hand, the practice is to provide theoretical knowledge to students before their actual practise. This according to Stevenson calls for changes in the structure of the organisation of schools and the professional ideologies that underlie teachers' organisation and knowledge transmission. The school curricula are predefined and serve predetermined behaviourally specific ends which contradict the aims of environmental educational goals. Furthermore, Osterman (2010) stressed that teacher accountability can impact any implementation, specifically the evaluation of affective education. From his review of studies Osterman stated that when there are high stakes testing methods involved, teachers automatically start controlling and this takes away the moments where teachers and student are able to respond and relate to each other for inquiry based learning. The findings from the review of studies that involved federal, state and local policy on instructional roles revealed that teacher–student relationships were impacted and high stakes testing pressured teachers to produce high student achievement. This prompts teachers to rely on blame, praise and teacher directed teaching that impacted student motivation. Teachers' beliefs regarding the general implementation of HVWHSE and their reasons for their beliefs seemed crucial to this study.

Reflecting critically, Buissink-Smith, Mann and Shephard (2011) stated that measuring affective learning is complex and it is still important to measure students' values, attitudes and behaviours for sustainable development. This is because it is the affective learning outcome that actually promotes values for future decision making for students as they decide what kind of choices they need to make to contribute to society with their knowledge. Their decision making is drawn more from their affective attributes rather than cognitive and it has an impact on their learning outcomes and their future contribution to the society. The authors suggested that assessment can be conducted from quantitative and qualitative methods to collect data from both primary and secondary sources over a short and long time frame. This

was based on earlier works of value proponents such as Krathwohl, Bloom & Masia (1964). These included the five hierarchical stages as proposed by Krathwohl et al., (1964). They include the ability to receive, to respond, to value, to organise and to internalise. Short term assessment using primary sources for quantitative measurements included measuring through the use of pre-test and post-test questionnaires while short term measurements included observations, focus groups, formal and informal interviews with students, reflective journal writing, written thoughts, images, use of games, videos and the like to measure the commitment of students for affective objectives.

Secondary sources of measurement included peer reviewing and reflections, teacher reflections, and informal reports from teachers based on incidents during the teaching periods. Long term measurements are more complex. In the USA, the *Middle School Environmental Literacy Survey (MSELS)* was developed by McBeth, Hungerford, Marcinkowski, Volk and Meyers (2008), which included four domains for environmental literacy and they included knowledge, affect, cognitive skills and behaviours.

Some evidence is seen from reports from the Bahai community which were funded by the EU and is provided below. Dahl (2011) reported on a few projects that were implemented and funded by the EU with the indigenous areas in Mexico. The project named *Development of Indicators and Assessment Tools for CSO Projects Promoting Values-based Education for Sustainable Development* is affiliated with the Earth Charter. The report presented at the PERL International Conference at Istanbul, Turkey stated that case studies have shown the effectiveness in contexts of indigenous children in Mexico. The Echeri Consultores is an organisation which is affiliated with the Earth Charter and implemented the project on 9–13 year olds in 15 schools. The activities included art workshops, guided reflection on local ecosystems and tree planting. The second sample included another multicultural group of 19 aged 12–21. The Ecsheri group chose 12 indicators that related to *Collaboration in Diversity* and 10 indicators relating to the value of *Care* and *Respect for community life*. There were various reasons that contributed to the effectiveness of the assessment. First the youth publicly expressed their views by making their values visible and the experiential learning helped them understand one another. The

assessment was based on fun-filled activities and students were given two page questionnaires to fill out. The findings from the measurements were related to the results from a sample group of 1500 children in schools of the area. From the review of literature on values and assessment it can be understood that assessment for values-based education can be made effective if it is implemented in a fun-filled way for students using multiple strategies.

The above reports highlighted that there are mixed views about assessment for values education. If teachers believed that student outcomes are positive for HVWSHE, then it would be important to explore firstly if values education is easily implementable in classrooms and if so, what factors impacted teachers' beliefs regarding student outcomes for HVWSHE. Exploring teachers' views on student outcomes regarding their attitudes and behaviours would help generate some information about how teachers assess student outcomes in the different regions in Southeast Asia.

3.4 Belief systems and Teachers' beliefs and their impact in classroom teaching and learning processes

Before the discussion of teachers' beliefs regarding the new reform strategies in educational contexts, it is important to understand belief systems and how crucial it is to explore them. Between 1970 and 2000, psychologists explored components of belief systems. Rokeach (1972) stated that beliefs have affective, cognitive and behavioural components. From this it can be understood that teachers have beliefs that are related to knowledge and beliefs that are related to their work and that these beliefs influence their intentions and behaviour towards their teaching. According to Fishbein and Ajzen (1975) beliefs are evaluative because they lead to a favourable or unfavourable evaluation of an object, depending on available information. Fishbein and Ajzen stated that beliefs have affective, cognitive and conative components. The theory of belief systems of Fishbein and Ajzen (1975) is central to the theoretical framework of this present study and its implications for HVWSHE are explained in detail in the next chapter.

Other proponents of belief studies such as Stegmuller (1976) asserted that beliefs have components that help in organising tasks. Teachers' beliefs regarding their

teaching practices depend then on what they think is important. Sometimes beliefs can be complex because belief systems have components, which "are in part concerned with the existence or nonexistence of certain conceptual entities" (Abelson, 1979, p. 357). The teaching processes of HVWSHE are likely to be influenced by teachers' beliefs regarding religious and spiritual practices. In other cases, teachers' experiences may have an impact on their beliefs because Siegel (1985) reflected that beliefs are set as mental schemas through experiences. This suggests that teachers' experiences are crucial and this study of HVWSHE examined teachers' responses which have affective responses and are important components according to assertions by Zajonc (1980).

Nespor (1987) reflected that beliefs have both affective and evaluative components and that affect works distinctly from the cognitive component of knowledge. Other belief proponents such as Calderhead (1996, p. 715) referred to beliefs as "suppositions, commitments and ideologies", in contrast to knowledge which refers to concepts and facts according to an individual's understanding. Richardson (1996) differentiated knowledge from beliefs by pointing out that knowledge has to be backed up with some form of evidence while beliefs do not. Bandura emphasised that self-efficacy beliefs are the foundation of human agency (Bandura, 2000, p. 75). According to Bandura:

> Efficacy beliefs influence whether people think erratically or strategically, optimistically or pessimistically; what courses of action they choose to pursue; the goals they set for themselves and their commitment to them; how much effort they put forth in given endeavours; the outcomes they expect their efforts to produce; how long they persevere in the face of obstacles; their resilience to adversity; how much stress and depression they experience coping with taxing environmental demands and the accomplishments they realize. (2000, p. 75)

As Bandura emphasised there are various factors that could impact teachers own confidence and attitudes where their efficacy is concerned. Teachers' beliefs are important where teaching approaches are concerned for HVWSHE as the above

reports on belief systems revealed the complexity and the important role that beliefs have in the implementation of any task.

Teachers' beliefs regarding their teaching approaches for environmental education are crucial because of the different strategies and elements that teachers have to consider when they teach in classrooms and these aspects are presented in the section below.

3.4.1 Teachers' beliefs regarding their teaching approaches

Teachers teaching approaches are considered very important if environmental education for sustainable development is to be successful. Nespor (1987) asserted that teachers' beliefs and how they conceptualised their work and their roles in their schools were not scrutinised enough and there was a need to give more importance to teachers' beliefs in educational research.

Almost any kind of reform requires teachers to undergo a challenging period because of the obstacles they face depending on whether it is a new teaching approach such as a constructivist type of teaching or implementing technology or with new resources. Several researchers who reviewed teachers' beliefs and thinking processes have concluded that teachers' beliefs are complex and difficult to change. Teachers' beliefs and preconceived ideas may also not be aligned with new reforms or with what is required for their implementation (Clark and Peterson, 1986; Ertmer, n.d; Isenberg, 1990; Munby, 1982; Shavelson and Stern 1981). An example is the implementation of silent sitting and prayers which are pedagogies which are not accepted widely in certain communities. Teachers from non-secular backgrounds and those whose cultural practices have relevance with silent sitting may adapt these practices faster and face resistance with teachers who consider these practices alien to them.

Pajares stated that beliefs could play a key role in educational research if teachers' beliefs are explored and their key assumptions examined (Pajares, 1992). Taking Pajares' (1992) view of belief systems it can be understood that an investigation of teachers' beliefs about HVWSHE could reveal the key assumptions held by teachers. For example, it is important to understand if teachers feel they are able to change

their teaching from traditional approaches to student centred approaches. Using socio-constructivist approaches which involve student group discussions and experiential learning outdoors, requires teachers to change their teaching patterns. It is of significant interest to know whether teachers believe in using cooperative learning methods and if they would like to adopt strategies that result in reflective discussions in classrooms and what factors are barriers to implementing them for HVWSHE.

Fang (1996) reviewed several studies and found that sometimes teachers' narratives revealed the differences between their own thought processes and those required by the aims of the reforms. Fang found that narrative studies of "construction and reconstruction of teachers' practical knowledge will help school reform" because participants' thought processes may show differences in their beliefs related to their personal experiences Fang (1996, p. 59). Fang also found that the educational system in schools in a particular region or district may hold its own cultural views in its particular educational settings which are unique to its own environment. Sometimes the school members, school climate and the decisions made by educational officials and stakeholders have an impact on teachers' beliefs (Fang, 1996). In Southeast Asia the implementation of values-based water education are impacted by the different cultural and religious elements in the respective regions. When large organisations such as SEAMEO and UNHABITAT implement certain new reforms in cooperation with school and water organisations for implementing values in their curriculum, the teacher's role is seen as increasingly important where curricular reforms and implementation are concerned.

If teachers are ready to be trained and provided with support, it must be on a long term basis until teachers' beliefs are aligned with the aims of the goals as in HVWSHE. Fischer-Mueller and Zeidler (2002) found that factors impacting teachers' beliefs include their poor conceptual understanding of the theoretical application of the new reforms and their resistance to change. However, these beliefs changed over time when teachers were engaged in reflecting the goals of science through shared enquiry which helped build collegial relationships with each other. This enhanced more inquiry based practice and developed less resistance to changing beliefs. A longitudinal study of teachers' beliefs and practices in a technology-based

classroom by Levin and Wadmany (2007) showed that teachers' beliefs changed gradually over the course of time, and that some teachers had multiple beliefs. The beliefs of a sample of six teachers were studied for a three-year period when an innovative teaching method was introduced. At the beginning three teachers had a fixed strategy of transmitting knowledge but after the three years most had started to facilitate and use collaborative teaching strategies.

Sometimes examination of teachers' beliefs can reveal that their beliefs are different from their actual practice in the classroom. For example a teachers' beliefs study conducted in Singapore revealed that teachers believed they were using teaching approaches that were student centred although they were not. Teo et al. (2008) investigated the relationship between teachers' beliefs regarding teaching, the use of technology and the implementation of constructivism in Singapore using a sample of 582 pre-service teachers who had at least six months of teaching experience. This revealed that these teachers from Singapore were more inclined to transmit knowledge than to facilitate students' construction of knowledge (Teo et al., 2008). In such cases teachers believed that they were using the new reform but their conceptual understanding of the new reform was not in depth. These studies show the impact of teachers' beliefs are resistant and ongoing support is needed to keep teacher motivation aligned to the reforms. First teachers have to gain skills to use technology and also be able to change their teaching patterns. As Prawat (1992) stated, teachers' teaching methods change from lecture modes to scaffolding knowledge which are completely different ways of teaching. With HVWSHE, especially for affective learning, teachers' teaching patterns may need to conform to aligned reforms and beliefs have an impact on their teaching patterns.

The next section focuses on the effectiveness of values based education for HVWSHE.

3.5 Effectiveness of values-based education for HVWSHE

HVWSHE is used in parts of Thailand, Indonesia, and Lao PDR to increase students' awareness and raise social consciousness in students. The teaching principles and pedagogies used in HVWSHE are similar to those used in Education in Human Values, which is applied, in mainstream education in most schools that follow the

procedures of Sathya Sai education. Jumsai (2003) and Taplin et al. (2005) are two key researchers who have contributed to the understanding of Education in Human Values in Southeast Asia. This review will look at the studies of these researchers on Education in Human Values education (EHV) in mainstream education. The similarities between EHV and HVWSHE mean that a review of the former is worthwhile in understanding the latter.

3.5.1 Study of the implementation of teaching pedagogies for education in human values

Specific teaching pedagogies such as silent sitting, prayers, storytelling and music have been used in Sathya Sai schools all over the world (Sri Sathya Sai World Foundation 2007). Taplin et al. (2005) undertook action research on using Education in Human Values into subject curricula in China. They explored teachers' perceptions of how human values were integrated, using a problem-solving approach in mathematics and science teaching. Teaching pedagogies were used along with content teaching. Taplin et al. argued that a teacher's ongoing professional growth is necessary for the successful implementation of human values education. Teachers were engaged over a twenty-month period in classroom based action research and received ongoing input from the facilitators. Positive changes occurred in their beliefs about the importance of integrating human values into teaching. Their ability and confidence to solve problems that arose in implementing the new teaching ideas increased as did their belief in themselves as problem-solving practitioners and their belief that they could continue to make changes in their teaching approaches to further develop values education in teaching. Gradually the teachers began to understand the differences between the new and old paradigms of their integration of values in education (Taplin et al., 2005).

Teachers were required to explore the use of silent sitting as one of the teaching pedagogies of EHV. The reflective notes of one of the teachers stated the following:

> I tried different ways: silent sitting, using background music and using guided visualisation. I found the music was not such a good way and the guided visualisation was better for children. (Taplin et al., 2005)

When innovation is implemented in the normal curriculum it takes time for teachers' beliefs to change and adapt as well as to modify their practices to their own situations. The teachers were sceptical at the beginning of the innovation until they were given time, support and encouragement to learn new skills and facilitate the integration of human values across the curriculum (Taplin et al., 2005).

There are large class sizes (often 50–60 students) in Chinese schools and time constraints apply as well as the pressure of covering the syllabus. The action research required teachers to work in pairs and to enable peer discussion and sessions that emphasised the aims and objectives of the project and curriculum (Taplin et al., 2005). The strategy aimed at: "demonstrations of promising practices, ongoing professional development by peers rather than one-shot workshops by outside experts" (Taplin et al., 2005, p. 4). At the beginning of the second session of the workshops, teachers were concerned about the students' performance. One of the teachers stated:

> We are finding that the characters of the children in the experimental class are improving but we are worried that their scores are going down because we are spending less time on the lesson by talking values. (Taplin et al., 2005, p. 22)

However, the teachers' genuine beliefs in the innovation developed gradually over time. During the fourth session one of the teachers commented: "I can feel they are increasingly paying attention to the honour of the whole class and to self-discipline"; while another stated: "I can feel that the students can feel the change in me" (Taplin et al., 2005 p. 22).

The process of facing obstacles and failing often leads teachers to give up integrating values education. Nevertheless, teachers according to Taplin et al. believed "the value of the initiative and their own capacity to bring about change came about when they recognised the impact on themselves, on their students and on the teacher-student relationship" (Taplin et al., 2005, p. 30). It is crucial therefore that teachers' beliefs and perceptions can change even if they resist change at the beginning.

3.5.2 Studies of HVWSHE in Southeast Asia

Ng et al. (2007) reported on a study of teaching mathematics for values-based water education through constructivist approaches. In their study it was reported that a lesson was developed with a cross-curricular approach and constructivist learning theory and activities, which were problem-based. This was introduced to eight teachers and teacher educators from SEAMEO member countries (Brunei, Indonesia, Malaysia, Myanmar, Philippines, Thailand and Singapore) as part of their training program in online mathematics teaching and learning in 2006. A section of the lesson was piloted with 12 to 13 year old students in Malaysia in 2006. Teaching pedagogies included art, poster presentation, audio visual aids and music. Lyrics of the song, "Water, precious water" were provided and according to the researchers, students could relate to it personally; it engaged their attention and they stated that "mathematics has been found to become alive and purposeful" and it was fun filled (Ng et al., 2007, p. 15). The use of several different types of pedagogies helped impact student learning and motivation in this study of HVWSHE.

There are three other studies that are relevant to HVWSHE which used different pedagogical approaches and new thematic strands to test the effectiveness of HVWSHE. Ng (2007) evaluated a teacher-training program where teachers from some Southeast Asian countries were introduced to the concept of values-based water education for HVWSHE. The introduction of the concept included interactive participation where teachers were divided into four groups depending on their area of expertise. The four groups explored issues of water depending on four themes; environmentally sustainable development; health, sanitation and recreation; social equity and human dignity; culture, traditions and religious practices which are themes conceptualised according to the handbook for Values-based Water Education (Ng, 2007). The interactive instruction was aimed at creating a collaborative learning environment between teachers and learners using both social constructivist approaches as well as constructivist teaching pedagogies such as discussion among participants using peer-learning strategies.

A pre-test and post-test survey was administered to 23 teachers to study the increase in teachers' perceived levels of knowledge of selected components related to HVWSHE (Ng, 2007). The results from the quantitative findings were triangulated

with both observations and interviews along with the summary of open-ended responses. There was a difference of 2.44 in the mean score of the pre-test and post-test revealing that teachers' philosophical overview, rationale and conceptual knowledge of HVWSHE had increased.

Regarding teachers' understanding of HVWSHE and the significance of HVWSHE in their region, the mean score difference in the pre-test and post-tests of their conceptual understanding was 2.61, showing that participants' perceived levels of knowledge had increased. Regarding thematic strands, a notable difference was seen in participants' perceived conceptual understanding of strand 4 (water in culture, traditions and religious practices), where the mean score difference between the pre-test and post-test was 2.57. The output analysis revealed the smallest difference was in participants' perceived understanding of thematic strand 1 (water and environmentally sustainable development) with a mean score difference of 1.91.

Ng (2007) reported on the post-test questionnaire feedback administered to participants from Brunei, Cambodia, Indonesia, Lao PDR, Malaysia and Malaysia on May 25th, 2007. The report on the thematic strands is presented below.

Ng (2007) stated that from teachers' reports for strand 1 (Water and environmentally sustainable development), some of the teachers' understandings of the environment were to:

> Provide environmental facts as eye-openers: Coincide teaching these facts with human values, especially right conduct to create awareness that it is every inhabitant's duty on earth; Lake Chad drying up, no water for survival, agriculture, migration of people. (Ng, 2007, pp. 8–11)

Regarding strand 4 (water in culture, traditions and religious practices) teachers' responses included:

> Islam: ablution requires clean pure water (2 statements), Wudhu, spiritual cleanliness…
>
> Water to clean old thing (keris) – Javanese (x2), Bride-bathing with water and flower, etc (2)…cleansing body before prayers/praying (x3)… Christian

> – water baptism … The monk will spring the water onto our head as blessing… Water is an offerable thing to the Buddha and it has to be cleaned and saved…. (Ng, 2007, pp. 8–11)

Regarding participants' perceived conceptual understanding of thematic strand 3 (water, human dignity and social equity), the output analysis revealed a mean score difference of 2.35 and the mean score difference between the pre-tests and post-tests for thematic strand 2 (water for health, sanitation and recreation) was 2.26.

The study revealed that a conceptual understanding of the thematic issues is important. Ng (2007) recommended that in order to train teachers they should be provided with opportunities for professional development by "integrating values-based learner-centred approaches" instead of focusing only on "content-based learning with instructor centred approaches" (Ng, 2007, p. 11). This study had shown that teachers' teaching approaches play a crucial role for HVWSHE. However, it did not highlight the importance of how teachers will use these concepts to draw out values from students and how these concepts will be used for learner centred approaches.

Another study by Yeap, Ng, Wahyudi, Cheah and Devadason (2007) reported on the development and validation of the Water Attitude Scales (WAS) questionnaire to evaluate the perceived change of values and attitudes in students towards water after the implementation of HVWSHE. A draft instrument of a 29-item questionnaire was developed using the thematic strands after statistical analysis of the initially developed draft questionnaire and discussion with teachers. The questionnaire was administered to 51 Form 2 students in Penang, Malaysia.

Analysis of students' feedback from the pre-test and post-test results revealed that each scale was highly reliable, with a Cronbach's Alpha coefficient value ranging from 0.98–0.99 and low mean correlations that ranged between 0.34–0.45. The study confirmed that the WAS questionnaire was a dependable instrument with which to analyse learners' perceptions regarding the value of water as prescribed for the HVWSHE curriculum. However, the researchers stated that a range of assessment techniques needs to be used for assessing values education because of the different pedagogical needs for achieving successful implementation for HVWSHE.

Toh et al. (2007) reported on a design-based study involving teachers who developed integrated human values in lessons and curriculum materials for Form 2 geography and science subjects for Human Values-based Water, Sanitation and Hygiene Education. The study used a constructivist framework where teachers first identified students' prior knowledge and integrating human values along with cross-curricular teaching approaches. Toh et al. (2007) stated that in order to achieve the integration of the teaching processes of the Human Values Integrated Instructional Model and the subject contents, a cross-curricular approach has to be used.

The lessons and materials were trialled in one of two Form 2 classes of 49 students from Penang, Malaysia. Students observed water filtration methods and conducted experiments. Games were incorporated and values were elicited during the sessions. Students were encouraged to express their feelings through values clarification and a discussion of good habits that are worthy of being role modelled. Teachers' observations were that the students enjoyed the field study (Toh et al., 2007).

The lessons were evaluated by pre-test and post-test using a Water Attitude Scale (WAS) questionnaire as developed by Yeap et al. (2007). The WAS questionnaire administered to 24 male students were analysed using paired sample t-tests. The findings revealed that students showed significant improvement of mean difference of 0.29 (with 95% confidence interval of the difference) in item No.12: "I would like to participate in a water saving campaign". For item No. 7: "I read books or follow news about water issues", a mean difference of 0.34 was found in the pre-test and post-test. For item No. 13 "I would like to work together with others to clean wells, sinks or other sanitation facilities", there was a mean difference of 0.37 (Toh et al., 2007).

To provide triangulation of the quantitative data, analyses were also conducted of student responses to different assessments. Some comments (May 23rd, 2007) from the Group 1 students' poster presentation is given below. Students were asked to give answers to the statement "Right conduct is ……" (Toh et al., 2007, pp. 8–9). Some of the responses are as follows:

...Sue the irresponsible people (If we want to enjoy sea scenery, stop polluting.)

...Let's take care of our water…Keep river clean.

Taking care not throw rubbish into the river; ...
Build a barrier to trap the flow of rubbish in drain; ...
Find someone that pollutes river.

The implications of this study are that interdisciplinary approaches and the integration of human values can help students' critical thinking skills and awareness of human values. According to the study, teachers should be equipped with innovative teaching pedagogies because they found that HVWSHE was more effective when implemented in an intradisciplinary mode (Toh et al., 2007). According to this study, the aims of HVWSHE will not be fulfilled unless teachers adapt the teaching pedagogies and nurture learning that aims at both cognitive and affective domains.

Ng et al. (2007) reported on a pilot study of a part of a lesson, which aimed at promoting HVWSHE to 12 to 13 year old students. The lesson was planned using a cross-curricular approach integrating problem-solving learning activities. The 120 minutes of three lesson sessions was meant for Grade 6, which aimed at students understanding fractions, percentages and computation with reference to water based issues and facts. Learning outcomes included calculation of water usage in houses and water collected from rain and local catchment areas. Students were also taught the interrelationships of water with all living things and human values. Music in the form of a human values-based song was also incorporated in the lessons to motivate students. According to the researchers, the lesson outcome was that students had fun and "integrating a cross curricular lesson into the classroom has been found to add value to seemingly isolated disciplines" (Ng et al., 2007, p. 15).

In all the above studies, teachers' use of the HVIIM is seen to have enhanced students' positive attitudes and their conceptual understanding of the use of the model. However, teachers' use of the affective dimension of the HVIIM such as Educare and role modelling had not been explored specifically in how teachers elicit and integrate human values during their teaching sessions. These studies have investigated the themes and their use in lessons, and the study of teachers' beliefs about the use of the teaching processes will reveal their beliefs regarding the use of these processes.

3.6 Teachers' beliefs regarding cultural and contextual factors

The importance of exploring teachers' beliefs regarding the implementation of HVWSHE related to contextual and cultural factors is therefore important. The reason, as stated by Nespor (1987), is because belief systems include the presence of either existent or non-existent identities. The section below presents a review of the importance in understanding the difficulties with implementing pedagogies which require teacher training when teachers implement new programs in new settings where HVWSHE is concerned.

One of the main themes that teacher training of HVWSHE includes is the cultural aspects of water practices and the religious philosophies associated with it. Although HVWSHE specifies the importance of bringing into students' lives the personal relevance of water practices, it is important that teachers are able to conceptualise the teaching for multicultural classrooms. Bryan and Atwater (2002) stated: "we believe that culture and cultural knowledge plays an integral role in knowledge construction, particularly in science and science education" (Bryan and Atwater, p. 826). They also stated that a review of teachers' beliefs regarding multicultural issues revealed that teacher educators have to understand the characteristics and beliefs of teachers who are being trained as they may not have adequate intercultural experiences, especially if the students are from diverse backgrounds.

Teaching scientific concepts in multicultural classes may depend on the existing beliefs that students have. For example, according to Linkson (1999) a degree of cultural mismatch was evident when science concepts were taught to a group of Australian indigenous people because according to him, most schooling was based on western science and teaching approaches. The western science curriculum provides a view that all things can be measured, counted and weighed because they can be separated and identified whereas Australian indigenous cultures consider non-scientific interpretations for many events they witness. An example given by the author is that if a crow flies above, and screeches, the Murrinpatha people of Wadaye believe that the crow totem is in some sort of trouble. Thus according to Linkson, the curriculum has to consider cultural differences to provide a worldwide view (Linkson, 1999). Teachers' beliefs are incorporated when they are early and they are

stagnant even during challenging situations and teachers' beliefs are accumulated through transmission of their own individual cultures making it difficult to change.

Sometimes teachers' beliefs are also impacted by cultural factors when dealing with the curriculum content (Linkson, 1999) or with sociocultural factors (Whitman and Lai, 1990). Whitman and Lai (1990) studied the similarities and differences in teachers' beliefs about effective teaching of mathematics in the USA and Japan and this revealed that teachers' socio-cultural environment had an impact on the way they taught. It was found that teachers in Hawaii, USA catered more for individual differences while those of Japan did not because of the fear of being identified as being different from the group and the 'need to save face'. Studies of this kind showed that teachers' beliefs are also impacted by cultural contexts.

The relationship between religion, culture and spirituality though complex, is also important where water education is concerned. Tisdell (2003) stated that it is important to educate matters that are culturally relevant to education. In HVWSHE, the shared beliefs, values, language and behaviours toward water related aspects of life are important because of the different symbolic meanings and behaviours associated with water in cultural groups. According to Tisdell, spirituality can be defined as an awareness of the interconnectedness of all things while cultural aspects are related to shared norms and experiences of a particular group.

The role of religion and spirituality in environmental education is seen as an important component of environmental education which is now incorporated by the UNESCO, Earth Charter Commission and various affiliated groups, and a number of independent scholars as well as the Bahai Communities. However, how these aspects are translated and supported to develop in classrooms entirely depends on teachers' skills and beliefs and it is important that general concepts may not be relevant to student learning unless cultural aspects are embedded in their learning.

Dahl (1996) and Hitzhusen (2006) reflected that the term sustainable development encompasses social dimensions but also includes moral, ethical and spiritual dimensions. According to Hitzhusen integrating teachings from religion to environmental education will broaden the availability of more values to help support environmental citizenship. This can be done without converting students to a new

belief system but by inspiring them to develop their environmental values from the existing value system they believe in. The work by G. E. Hitzhusen in 2005 consists of a compilation that informed important concepts, teachings and activities which were integrated in both Christian and Jewish environmental programs in the US and Canada drawn from old traditions. Some themes that support spiritual teachings for environmental education include cultivation of awe and wonder, exploring ecological and communal relationships with spiritual, ethical and teachings from the scriptures. When the concepts are implemented in classrooms, teachers must have appropriate cultural orientations and dispositions, and exploring their beliefs is important for HVWSHE.

For example, Hitzhusen also emphasised that some of the pedagogies such as prayer and worship in the form of thanksgiving, song and rituals can be used using Hungerford and Volk's (1990) model as a guide as it develops spiritual awareness which can empower students. He also stated that the use of narratives from religious traditions and helping students look at the importance of life as a gift can inculcate respect and love for the environment. Teachers' beliefs regarding the implementation of prayers and worship in classrooms can be positive for students' understanding of the environment, but if teachers do not believe that prayers have significance for water education they may not implement it.

Haigh (2006) explored the relationship between deep ecology and spiritual teachings. Beringer (2006) suggested spiritual explorations as an alternative pathway to understand sustainable education drawing on the works of Seyyed Hossein Nasser, called *Religion, Order and Nature* written in 1996. He argues that environmental education requires teaching both spiritual and religious knowledge at the cultural and global level. According to Nasser, religion will inform environmental ethics reference systems and as knowledge systems of the nature-human relationship which modern science cannot capture. Some of the issues such as genetically modified crops, use of atomic energy as source for increased demands of energy without ethical consideration show that there is a lack of spiritual religious understandings of nature.

Salomone (2006) stated that of the Christian traditions, Catholicism has two practices which can lead to environmental education. One is through *monasticism*

where practices can be based on simplicity, moderation and balanced management of natural areas. Many monasteries are centres for ecology and world peace because of the lifestyle led by monks from the Camaldol. The second is *associationism* which concerns all sectors of society. Catholicism can teach messages of peace and social justice.

The above reviews confirmed that religions and spiritual teachings are able to contribute to environmental education but according to Pajares (1992) individual beliefs affect one's behaviours, and teachers' beliefs act as filters for teachers to organise their educational tasks.

There are initiatives taken up by the Earth Charter which have postulated certain agendas but there are no formal programs where teachers' beliefs have been explored to understand how teachers' beliefs actually impact their teaching. The Baha'i community have contributed to the Earth Charter to the Preparatory Committee of the United Nations Conference on Environment and Development (UNCED). The Baha'i community proposed that the global action and development should be rooted in accepted values and principles. The concept paper shared at the 1st session of the United Nations Commission on Sustainable development in New York in June 1993 reported that the greatest challenge for the Earth Charter is to implement Agenda 21 because Agenda 21 provides the framework of scientific, technical knowhow for implementation of sustainable development but does not empower for a personal commitment to global ethic. There was no conceptual framework of how various values of world citizenship such as human honour, dignity, compassion and desire to serve can be implemented in actual practise (Baha'i International Community, 2008).

In 2009, the UNESCO summit that took place in Oregon, consisted of fourteen national chairs from Eastern Europe and Central Asia hosted by the UNESCO chair of the USA, Steven Shankman, Mary Evelyn Tucker and co-creator of the Earth Charter. This event challenged global thinkers and policy makers to have interfaith dialogues with both religious and spiritual communities so that they could draw upon their values in honour of mother earth. The teachers' role is underestimated when they teach content related to religious and spiritual practices.

The section below elaborates on the integration of water and environmental values in Asia and the non- Asian regions.

3.6.1 Water and environmental values in Asia

Environmental values in Asia have been derived predominantly from spiritual and cultural practices before environmental ethics became popular. To understand how HVWSHE fits into the Southeast Asian perspective of education for sustainable development, it is important to look into the kind of environmental values people hold regarding water in the different regions of Southeast Asia.

According to Bhandari and Abe's report, Asia Pacific regions contain followers of all the major religions of the world such as Hinduism, Buddhism, Christianity and Islam. Before technological advancement and scientific discoveries, societies had their own rituals, practices and traditions, which protected and preserved water, and these were handed down over generations through collective wisdom (Bhandari and Abe, 2000) making it difficult to standardise teaching content for water issues (Smith & Ali, 2006). Although many countries in Southeast Asia claim to practise secular education there are strong elements of cultural and religious practices relating to water in education in many parts of the region. Countries, especially India, Malaysia, Brunei, Cambodia, Thailand, Indonesia and Lao PDR have festivals, rituals and traditions that use water for daily spiritual practice. It is important to understand the role of water in religion, tradition and culture because of the integration of these aspects in the Asian regions (UNESCO, 2003; UNHABITAT & Global Dharma centre, 2005).

However, the review of literature stated that in recent years the values attached to water are becoming less significant over the generations (UNHABITAT & SEAMEO, 2007, p. 11) and this could be because technology took over in 1990's. Azariah, the founder President, All India Bioethics association asserted that technological development is related to technological manipulation and is profit oriented (Azariah, 2004 and that the problems related to the modern world could be solved through better co-existence within humanity as a whole through spiritual awareness. A similar emphasis was given by Kanu (2001) who stated that people in

Africa understand the sacred role that water plays in their lives and how it protects and supports growth and development of the environment in general.

Many of the cultural aspects are related to conserving and protecting the environment which has been derived from years of conservative practices embedded in their own social contexts. The cultural aspects cannot be overlooked because, for example, in the Northern region of India, the culture of Meetis was studied by Singh, Singh and Gupta (2003). They investigated the communities in both Manipur and Assam and through participatory methods, interviews and discussions of their environmental beliefs. Surveys and interviews with scholars and information from old texts provided a vivid description of their environmental beliefs. The Meetis used cultural mechanisms to conserve and preserve nature where groves were considered sacred and trees were worshipped. There were elaborate and specific details on taboos related to what plants must be harvested and what plants and animals can be consumed. Similar practices were seen by the Ami tribes in Taiwan and by the Shinto faith in Japan. Such eco-centric practices can be understood only through a thorough investigation of whether beliefs of cultural practices have an impact for HVWSHE. Shared belief systems and water related practices in different regions are elaborated below according to their geographical positions in many countries and these practices have a significant impact on belief systems.

Water related practices in traditions and religions

Dewey stated that common patterns of relating to aspects of the world exist because every experience is evidently an "interaction between a live creature and some aspect of the world in which he lives" (Dewey, 1934, p. 11). Eastern and Western countries originally practised various traditions related to water rooted in their own cultures. Eliade (1958) stated that in cosmogony, myth, ritual and iconography, water weaves itself in cultural patterns. According to Bruner:

> Culture plays an important part in meaning making and meanings are considered 'public and shared'. Stories related to water are present in almost all cultures. Water has from time immemorial been a part of folk stories in many parts of the world. According to Bruner, folk psychology deals with 'nature, causes, and consequences of those intentional states/beliefs, desires,

> intentions, commitments' which scientific psychology ignores. (1990; 2005, p. 13)

Macer (1994a) stated that humans have a deep relationship with water as water possesses spiritual images of cleansing and purity and because humans have a socio-biological preference for water. Macer (1994b) conducted an international bioethics survey in 1993 in ten countries, Australia, Hong Kong, India, Israel, Japan, New Zealand, the Philippines, Russia, Singapore and Thailand. This had open-ended questionnaires where people had to describe images of life and nature and the universal themes selected were water, rivers, oceans, ponds etc, which confirmed that water is a common image of nature. The strongly held beliefs regarding water practices are therefore important and are relevant in this study of HVWSHE.

Bouguerra, a consultant with World Health Organisation (WHO) and UNESCO, heading the world water program of the "Alliance for a Responsible and United World" stated that:

> water is a source of life, an element of regeneration and purification. It is also the origin of the world. There are innumerable symbolic meanings attached to water in the traditions and cultures of the black continent. (2005, p. 16)

According to Bouguerra, "myths, faiths, symbols seem to serve another essential cause for the survival of communities: protection of the environment" (2005, p. 21).

The practices associated with water are integrated in daily living through rituals, in prayers, incorporation of practices that respect water through aesthetic rituals in weddings, and the importance given to water in ceremonies for birth and death.

Quotations from sources compiled by Abrams (2000) provided below illustrate the diversity of religious associations with water in Southeast Asia.

Water from a Baha'i perspective

> The Almighty Lord is the provider of water, and its maker, and hath decreed that it be used to quench man's thirst, but its use is dependent upon His

> Will. If it should not be in conformity with His Will, man is afflicted with a thirst, which the oceans cannot quench. (Abdu'l-Bahá, in Prayer, Meditation, and the Devotional Attitude. (compilation, Abrams, 2000, pp. 231–232)

Water from a Buddhist perspective

The monks recite: "As the rains fill the rivers and overflow into the ocean, so likewise may what is given here reach the departed" (Abrams, 2000).

Water from a Christian perspective

Almost all Christian churches or sects have an initiation ritual involving the use of water. Baptism has its origins in the symbolism of the Israelites being led by Moses out of slavery in Egypt through the Red Sea and from the baptism of Jesus by John the Baptist in the Jordan (Abrams, 2000).

Abrams (2000) noted, that after Jesus' resurrection, he commanded his disciples to baptise "in the name of the Father, Son, and Holy Spirit" (Matthew 28:19–20).

Water from a Hindu perspective

To Hindus all water is sacred, especially rivers, and there are seven sacred rivers, namely the Ganges, Yamuna, Godavari, Sarasvati, Narmada, Sindhu and Kaveri. Although Hinduism encompasses so many different beliefs, among those that most Hindus do share is the importance of striving to attain purity and avoiding pollution. This relates to both physical cleanliness and spiritual well-being (Abrams, 2000).

Water from an Islamic perspective

The Prophet stated:

> Oh, Sa'ad, do not over use water! Just use whatever you need exactly. Sa'ad replied, 'is there any misuse of water?'. The Prophet (pbuh) said: 'Yes, even if you are on the shore of a river'. (Zad Al-Ma'ad, pp. 1–48, quoted in Abu-Hola, 2009, p. 205)

In Africa conservation of water from early traditions was handed down from generation to generation in the form of stories that became the beliefs of later generations. For example, at an expert group meeting on water education in African cities held at Johannesburg in 2001, Pearson introduced a piece from a theatre production "For the Love of Water" in Africa. He stated this verse is used in Africa, a myth to conserve and preserve water:

> Kgogedi, the terrible water snake that lives deep beneath the Earth's surface and holds back the waters because the people have lost respect for water, boomed in a loud voice… 'You are the one to go and teach the people that without respect there is no water. You are the one to teach them to be Water Wise. (Pearson, 2001, p. 194)

Such narratives are held as beliefs by indigenous Africans and can be used with students to initiate critical and reflective thinking.

Smith and Ali (2006) studied the impact of cultural and religious water use in the United Kingdom. According to them, religion has a fundamental bearing on how people use water and what they think about water. District metering data from seventeen metropolitan cities was collected. It was found that the patterns of water use were significantly affected by religious practices particularly those of Jewish and Muslim groups. There is a peak usage of water on Friday afternoons because the Jewish Shabbat starts on Saturday. In the case of Muslim districts, peak water usage occurs on Fridays before sunrise and at midday, which is before prayer time. In the case of Hindus, water use was high during the early morning. This is linked with the need for cleaning and purifying altars etc. According to researchers, Sikhs have water practices associated with their religious faith, which are identical to the pattern of water use by Hindus (Smith & Ali, 2006). Hefny (2007) found that the ethical framework for water in Islamic societies is based on Islamic beliefs and will conform to Islamic rules.

There are detailed accounts of water cults in ancient Egypt, classical Greece, Troy, Babylon and Rome (Brenneman, 2005; Coles & Wallace, 2005). There is evidence that water worship was practised by Celtic tribes across Europe (Coles & Wallace, 2005).

Xu, Ma, Tashi, Fu, Lu and Melick (2006) found that in China, stories, myths, legends, songs, dances, rituals and practices are combined by society into collective memories. These are rooted in indigenous knowledge in particular geographical locations. Practices derived from indigenous knowledge are culturally transmitted as collective memories. Certain places associated with water are considered sacred such as lakes, rivers, mountains, temples and shrines. These places are considered a powerful source of force, energy and wisdom (Xu et al., 2006).

Some countries have particular myths about geographical features, cultures and living habits that incorporate their own myths, symbols and historical stories about water (Courtney, 2006; Estrada-Belli, 2006; Hardman, 2010; Narayanan, 2000; Taylor, 2007).

It is challenging to explore teachers' beliefs regarding the different environmental values held in Asia because of the different cultural and religious differences. The section below provides a review of work done in Asia regarding the implementation of Human Values-based Education in schools.

Teachers' beliefs may be resistant if they do not feel the worth of including new reforms. For HVWSHE, when teachers integrate pedagogies and if teachers do not believe that they can make constructive relevance between their beliefs and the new beliefs about teaching and learning, it would impact their aims.

3.6.2 Teachers' beliefs and contextual factors

In some cases, the obstacles to teachers implementing the reforms were because of teachers believing that these reforms were not needed. Sometimes external factors such as class size, lack of resources and the challenges of meeting curricular needs, can stop teachers from implementing the new reforms.

A study conducted by Czerniak and Lumpe (1996) reported that teachers did not believe that some of the reforms were necessary. Czerniak and Lumpe (1996) examined teachers' beliefs regarding the need for reforms in science education, the implementation of reform strands and teachers' perceptions relating to the implementation of the reform strands. A sample of 400 K–12 teachers from Ohio, U.S.A was selected from the study for the survey. Czerniak and Lumpe found that

while 80% of the teachers they surveyed believed reforms were necessary; 81% of the teachers did not believe that a science teacher needed to use constructivist strategies in classrooms, while 74% of teachers used these teaching strategies either once a week or hardly used them at all. Eighty three per cent of teachers reported that they used cooperative learning strategies in their classroom and it was the most used reform.

Similar problems were noted with teacher reforms when teachers had to integrate constructivist type teaching approaches (Beck, Czerniak & Lumpe, 2000; Lumpe & Chambers, 2001; Waugh, 2000). For example, Beck, Czerniak and Lumpe (2000) investigated the factors that impacted K–12 science teachers' beliefs regarding the implementation of constructivism in the classroom. Beck et al. used two different groups of teachers; a sample of 26, who had been involved in a workshop on science curriculum reform and another 21 who did not attend a workshop. The salient beliefs of both groups of teachers were elicited via their responses to open-ended questionnaires guided by the procedures from the model of Ajzen and Fishbein (1980). Teachers' open-ended responses were then analysed and from the output analysis of these response statements, five questionnaires on components of constructivism were designed and sent to five hundred teachers in the north-western region of Ohio, USA.

The important themes that emerged from the study were *staff development*, *planning, class time* and *curriculum materials* (Beck et al., 2000, p. 337). The findings revealed that staff development must be long-term, specifically acting on teachers' beliefs that impact teachers' implementation of constructivism; this could include development that fosters positive attitudes toward the use of constructivism in classrooms. Regarding planning and class time, teachers were concerned that implementing the new reform components would take more time and they would not be able to cover enough of the content. When teachers are more concerned about finishing the syllabus and it is examination driven, they have to be provided more support and long term planning may be necessary. If the change is drastic and teachers have to implement suddenly as required by officials, or due to some regional instructions as in HVWSHE, the implementation may not be successful unless the constraints are addressed.

The concerns found in the study by Beck et al., are of importance to the implementation of HVWSHE. In HVWSHE, teachers have to adapt the HVIIM and use the principles and pedagogies such as storytelling, music, group activities and silent sitting etc. When applying these pedagogies it is important that teachers encourage classroom discussions and reflective time for students to understand and change their conceptual understanding of both the knowledge content and their value orientations.

Other factors that impact teachers' beliefs are the lack resources and time. Lumpe, Haney and Czerniak (1998a) studied teachers' beliefs regarding implementation of Science, Technology, Society (STS) as a reform and teachers' intentions regarding the implementation of this reform in Ohio, U.S.A. Samples included one group of 14 selected K–12 teachers from Northwest Ohio and 117 K–12 teachers from Ohio. The study revealed that K–12 teachers believed that lack of materials, funding, time and help from others would discourage the implementation of reforms although they believed that the STS curriculum does help students in meaning making, decision making, and understanding science concepts better. According to Lumpe and Chambers (2001) context beliefs: "are those beliefs about the ability about the external factors to enable a person to reach a goal plus the belief that a factor is likely to occur" (2001, p. 95). Capability beliefs were defined as those beliefs that teachers have which are developed from their personal experiences as teachers or students, and may not be aligned with the appropriate practices.

Chen (2008) found similar indicators in Southeast Asia regarding the practice of constructivist approaches. Twelve teacher participants were interviewed regarding their teaching and learning, their beliefs regarding ideal technology integration and the constraints they faced within their framework. Although all teachers claimed that they had integrated technology in their classroom using constructivist methods, the observations, interviews and documents did not show the use of cooperative, collaborative or self-regulated learning (Chen, 2008).

Chen suggested that there were four external factors that impacted teachers' beliefs and inhibited the implementation of constructivist approaches, namely lack of time, size of the classroom with forty students, inadequate supply of software and the absence of administrative support. Competition for achieving high grades and a high

stakes assessment system discouraged teachers from innovation. Teachers were concerned about performing their duty to parents, students and stakeholders and this was an obstacle when the changes and reforms would cause interference in their daily duties. These constraints that teachers faced affected their teaching practices (Chen, 2008).

Unless teacher concerns are solved the implementation may not be effective. Teachers' receptivity depends on how practical the changes are especially if it is a centrally controlled education system (Waugh, 2000). Waugh asserted from his studies conducted on teacher receptivity that planning, teacher concerns and their involvement in decision making are important. When teachers have barriers that do not make their daily teaching practices effective, they add to their existing conflicting beliefs in their teaching and teachers may not be aware of it (Chen, 2008).

Nespor (1987) stated that belief systems include affective feelings, teachers' evaluations of experiences and concepts of entities, which may not be open to critical evaluations as are knowledge systems. With HVWSHE, teachers' beliefs are therefore important to be addressed especially when there are new reforms that incorporate different principles and pedagogies.

The review of literature explored different aspects of Teachers' beliefs for HVWSHE. Specifically, teachers' beliefs regarding the principles and pedagogies were found to be an important aspect to be explored. This study confirmed that Teachers beliefs regarding cooperative learning, role modelling and educare helped find how these reform principles impact teachers' beliefs. With reforms such as HVWSHE, pedagogical strategies such as silent sitting, prayers, music and storytelling, which are widely used, are also explored in this study. Another important aspect that this study explored was the cultural and contextual aspects which impact teachers' beliefs about HVWSHE. Finally the study explored the impact of teachers' beliefs on students' attitudes and behaviours about HVWSHE.

Chapter Four: Theoretical Framework

4.1 Introduction

This section presents the theoretical framework for the study of teachers' beliefs and perceptions about the principles and pedagogies in HVWSHE. This thesis uses two theories which are important to understand teachers' beliefs. They are:

- Fishbein and Ajzen's beliefs theory (1975);
- Bandura's Socio Cognitive Theory (1986).

4.1.1 Fishbein and Ajzen's beliefs theory (1975)

Fishbein and Ajzen's (1975) beliefs theory provided a supportive framework for exploring teachers' beliefs about their classroom teaching and learning. The theory of beliefs of Fishbein and Ajzen (1975) was also used to guide the construction of the questionnaire. Ajzen's and Fishbein's beliefs theory is used in this study for various reasons which are elaborated in the later sections.

4.1.2 Bandura's Socio Cognitive Theory (1986)

The other theory used in this study is the social cognitive theory by Albert Bandura (1986, 1989). Bandura postulated that individuals possess self-efficacy beliefs where individuals are capable of self-controlling, self-regulating and self-organising behaviour (Bandura, 1994). Bandura (1997) emphasised that individuals are capable of alleviating their fears and balancing their behaviour by exerting self-control.

Pajares (2002) stated that Bandura's socio cognitive theory could be explained as an individual possessing self-reflective capacity. This self-reflective characteristic, according to Pajares (2002), includes self-efficacy beliefs which make an individual capable of organising and discharging their actions to enable them to manage situations. According to Pajares (2002) self-efficacy beliefs can be defined as the confidence one has in their own ability to do things. This theory is important to elaborate on teachers' beliefs and their capability in using the HVWSHE principles.

Studies regarding teachers' beliefs have explored teachers' beliefs about classroom teaching and learning. Beck et al. (2000) stated that teachers play a significant role in the implementation of educational reforms because they make pedagogical decisions in their classrooms and without taking into account their beliefs regarding the reforms, all efforts could be unsuccessful. Other studies also emphasised teachers' beliefs about curriculum (Czerniak, Lumpe, Haney and Beck, 1999) and the impact of teachers' beliefs on the implementation of educational reform (Flowerday & Schraw, 2000).

The following section presents a detailed view of how the theories are used to understand teachers' beliefs regarding HVWSHE.

- Fishbein and Ajzen's theory of beliefs (Fishbein & Ajzen, 1975);
- Teachers' beliefs regarding classroom practices;
- Use of the theory for instrumentation;
- Implications of the Theoretical Framework for Teachers' Beliefs related to HVWSHE.

4.2 Fishbein and Ajzen's Theory of Beliefs

According to Fishbein and Ajzen:

> Beliefs are fundamental blocks in our conceptual structure. The totality of a person's beliefs serves as the informational base that ultimately determines his attitude, intentions and behaviours. A person's attitude toward an object is based on his salient beliefs about that object. (Fishbein & Ajzen, 1975, p. 14)

According to Fishbein and Ajzen (1975), an individual forms a set of beliefs about an object and associates this object with different attributes. In addition, the individual also forms new beliefs from direct observation. Fishbein and Ajzen (1975) stated for example that an individual may have an attitude toward the church, and this is the function of his beliefs about the church. If the individual's beliefs,

according to Fishbein and Ajzen, are favourable then his or her attitude will be positive. But if the individual associates the church with unfavourable attributes then the individual will hold a negative attitude (Fishbein & Ajzen, 1975).

Using the above theory, Fishbein and Ajzen (1975) stated that "attitude is viewed as affective or evaluative in nature and that it is determined by the person's beliefs about the object" (Fishbein & Ajzen, 1975, p. 14). Fishbein and Ajzen further stated that:

> An attitude represents a person's general feeling of favourableness or unfavourableness toward some stimulus object. In our conceptual framework as a person forms beliefs about an object, he automatically and simultaneously acquires an attitude to some object. Each belief links the object to some attribute; the person's attitude toward the object is a function of his evaluation of these attributes. (1975, p. 216)

In addition they stated that new beliefs could be formed through direct observation. Fishbein and Ajzen emphasised that people hold positive and negative beliefs and attitude is viewed as corresponding to the total affect associated with their beliefs. They elaborated that: "The totality of a person's beliefs serves as the informational base that ultimately determines his attitudes, intentions and behaviours" (Fishbein & Ajzen, 1975 p.14). According to Fishbein and Ajzen:

> Beliefs about an object provide the basis for the formation of attitude toward the object and attitudes are usually measured by accessing a person's beliefs (Fishbein & Ajzen, 1975, p. 131).

Fishbein and Ajzen also stated that:

> Although a person may hold a large number of beliefs about any given object, it appears that only a relatively small number of beliefs serve as determinants of his attitude at any given moment. A person's attitude toward an object is primarily determined by no more than five to nine beliefs about the object; these are the beliefs that are salient at any given point in time (1975, p. 218).

Components of Theory of Beliefs

Given that beliefs can have evaluative attitudes, Fishbein and Ajzen (1975) also stated that beliefs have three components. They are affect, cognition and conation.

- Affect refers to a person's feelings toward and evaluation of some object, person, issue or event;
- Cognition denotes his or her knowledge, opinion, beliefs and thoughts about the object;
- Conation refers to a person's behavioural intentions and their actions with respect to an object or in the presence of the object.

These three components are important for measuring attitudes (Fishbein & Ajzen, 1975, p. 12). According to them:

> The formation of one belief may lead to the development of other inferential beliefs; that a person's attitude is determined by his salient beliefs about the attitude object; and that beliefs about a given behaviour and about the expectations of relevant others vis-à-vis that behaviour determine a person's intention to perform a behaviour and thus influence the overt behaviour itself. (1975, p. 388)

This theory was used to guide the research of teachers' beliefs. The relationship between teachers' beliefs and attitudes about HVWSHE is determined by a number of factors. Teachers may have positive or negative beliefs about the use of the principles and pedagogies and the understanding of these belief patterns will provide an overview of how motivated teachers are after their training to implement HVIIM for water education. If teachers have a favourable attitude towards using HVIIM they will use the model in their classrooms. The theoretical framework will also help understand what components cover teachers' beliefs for HVWSHE.

Teachers' conceptual understanding of the theory underpinning HVIIM is crucial. This understanding will impact their teaching approaches. Teachers' use of the

pedagogies and principles depends on their knowledge of the significance of the principles and pedagogies. Their beliefs depend on knowledge (cognitive), their feelings regarding the use of the principles and processes (affective), and their intentions (conative) to implement this reform. According to Ajzen and Fishbein's theory, teachers' attitudes towards implementing the principles and pedagogies will depend on a preceding affective evaluation of whether they like using them or not. Ajzen and Fishbein stated that for every belief there are specific attributes which impact an individual's attitude whether the belief is positive or negative. In this case teachers' intentions to implement the principles and pedagogies may depend on teachers' beliefs about specific attributes of the principles and pedagogies. Therefore teachers' beliefs in general will depend on a certain number of attributes they hold regarding the principles and pedagogies. If there is a favourable disposition then teachers will have favourable attributes towards using the principles and pedagogies, and if they have negative dispositions then they may hold negative attributes towards using the principles and pedagogies of the HVIIM. Therefore applying Ajzen and Fishbein's theory, teachers' attitudes towards the use of HVIIM will depend on their beliefs about HVIIM that HVIIM has some attributes and on their evaluation of their attributes. When teachers use the principles and pedagogies they form new beliefs if they experience student transformation and that has an impact on teachers' attitudes. However, Ajzen and Fishbein stated that it is not only the knowledge of that attitude that the individual holds that motivates the individual to perform or not perform the behaviour but it is their intention. Sometimes teachers may hold beliefs that could be normative, which means there may be certain referents that may influence the individual to perform or not perform what Ajzen and Fishbein termed as subjective norms. Therefore attitude towards both the behaviour and the subjective norms will contribute to a person's behavioural intention.

In the case of trained teachers, they may either implement HVIIM because they have favourable or unfavourable attitudes to using the model, or they may believe there are other pressures which prevent them from using it or support them to use it. The theory can be used to identify teachers' beliefs if teachers are able to express their agreement and disagreement as Ajzen and Fishbein proposed in the application of the beliefs theory. The theory postulates that teachers' attitudes or evaluations depend on the beliefs that are accessible. These accessible beliefs help to determine

the principles and pedagogies with a certain attribute. Thus the theory of beliefs helped to explore teachers' beliefs and it was seen as appropriate for this study. The theory of Ajzen and Fishbein was found to be a suitable guide to this research as it helped to also formulate the questionnaire. A detailed explanation is provided in the next section.

4.3 Use of the Theory for Instrumentation

According to Fishbein and Ajzen (1975), when an attitude is formed it becomes a feeling which is either favourable or unfavourable toward some object. They stated that an individual who holds beliefs about any object could only hold a limited number of beliefs that determine their attitudes at a particular moment. From their review of research on attention span, apprehension and other studies on information processing they stated that an individual can only access five to nine salient beliefs at one point of time. According to them, these elicited beliefs are known as salient beliefs (Fishbein and Ajzen, 1975) which they later termed as accessible beliefs.

All scaling procedures according to Ajzen and Fishbein will help to evaluate an individual's evaluative dimension. Using a Likert type of scale helps to identify an individual's evaluative dispositions because it helps to identify both positive and negative evaluations. The Likert type of scale was used in this study to identify teachers' agreement or disagreement of beliefs. Additionally Fishbein and Ajzen have also stated that when an individual responds to a belief statement then the individual's own attitude is known as long as the individual also provides his or her own intention or belief. The study did not intend to test the theory but to use the theory as a guideline to access teachers' beliefs using belief statements regarding principles and pedagogies.

Lumpe and Chambers (2001) explored science teachers' beliefs and their intentions in using science – technology – society in their classrooms by using Ajzen and Madden's (1986) method of exploring teachers' beliefs (Lumpe and Chambers, (2001).

The researchers used teachers' open-ended statements to analyse and retrieve influential beliefs which are called indirect beliefs. Their belief statements were

content analysed, categories were constructed and general categories were developed. Lumpe and Chambers (2001) explored teachers' context beliefs about technology using this method. The study of beliefs for water education content analysed the data from interviews and emergent themes were extracted from the narrative data. The study of teachers' beliefs relied more on the qualitative data for open exploration which prompted different possibilities for producing numerical, thematic and narrative data.

Fishbein and Ajzen (1975) postulated that an individual can access five to nine accessible beliefs at one point in time and this is the underlying concept for eliciting teachers' beliefs in this study. The first research question elicited teachers' beliefs regarding the principles. The second research question elicited teachers' beliefs regarding the processes. The third research question elicited teachers' beliefs regarding both the cultural and contextual factors related to HVWSHE. The fourth research question required teachers to indicate their beliefs regarding the advantages and disadvantages of using HVWSHE in their teaching. For the fourth research question teachers were asked to write open-ended sentences to list the advantages and disadvantages of HVWSHE.

When exercised in their own environment teachers' belief components have different outputs because of the differences in the situations they are in. Teachers in Southeast Asia have different cultural and socio-economic backgrounds. When applying HVWSHE principles and processes teachers may face differences in their own situations depending on the cultures they are in. As HVWSHE is linked to social conditions, Bandura's socio cognitive theory is important to help understand why teachers face these problems in their own classroom situations.

The social cognitive theory of Bandura (1989) provided an important view of how individuals react to change. According to Bandura, socio-cognitive theory contributes a major role to understanding cognitive, self-regulatory and reflective processes. Bandura (1989) stressed that individuals choose what they want to do depending on their own self-efficacy beliefs. According to Bandura (1989) self-efficacy beliefs control human functioning through cognitive, motivational, affective and decisional processes. Self-efficacy beliefs have an impact on the challenges people take and how much of an effort they want to put in. Moreover, Bandura stated

that the more capable teachers are, the more persistent they will be. However, Bandura emphasised that this also depends on the teachers' cognitive domain, which is related to memory. He stated that cognitive, affective and motivational processes are all activated by self-efficacy beliefs and are able to either support or inhibit memory processes.

HVWSHE emphasises the use of problem-based learning, specifically with water issues. Problem-based learning can be adopted only if teachers have the confidence to implement the new reform. Haney, Keil, Zoffel, & Wang (2007) found that teachers' self-efficacy beliefs were important in the success of problem-based learning that focused on issues of health science. The study by Haney et al., revealed that when teachers were confident of their knowledge and skills their beliefs regarding the classroom-learning environment became more positive. At the same time, it was found from theoretical developments that re-evaluation of attitude construct confirmed that attitudes are activated when the attitude object is there (Ajzen & Fishbein 2000). With sufficient motivation and cognitive capacity, attitudes can be activated when information is available. These insights from the theory of beliefs and self-efficacy prove that teachers' beliefs and their self-efficacy beliefs will improve if they have the conceptual understanding and confidence to implement the new reform.

Pajares (2002) reflected that individuals manage their own situations when they have to deal with the environment as well as their own inner impulses. According to Pajares (2002), individuals interpret the results of their own actions and change the environment around them.

Thus Ajzen and Fishbein's theory of beliefs helped to identify teachers' accessible beliefs which include self-efficacy beliefs as well as providing a small overview of their intentions to use the principles and pedagogies.

4.4 Teachers' Beliefs Regarding Classroom Practices

The following section explores the factors that have impacted teachers' teaching and learning processes in the past. Additional studies, related to water education and environmental education, were also reviewed to explore factors that can impact

teachers' beliefs in classroom teaching and learning. These factors are outlined below and a brief overview is provided to show how teachers' beliefs impact classroom teaching and learning when teachers use the HVWSHE principles and processes. They are:

- Teachers' beliefs and perceptions regarding classroom teaching approaches;
- Teachers' beliefs and perceptions regarding the use of teaching pedagogies;
- Teachers' beliefs and perceptions regarding contextual factors;
- Teachers' beliefs and perceptions regarding water in culture and traditions.

4.4.1 Teacher's Beliefs regarding Classroom Teaching Approaches

Teachers' beliefs include their feelings, their ability as well as their intentional behaviours about the implementation of the principles and processes of HVWSHE. These components are described by Fishbein and Ajzen (1975) as embedded cognitive, affective and conative processes in teachers' beliefs. A study of science teachers' beliefs regarding their intentions to use cooperative learning reported that although teachers thought cooperative learning was useful in the classroom they perceived that they had constraints due to time, curriculum and off-task behaviours (Lumpe, Haney & Czerniak, 1998b). Lumpe et al. stated that teachers lacked resources for cooperative learning and teachers were found to use less cooperative learning when they taught the upper grades.

Sharan's (1980) review of cooperative learning revealed that team learning helped increase the socio affective variables such as helping behaviours, and helping students balance their problems with studies. Team cooperation has also been shown to affect higher-level cognitive learning. Despite these advantages of cooperative learning constraints such as lack of time, off task behaviours and curriculum are shown to impact their teaching approaches (Lumpe et al., 1998b).

The main objective of HVWSHE is to encourage the right attitudes and behaviour of students with regard to water conservation. When teachers implement cooperative learning, teachers' self-efficacy beliefs are important. The teacher's focus is on

student learning in both academic content and helping students develop social skills. The teacher's attention needs to focus on the process of learning and how interactive the lessons are.

4.4.2 Teachers' beliefs regarding the use of teaching pedagogies

Teachers' feelings, beliefs and intentions affect how they integrate and elicit human values in their lessons which support learning by enabling students to construct learning in social settings. According to Prawat (1992) teachers face problems when they use constructivist approaches to teaching and learning because they not only have to think of how students receive information but they also need to know the process of constructing and scaffolding a students' understanding of the subject matter. Prawat (1992) argued that only teachers who have a conceptual change view of the content of a particular discipline could think of the learner in interactive terms.

According to Prawat (1992) teachers have not only to know what is pertinent to students but also "the traditional telling–listening relationship between teacher and student is replaced by one that is more complex and interactive" (Prawat, 1992, p. 357). Such a teaching approach is more demanding compared with traditional approaches of teaching (Prawat, 1992).

According to Chen (2008) there are three different factors that constrained the implementation of technology as an instructional method. Chen found that teachers' limited understanding of constructivist instruction, external factors and their conflicting beliefs about the use of pedagogy were obstacles to the implementation of technology.

Chen's study provided an overview of how limited understanding of any philosophical orientation, in this case limited understanding of constructivist instruction, external factors and beliefs that do not align with use of the pedagogy, can impact the objectives of the new changes required of teachers to make. A similar view can be applied to the application of teaching pedagogies for the implementation of HVWSHE teaching.

For HVWSHE, when teachers use an integrated approach they have to emphasise elements from all discipline areas and then implement them in the real world by

drawing content from various resources and integrating the principles and pedagogies.

The main aim of HVWSHE is to develop positive attitudes in students so that "as an education project it highlights knowledge and changing attitudes on water as a resource and as an essential part of our environment" (UNHABITAT & SEAMEO, 2007, p. 22). As such it is a social reform program.

As Pratt (2002) stated, social reform teachers are required to "bring learners into diverse learning communities of practice, asking probing questions and use powerful metaphors that help learners bridge between prior knowledge and new concepts, and work hard and to respect and promote the dignity and self-efficacy of their learners" (Pratt, 2002, pp. 12–13). In order that the new pedagogies in HVWSHE promote transformative learning, as in any kind of social reform teachers, as Pratt remarked, they "have to work toward a set of ideals" (Pratt, 2002, p. 13), and a specific set of ideals becomes the main objective of their teaching and their orientation "is ultimately their measure of teaching" (Pratt, 2002, p. 13).

Pratt also emphasised that social reform teachers view students not from an individual perspective but from a collective perspective. Social reform teachers, according to Pratt, centre their teaching on class discussions and knowledge pertaining to the disciplines as discussed in terms of why and for what purpose such knowledge is used. In a parallel situation, implementing HVWSHE, teaching pedagogies are used not only as tools for instruction but teachers also play a major role in bringing the human values perspective to the learners and helping them to understand the significance and aims of the reform. Attaining the objectives of HVWSHE is a significant task for teachers because teachers have to maintain their current academic teaching objectives as well as motivate learners with an in-depth understanding of water issues and the values inherent to them.

Pajares stated that in normal circumstances beliefs do not change "even if it is logical or necessary for them to do so" (Pajares, 1992, p. 317). According to Pajares, beliefs function in such a way that they help people to understand who they are and to identify themselves socially and culturally within shared groups and shared values. However, Pajares stated "from both a personal and socio/cultural perspective, belief

systems reduce dissonance and confusion even when dissonance is logically justified by the inconsistent beliefs one holds" (Pajares, 1992, p. 318).

Taplin et al., (2005) reported the constraints that teachers in China initially faced when they implemented the teaching pedagogies. Teachers in their first sessions after the workshop used silent sitting for the first few lessons and they asked for lesson demonstrations because they found it difficult to link silent sitting and music to their lessons. During the second and third sessions teachers noticed that they were making some connections between values education and the school program even though they encountered some constraints. It was during the fourth session that teachers started showing an in-depth understanding of the implementation of the pedagogies not only as a "fragmented thing applicable only to their experimental classes but as a total school programme in and out of the class" (Taplin, 2005, p. 19).

Similarly, for teachers to see the importance of role modelling teachers need to adopt right attitudes and behaviour for water education. If teachers believe that role modelling will influence students' attitudes and behaviour then they will make the effort to role model these behaviours. The presence of role models has enabled the development of pro-environmental behaviour, according to a review of literature on environmental education (Chawla and Cushing, 2007). Their review revealed that students need direct experience from the local community they live in, that they need to be involved in activities that help their self-identity develop by working for the common good and having direct experiences with community projects. In HVWSHE, teachers' beliefs regarding this principle depended on their own conceptual understanding of what role modelling for water education is. If their beliefs do not align with teaching practices that support learning by enabling students to construct learning in social settings then they are less likely to implement role modelling in their classrooms.

4.4.3 Teachers' Beliefs regarding Contextual Factors

Contextual factors refer to factors that favour or constrain implementation of the principles and pedagogies. These could be lack of administrative support, size of the class or the teachers' academic load. Factors such as the size of the class, time needed to integrate human values and available resources can constrain teachers who

are implementing both the principles and processes in HVWSHE. Support from administrators is also considered important. The context has an impact in shaping teachers' beliefs that can obstruct teachers' professional development (Lumpe & Chambers, 2001). According to Lumpe and Chambers, both self-efficacy beliefs and contextual beliefs are important factors that determine how teachers perform in classrooms.

4.4.4 Teachers' Cultural, Religious and Traditional Beliefs regarding Water

Teachers from parts of Southeast Asia hold beliefs regarding water issues related to their own traditions and cultural practices. Beliefs that are based on personal experiences are called episodic structures (Nespor, 1987). According to Nespor, teachers have these beliefs organised into their belief systems.

Biel and Nilsson (2005) emphasised that religious views impact the judgement about specific environmental issues. Their study found that genetically modified crops were of concern but traditional environmental problems were not. According to them certain values that are embodied in religion have an impact on environmental attitudes. Teachers' beliefs that include the affective, cognitive and conative are connected directly to culture and traditions that have evolved in their own social environment and these factors are embedded in teachers' understanding of the use of water.

4.5 Implication of the Theoretical Framework for Teachers' Beliefs related to HVWSHE

The six factors provided below in Figure 4.1 have an impact on teachers teaching and learning. These have great implications on how teachers think, feel and act about HVWSHE. Teachers' attitudes and perceptions can be affected positively or negatively which will impact on the success of the program. Much of what teachers feel and the way that they act will depend on the knowledge and opinions they have about HVWSHE and their attitudes will be influenced by the advantages and disadvantages they feel about the teaching of principles and pedagogies.

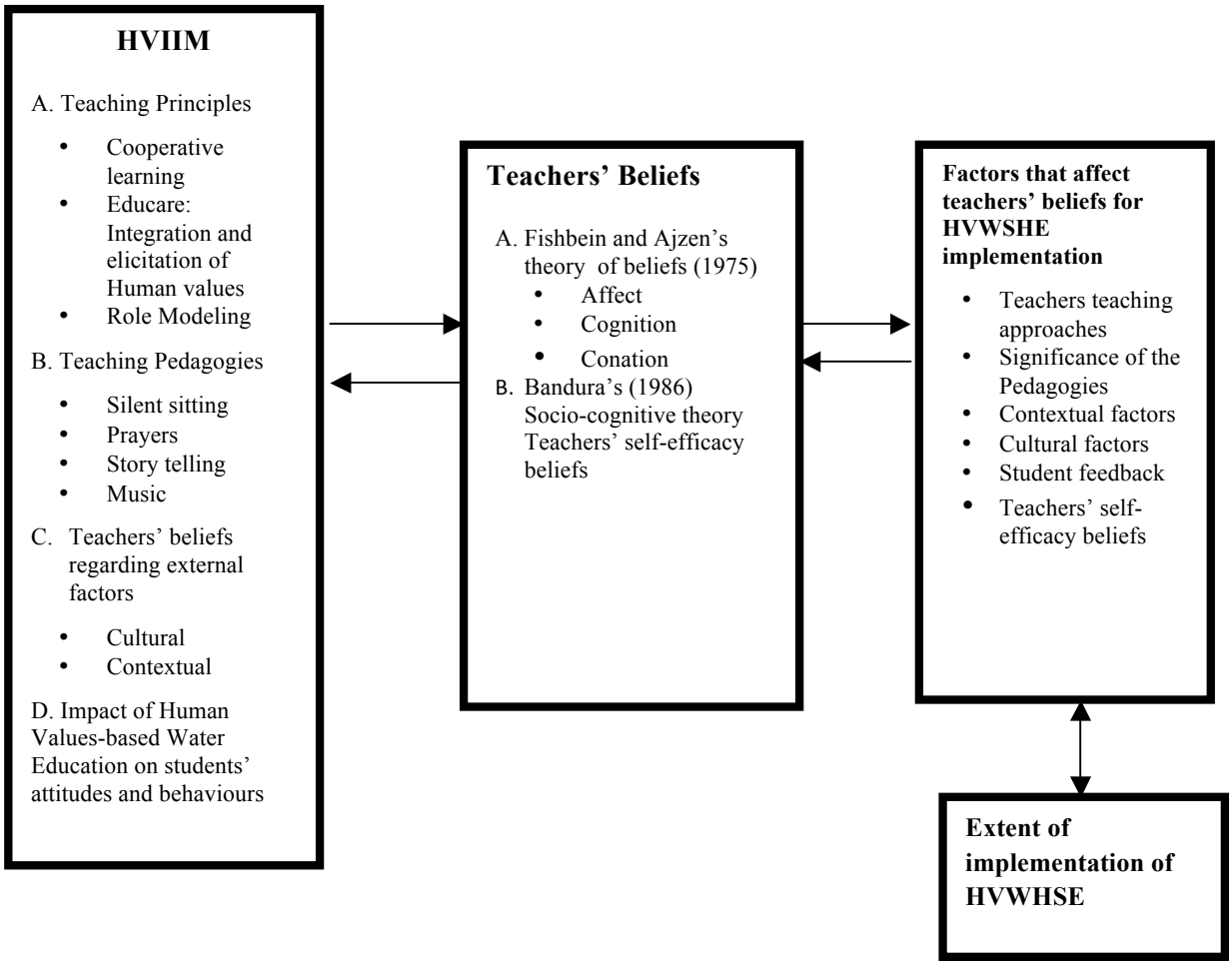


Figure 4.1 Theoretical framework

Figure 4.1 illustrates that HVWSHE is an interactive process. Teachers' beliefs and perceptions will influence the implementation of Human values in the classroom. Teachers' evaluations regarding different factors in the classroom will impact on the implementation of innovative practices with HVWSHE. The figure above shows how teachers' beliefs regarding the HVIIM principles, beliefs theory of Fishbein and Ajzen (1975) and factors that affect teachers' beliefs for HVWSHE implementation, interact with each other.

Chapter Five – Methodology

5.1 Introduction

The previous chapter provided details of the theoretical framework used in this study of teachers' beliefs in selected countries in Southeast Asia. This chapter will present the methodological approach, the rationale behind the design of the methods used and the ethical issues concerned with this study. This is followed by an introduction to the methods used in this study.

The section below presents the methodological approach, and the design used in this study. A research paradigm usually indicates what needs to be studied and the questions that need to be asked within a given framework following certain rules. Educational research encompasses and acknowledges that social enquiry is values-laden and includes human conditions and their experiences (Lather, 1992). According to Lather, researchers who use scientific approaches to enquire into their empirical research, also include their social imprints because all methods have some kind of social bias which is embedded in their respective cultures. The questions asked in this study are informed by enquiries similar to Lather's (1992) approach to feminist post-structural enquiries as termed by Lather. According to Lather (1992) when research is based on a paradigm that is mainly based on scientific facts from measurable variables then the methodological approach belongs to the positivist paradigm. In this study the methodological approach used enquiry.

The theoretical basis of the paradigm used in this study is known as interpretivist paradigm or the constructivist paradigm which originated in the early 1960s and 1970s from the field of social sciences. Key thinkers were Max Weber, George Simmel and Martin Heidegger. Heidegger, a pupil of Edmund Husserl, developed the philosophical thinking of Husserl and formed his own idea of phenomenology. The key assumptions of this paradigm are that reality is constructed depending on the assumption of the interpreter. Every social reality holds some meaning and there are different perspectives on any one social incident that cannot be generalised (Mack, 2010).

The interpretivist paradigm originated with different philosophical approaches from the social sciences compared to the positivist paradigm. The philosophers from different scientific communities associated with interpretivism are Edmund Husserl (Phenomenology), Arthur Schultz (Phenomenology), Wilhelm Dilthey (Hermeneutics), Han-Georg Gadamer (Hermeneutics), Herbert Blumer (Symbolic interaction) and Garfinkel (Ethnomethodology) (Mack, 2010).

The research methodology used here is predominantly an interpretive enquiry with a positivist approach in order to understand more of the phenomenon. In this way, an inference can be drawn from the purposeful sample. The methodology helped the researcher gain access to understanding the meaning behind certain events and experiences based on social constructions and the reality of participants' living contexts. Although the positivist paradigm places emphasis on measuring a phenomenon accurately, this study used the positivist approach to complement the dominant part of the enquiry which was more from an interpretivist approach.

This study explored teachers' beliefs through both questionnaires and interviews. The methods used are presented in two stages: the questionnaire and the interviews. As the study was exploratory, the quantitative data helped to provide an overview of teachers' beliefs regarding the extent of their agreement with implementation of HVWSHE in their classrooms. The qualitative data helped to generate categories which were salient to HVWSHE. The objectives of the study were further enhanced by in-depth interviews about HVWSHE in three countries, Thailand, Indonesia and Lao PDR. Morse and Richards (2002) emphasised that multiple sources can contribute to the understanding of a phenomenon in one single study. According to Morse and Richards:

> Sometimes the researcher knows enough about the phenomenon or the domain of inquiry to develop questions about the topic in advance of interviewing, but not enough to be able to anticipate the answers. When this is the case, the researcher designs open-ended questions, arranged in a reasonably logical order, to cover the ground required. Usually the interviewer will ask the same questions of all the participants, although not necessarily in the same order, supplementing the main questions with either planned or unplanned probes. (2002, p. 94)

The aim of this thesis is to explore teachers' beliefs regarding the implementation of principles and processes from HVIIM. This research is primarily based on the assumption that teachers' beliefs regarding implementing the principles and processes from HVIIM can be understood if these beliefs are explained to the teachers from the perspective of their own cultural contexts.

Consequently the methodology chosen was a mixed method approach composed primarily of a qualitative component together with a quantitative component. Due to the small sample size, this study can only be considered exploratory. Any quantitative conclusions will not be significant. However, it is hoped it will provide insight into what teachers believe about applying practices from HVIIM to water education. The research design used to explore teachers' beliefs regarding their use of the HVIIM principles (cooperative learning, educare, role modelling) and processes (silent sitting, prayers, storytelling and music) are provided below. Teachers' beliefs regarding the contextual and cultural factors are also explored in this study.

The next section presents the methodology adopted for this study followed by its rationale. This is followed by the researcher's personal experience and the methods used for both the quantitative and qualitative phases. The data analysis is presented after each of the phases, followed by the validity measures. Finally there is an explanation of how the conclusions were drawn and verified.

5.2 Methodology

An interpretivist paradigm, according to Denzin and Lincoln (2005, p. 6), "understands that research is an interactive process shaped by his or her personal history, biography, history, gender, social class, race and ethnicity and by those of the people in the setting". There are various types of interpretivist paradigm theories such as positivist/post-positivist, feminist, ethnic, Marxist, culture studies and queer theory (2005, p. 24). The criteria chosen in this study belongs to the feminist paradigm where teachers' beliefs are based on their lived experiences, through dialogue, reflexivity and concrete grounding. The form of their theory is based on a critical perspective and the type of narrative is through their stories of their personal experiences. Denzin and Lincoln stated that the interpretive paradigm can be viewed

as the "net that contains researcher's epistemological, ontological and methodological premises" (2005, p. 22).

Donague (2003) emphasised that the epistemological stance of the four paradigms such as positivism, interpretivism, critical and post-modernism are based on the four different ways that knowledge is constructed and this he drew from the philosophical works of Jurgen Habermas (1972). According to Jurgen Habermas, man has three types of cognitive interests which are: interests in technical control, interest in understanding the meaning behind social dialogue, and to understand the critical aspects of knowledge which can cause systematic distortion for any group in society. This study used the second kind of cognitive interest which is to understand the meaning behind the voices of the participants through an interactive process. The first type of cognitive interest which Donaghue explained works under the assumption that is based on technical interest and belongs to the positivist paradigm. This study used the positivist paradigm as well but it was of minor importance. The use of empirical data was to find out to what extent teachers agreed or disagreed with the implementation of the different principles and pedagogies of the model. This research intended to understand a holistic view from a purposeful sample of teachers trained by the SPW. The pre-dominant interest was to find the meaning of what teachers stated in their personal contexts and what possibilities the study could explore to understand the extent of their agreement to use HVIIM. This knowledge of interest falls into the second category which Donaghue postulates is to explore the meaning behind social dialogue and interprets the contents of the dialogue to explore how trained teachers used HVIIM.

The numerical data obtained from the questionnaires was followed by qualitative data for teachers to explain the reason why they chose to agree or disagree. The numerical data was used to understand the degree of agreement and their reasons to support their agreement through the elaboration of teachers' own beliefs statements. Through understanding their degree of agreement it would help reveal more of the social phenomena of their teaching contexts. Furthermore, Denzin and Lincoln (2005) emphasised why mixed methods are suitable for qualitative use by drawing on the works of Teddlie and Tashakkori (2003, p. 15). Teddlie and Tashakkori stated that mixed methods can be used for exploratory and confirmatory purposes in which

exploratory factors are mostly qualitative in nature while quantitative are more confirmatory. The quantitative approach used in this study was used not for validating but for looking at a particular problem from various perspectives. Using only a positivist approach can help test and legitimise the empirical data but the findings would exclude the meanings which are socially and culturally embedded that could be otherwise be obtained using an interpretivist paradigm.

The exploratory analysis focused on an emic perspective in order that participants' views, meanings and their interpretations can be understood from their social contexts. Their perspectives can be interpreted in terms of their work, their relationships with students and how they use the different principles and pedagogies in their classrooms within the social context of the selected Southeast Asian regions. In addition the study enquired into teachers' social contexts which included their religious, traditional, educational, and academic experiential beliefs, within their living professional and personal lives with values-based water education and how they impacted their understanding of HVWSHE. The interpretive enquiry also explored how to look into multi-voiced perspectives from different living contexts and by using paradigms from a positivist approach and a predominant interpretivist approach the researcher was able to deconstruct personal bias and remain as an enquirer within this research paradigm.

The research questions addressed both the principles and pedagogies from the HVIIM. The training of HVWSHE requires that teachers understand the theoretical perspective of the integrated learning concept from HVIIM and why they use it. Again, if they have an in depth understanding of the conceptual framework of HVIIM, teachers will be able to conduct interactive sessions for eliciting values during their teaching sessions. Also, teachers have to have the skills to use the teaching pedagogies during their teaching sessions. This could be evaluated only if they were given semi-structured questions during the interviews. Another enquiry in this research was to understand whether teachers from different countries in one cohort were agreeable to using the principles and pedagogies. It is for these reasons that both qualitative and quantitative approaches were included.

Conceptual Framework

Figure 5.1 shows an overview of the research design and how the study proceeded. It links the methodology with the research question, the methods and validity measures.

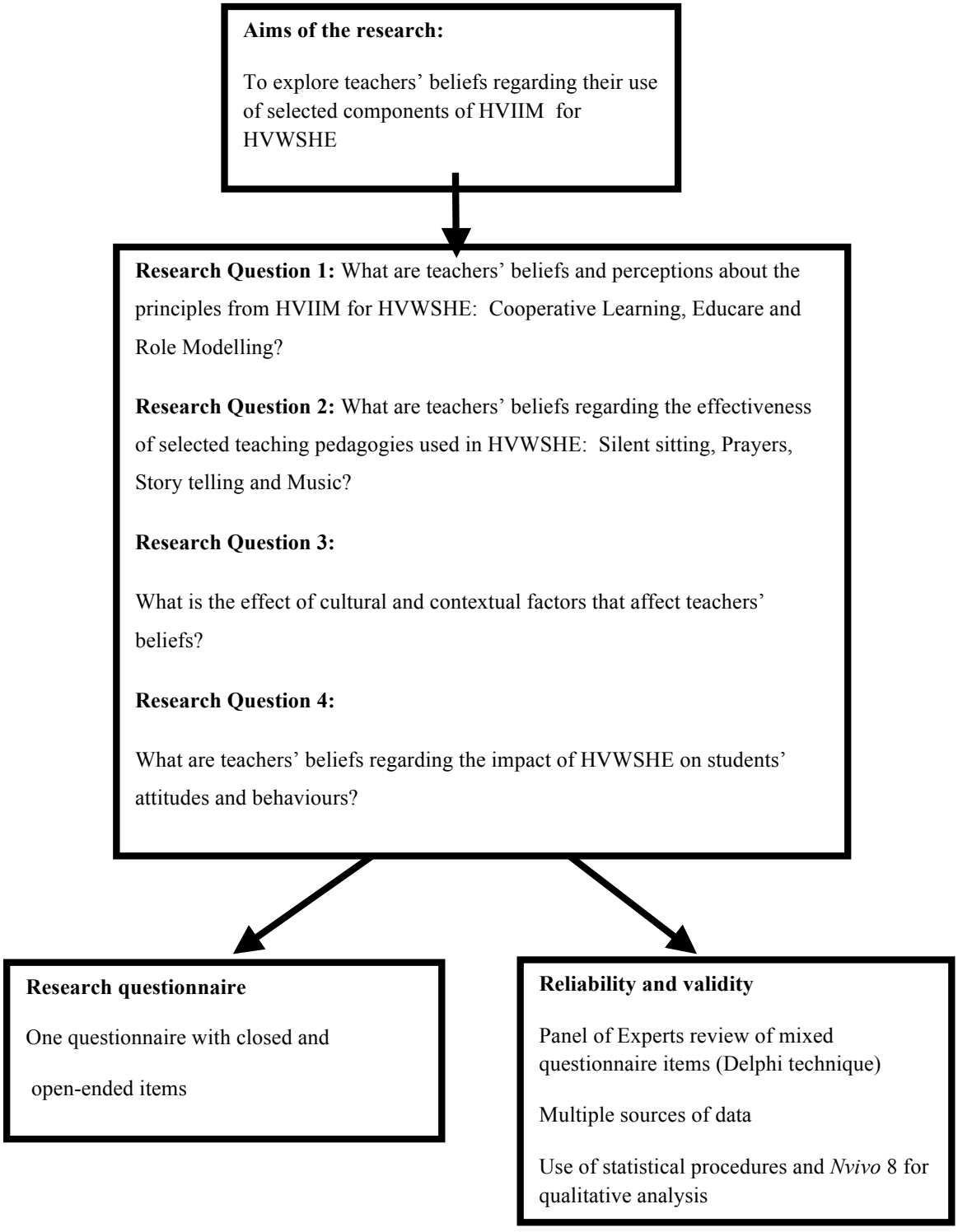


Figure 5.1 Research Design

The study follows the guidelines of Teddlie and Tashakkori (2009) for administering a mixed method. Different data sources were used to collect data.

Rationale for using the Mixed Method Study

The sample used only one cohort of teachers because the study only intended to explore the beliefs of teachers who were actually implementing HVWSHE. The Society for Preservation of Water started training teachers in HVWSHE in 2007–2008. Teachers were from Thailand, Indonesia and Lao PDR. Teachers from these countries have different socio-cultural backgrounds and an exploratory study of their beliefs regarding their classroom practices was considered to be a significant contributory factor for understanding teachers' practices within their cultural contexts. As a result, a predominantly qualitative approach was considered more appropriate for this study.

The use of the mixed methods helped obtain in-depth information on teachers' beliefs and complemented the findings from both the questionnaire and the survey. The mixed design also helped in understanding the strengths and weaknesses of the use of the principles and processes of HVWSHE from the teachers' perspective. An overview of the mixed method is provided below in Figure 5.2.

Mixed Methods

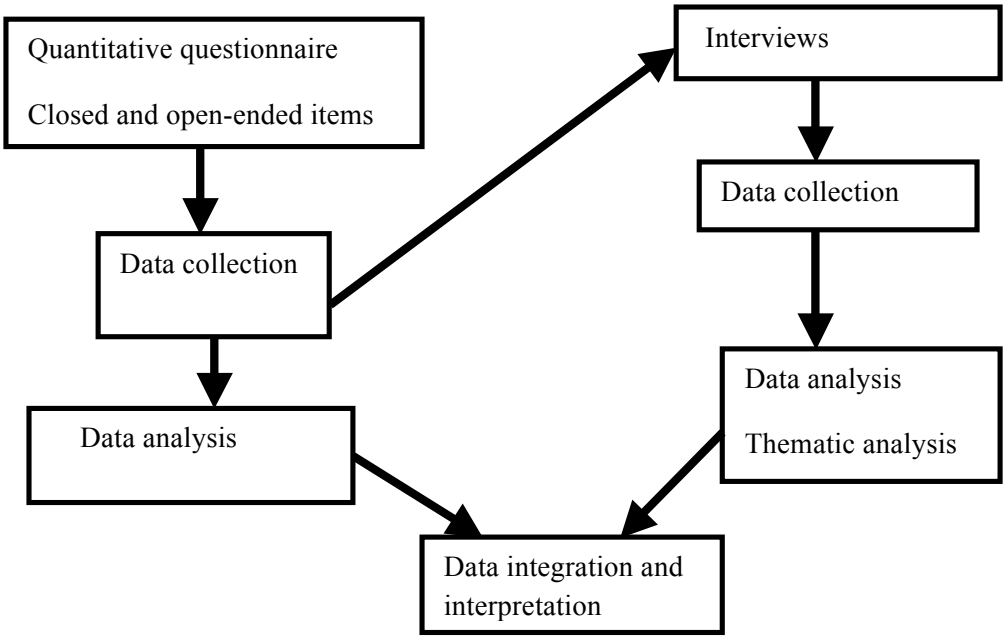


Figure 5.2 Overview of mixed method

Johnson and Onwuegbuzie (2004) stated that mixed methods research does not obstruct the researcher's choice. The mixed method provided an added benefit by increasing the validity of the measurements. By combining the survey and the interviews of teachers' personal experiences the study of teachers' beliefs provided an exploratory view of the effectiveness of the use of the principles and pedagogies and the impact on students' attitudes and behaviours.

According to Teddlie and Tashakkori (2009), when the respondents relate their experiences, and these experiences are consistent with the quantitative responses through questionnaires, it makes the inferences stronger and the results interesting.

According to Morse and Richards:

> The most significant feature of using a method is the researcher's perspective…within the perspective of each method, the researcher manipulates data by using analytical techniques…different methods may use similar techniques, but the individual method's strategy (the way the strategy is used) gives it a unique application and produces a unique result. (2002, p. 60)

The strength of the predominantly qualitative, with an added quantitative, method is that they can be combined to complement one another. To enable this, both open- and closed-ended items were included in the questionnaire for this study. The closed- and open-ended items were analysed for numerical data. This helped support the understanding of the qualitative data obtained from interviews.

The stages of data collection were sequential because of the difficulty in obtaining information from teachers who were from different countries, Thailand, Indonesia and Lao PDR. The first phase was to send questionnaires to teachers and then at a later date interviews were conducted in Thailand and Indonesia. It took seven months to collect the data using the mixed methods approach in this study.

5.3 Ethics

This study followed all ethical procedures that are required by the University of Sydney. Permission was sought from the Director of the Society for Preservation of Water (SPW) in Thailand to conduct the research using the cohort of teachers trained in 2007–2008 who were from Thailand, Indonesia and Lao PDR. The Director was contacted for advice on coordinating the study at all stages.

5.3.1 Ethical issues

Before collecting data, ethics approval was sought from the University of Sydney Human Research Ethics Committee, which is a required process according to the University's policy. The ethical considerations relating to the mixed design of this study were:

1. permission to conduct research was sought from the overseas Director of the SPW;
2. informed consent of participants for the interviews;
3. participants' anonymity;
4. privacy of participants and the precautions taken to avoid negative consequences.

Ethical issues for the questionnaire phase

The Director of the SPW arranged for the distribution of a general invitation between March and June from the researcher to potential participants inviting participants for both Phase 1 (questionnaire) and Phase 2 (interviews).

Participants were provided with an initial survey package which is explained in detail in section 5.4.2 under the topic, *data collection of the questionnaire*. The survey package included a general invitation for both the questionnaire phase and the interview phase. Participants were invited to respond to the questionnaire and return the answers by post in a self-addressed envelope enclosed in the survey package. This ensured that the identity of the participants in the questionnaire was kept anonymous. Participation information sheet for the questionnaire was provided in the survey package (see Appendix A).

Ethical issues for the interview phase

All potential participants were informed that they could withdraw at any time during the interview stage. Participants who agreed to participate in interviews were sent an invitation letter for an in-depth interview along with the participant information sheet and consent form between May and June 2009. Interview receipts were obtained between June and early July 2009. These were returned to the researcher in the pink self-addressed envelope. Interviews were conducted in a public venue chosen by the participants, both in Thailand and Indonesia.

Original questionnaires, tapes and transcripts of interviews will be kept in locked storage for five years and then destroyed. Information identifying participants will be stored separately and not linked in any way to the data.

5.3.2 Ethics of Reporting

Informed consent and written agreement were obtained before all the interviews were conducted (Kvale & Brinkmann, 2009). Participants were also informed that the results would be published. The participants' privacy was protected by altering their names to the initials of their country and numbers. In this study participants from Thailand were referred to by "T" and participants from Indonesia were referred

to by "I" followed by numbers. Their names were not mentioned in any of the results. Care was taken in the use of words to ensure there was no judgmental or inappropriate use of language in all interactions during the interviews.

5.4 Method

5.4.1 Sample

The sample chosen for this study was a cohort of twenty-two teachers who were implementing HVWSHE in their classrooms. Out of this sample 16 participants took part in the anonymous questionnaire.

The Society for Preservation of Water in Lamnarai, Thailand is situated three hours from Bangkok and had established cooperation with the United Nations Human Settlements to train teachers from Southeast Asia. Teacher training for Human Values-based Water, Sanitation and Hygiene Education (HVWSHE) started in 2008. The Southeast Asian region is predominantly multicultural and has different geographical locations with different educational policies and languages.

The sample chosen for this study was selected for heterogeneity purposive non-probability sampling.[2] Heterogeneity purposive non-probability sampling includes all opinions or views of participants and does not specifically look for modal beliefs.

Details of the training and the sample for this study

The Director of the Society for Preservation of Water in Thailand was briefed on the study by the researcher personally in Thailand in February 2009. A staff member was appointed by the Director with whom the researcher liaised to obtain details of the training.

Training sessions were held in 2008 at Lamnarai, Thailand from 25th May–11th June, 15th–21st June, 6th–12th July and 7th–13th September. The training was

[2] Heterogenity purposive non probability sampling includes all opinions or views of participants. The study does not intend to represent views proportionately but in getting a broad spectrum of ideas. HVWSHE is implemented in countries which have different contexts and this study intends to look at all possibilities of different perspectives including "outlier" or unusual ideas. This sampling is opposite to modal instance sampling. Retrieved from http://www.socialresearchmethods.net/kb/sampnon.php

conducted in small groups for teachers, teacher trainers and educational officers. The venue for the training was the Lamnarai school campus. The cohort of teachers consisted of the Under Secretary from the Ministry of Education, UNHABITAT members, Environmental Camps for Conservation (ECCA) participants, NGOs, and members from the Population Women Environment Development Organisation (PWEDO), school principals and teachers.

Details of interviews conducted

Interviews were conducted using semi-structured questions. The interviews lasted from 20–40 minutes depending on the responses from the teachers and their enthusiasm. The researcher personally carried out the interviews and they were conducted in English. A few teachers from Thailand and Indonesia spoke some words in their own language which they were translating at the time of the interview to English. As the researcher was fluent and understood what teachers stated in three languages, English, Thai and Malay, there was no difficulty in understanding what teachers were saying. Generally teachers from Indonesia took 20–30 minutes to respond while teachers from Thailand had more to elaborate and explain about the events in the classroom. All teachers in the sample were enthusiastic in responding regarding the program and two teachers from Indonesia specifically stated that they wanted more training in HVWSHE.

Language competency of respondents and limitations to this study

Although participants spoke languages other than English, this cohort of teachers consisted of a mixed group of participants some of whom spoke English fluently and some whose spoken English while not fluent was comprehensible. There were limitations to conducting the interviews. First, teachers might respond to what is socially acceptable and or they might not have understood the questions in the research instrument as English was not their first language. The participants from Lao PDR did not respond to the interview sessions and they responded only to the questionnaire. The reason could be because of their inability to respond to a language in which they may not be fluent. Another limitation to this study was the fact that teachers were from different cultural backgrounds in Lao PDR, Indonesia and Thailand. Their cultural contexts may also have affected their understanding of the

use of the teaching pedagogies. Silent sitting as some teachers perceived might be construed as pedagogy used only by Buddhists and not Islamic societies.

Again another limitation in this study was that most teachers from Indonesia were English teachers and their probability of using HVIIM could be even more limited than the science teachers if the schools and administrative rules and regulations do not implement an intradisciplinary approach in their school systems.

Details of participants for the questionnaire

The number of teachers in the sample who responded to the questionnaire is provided in Table 5.1.

Of the twenty two teachers in the sample, eight teachers from Thailand, six from Indonesia and two from Lao PDR, responded to the questionnaire.

Table 5.1 Sample of teachers who responded to the anonymous mixed method questionnaire

	Country	Trained Teachers who Implemented the Principles and Pedagogies in their Classrooms (No.)	Teachers (No.)
1	Thailand	10	8
2	Indonesia	10	6
3	Lao PDR	2	2
	Total	22	16

Details of participants for the in-depth interviews

The sample of teachers who implemented the program and who responded to an in-depth interview are provided below in Table 5.2.

From a total sample of ten teachers from Thailand, eight responded to the interviews. Six teachers out of ten teachers from Indonesia responded to the interviews. No teachers from Lao PDR responded to the interviews.

Table 5.2: Sample of teachers for interviews

	Country	Trained Teachers who Implemented the Principles and Pedagogies in their Classrooms (No.)	Teachers who Consented to the in-depth Interview (No.)
1	Thailand	10	8
2	Indonesia	10	6
3	Lao PDR	2	0
	Total	22	14

Purposive sampling helps to produce in-depth information that can be obtained from individual respondents (Teddlie & Tashakkori, 2009). The aim of purposive sampling was to explore and obtain information that addressed all the research questions. The small sample size helped to generate rich information through in-depth interviews to answer the research questions. According to Teddlie and Tashakkori:

> Purposive sampling is typically associated with qualitative research and may be defined as selecting a relatively small number of units because they can provide particularly valuable information related to the research questions under examination. (2009, p. 25)

5.4.2 Design of the Questionnaire

The purpose of using the questionnaire was to explore a broad perspective of teachers' beliefs regarding their use of the principles and processes, and the cultural and contextual factors. As the study is exploratory the Delphi method facilitated the understanding of multiple aspects of HVIIM. Skulmoski, Hartman and Krahn (2007) stated that the Delphi method works best when we want to broaden our understanding of unanswered questions, to predict events or find answers for some complex problems. A panel of experts was chosen for this purpose and the Delphi method was deemed appropriate to guide construction of the questionnaire. It is briefly explained below.

Use of the Delphi method for the Survey instrument

This study used the Delphi method according to the following steps as described by Skulmoski et al. (2007). Skulmoski et al. (2007) stated that the Delphi method is used when the knowledge of phenomena is incomplete. The HVIIM is based on the intuitive concept.

The Delphi method is an iterative process, which helps to collect and obtain expert judgement through a series of rounds of questionnaires. Skulmoski et al. (2007) added that this process ends when a consensus is reached and saturation achieved with maximum information obtained. The origin of the Delphi method is in the American business community and is used now in different fields including education (Skulmoski et al., 2007). The Delphi method used in this study does not follow the criteria of the pure Delphi method. Although five experts had sent positive responses to take part in the study, two of them were unable to respond due to lack of time. The small number of experts for the Delphi method is a limitation of this study. The panel of experts were chosen according to their expert fields of study. One of them, a UNESCO head from Bangkok, a specialist in bioethics research and environmental education, had suggested the names of two other panel members, a Bioethics expert who had vast experience with environmental education and another member who was an ethics expert. The fourth member, the Director of the Institute in Hong Kong, was known through the SPW in Thailand, who worked with the Human Values group and is using the Education in Human Values curriculum. The fifth member was a representative of UNHABITAT from the Southeast Asia Region who worked with the SPW, and was known to the researcher as SPW and UNHABITAT had worked together in a series of workshops for integrating values into water education for Southeast Asia.

Members were contacted by email from March 2008 to June 2008. Reminders were sent to them to confirm whether they were willing to be panel members and three out of five agreed. The limitation for the Delphi study is that it did not follow all the procedures required for a pure Delphi study because of time constraints and limited availability and access to the panel experts. The study involved collecting data from both interviews and questionnaires from three different countries. More time was allowed for the collection of data, and to await the other two members taking part in

this study. The different suggestions were taken into account, when the researcher and primary supervisor went through the comments and integrated them in a suitable manner to direct the research.

Table 5.3 shows the different recommendations by the group of panel experts for improving the questionnaire and using all the criteria for HVWSHE.

Table 5.3: Recommendations by groups of panel experts

Panel Expert	Role of Panel Member	Changes Made	Comments by Panel Experts
# 1	Human Values Educator	Changes were made to the contents of statements	**1st round** *To clarify meaning of terminologies used and modify statements which were unclear* **2nd round** Comments made "*I still have some concerns about e.g. 'HVWSHE into art nurtures students' sense of personal identity' – i.e. why art should nurture personal identity and not other constructs, music should nurture creativity and not other constructs etc."* **3rd round** Q5. *I believe that teachers can draw positive values (needs to clarify whether the teachers' or students' values are meant) during interactions with students in HVWSHE.* Q6. *Human values are easy to integrate into the existing subject curricula using HVWSHE.* Q7 *It is possible to motivate students (need to motivate them for what? To be interested in the topic? To be better people?) using HVWSHE teaching techniques.*
# 2	Bioethics President	Changes were made to the terminology of Question 9, 22 on integration of festivals and culture	Panel Expert 2 June 2 2008 1. *Who has used the word "Educare"? Is it an accepted word? If not you need to explain what it means.* 2. *Outline the tools for water education or water literacy.* 3. *Add festivals and cultural aspects.*
# 3	UNHABITAT representative for HVWSHE	Changes were made by adding a new section on direct methods such as silent sitting, prayers, music and group activities which is Section C of the questionnaire	1. *It is very detailed and covers almost the entire gamut.* 2 *What about direct method? Some teachers might use direct method, instead of integration – is that an option to consider? Then a series of sub-questions should follow.*

The panel of experts who checked the questionnaire comprised:

1. Avi Sarkar: the Chief Technical Advisor for Southeast Asia, Water for Asian Cities (WAC) and The Mekong River Catchment Water and Sanitation Initiative (MEK-WATSAN)
2. Dr. Margaret Taplin: Director of Institute of Sathya Sai Education, Hong Kong
3. Professor Jayapaul Azariah: Former Professor and Head, Department of Zoology, University of Madras; Founder President All India Bioethics Association; Member, Board of Directors, International Association of Bioethics.

A sample of the questionnaire was sent to each of the experts from the three different fields. This was followed by feedback from the experts with some comments. The questionnaire was sent to experts from the panel to review and refine until all items in the questionnaire were sufficient to address the four research questions. The researcher used the comments to compile a second questionnaire and it was sent for a second round of comments. Minor changes were made and the panel experts recommended a few changes. Finally the questionnaire items were discussed with the supervisor and the instrument was ready. Participants were allowed to express their decisions freely and decisions were made depending on their merit (Rowe & Wright, 1999).

The survey questionnaire on "Teachers' Beliefs and Perceptions Survey" was divided into four sections; Sections A, B, C and D. The final revised version of the questionnaire had nine demographic items in section A, seventeen items in section B, thirteen items in section C, and 2 items in section D. Questionnaire items for Section B and C were randomly arranged in the final instrument.

Section A investigated the Demographics of Participants

This section consisted of nine demographic questions. These included questions on gender, age, years of training in HVWSHE, number of months the participants had implemented HVWSHE, subjects in which they had implemented HVWSHE and

whether they were teacher educators. The cohort included teacher trainers who practiced HVWSHE in Thailand where the Society for Preservation of Water conducted the training on the same campus.

The next section consisted of Sections B, C and D. In order to investigate teachers' beliefs, statements were provided with a Likert type scale and space provided for open-ended items.

Sections B and C of the questionnaire together consisted of thirty items. Participants were asked to indicate the extent of agreement or disagreement on a Likert scale of 1–5 (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree) in the first part of each question item. Each statement was followed by the open-ended statement: "Please explain the reasons for your rating". Participants were invited to write their opinions in the space provided below the belief statements.

Sections B and C investigated Research Questions 1, 2 and 3

Research Question 1 investigated the following:

What are teachers' beliefs and perceptions regarding the principles used for HVWSHE?

This research question examined three aspects:

- Teachers' beliefs and perceptions regarding cooperative learning;
- Teachers' beliefs and perceptions regarding Educare in the classroom;
- Teachers' beliefs and perceptions regarding themselves as role models.

Principle 1: Teachers' beliefs and perceptions regarding cooperative learning

Three items in the questionnaire synthesised from Jumsai (2003) investigated teachers' beliefs regarding cooperative learning. These were: #11: *I include cooperative learning in most classes;* #17: *Group activities increase students networking skills;* and #21: *Group activities help students to increase their social skills*.

Principle 2: Teachers' beliefs and perceptions regarding Educare in the classroom

Ten items in the questionnaire investigated teachers' beliefs about integrating and eliciting values. Two items were adapted from the questionnaire developed by Taplin et al. (2005). These were**:** #1: *It is important to integrate Human Values in my lesson plans;* and #2: *I have the confidence to integrate Human Values in my teaching about the environment*.

Seven items in the questionnaire investigated teachers' beliefs regarding eliciting human values from students and integrating human values. These items were synthesised from Jumsai (2003). These were: #5: *I believe that teachers can elicit positive values from students using HVWSHE;* #6: *It is easy to integrate Human Values into all academic subjects; #7: It is possible to motivate students to practice Human Values by developing pro-environmental behaviours;* #8: *Students are motivated to help one another when values such as unity, peace and love are integrated into the lessons;* #10: *Lesson plans must stress students' interconnectedness with the environment;* #12: *Human Values education promotes self-control so that students do not waste water;* and #14: *It is possible to elicit Human values from students during class*.

Principle 3: Teachers' beliefs and perceptions regarding themselves as Role models

Nine items in the questionnaire investigated teachers' beliefs regarding themselves as role models.

Four items were adapted from *"Teachers Perceptions of Themselves as Problem-Solving Learners"* by Taplin et al. (2005). These were: #3: *I can continue to make changes to my teaching approaches in HVWSHE;* #4: *Having discussions with other teachers helps achieve the aims of Human Values-based Water Education;* #16: *I would like more opportunities to share information with other teachers about HVWSHE;* and #29: *I am able to bring in new ideas to help implementing human values within the classroom*.

Five items in the questionnaire were synthesised from Jumsai (2003). These were: #24: *I have genuine concern for others;* #25: *I have the self-confidence to be an example for students in my classroom;* #26: *I can inspire other people to network for*

a good purpose; #27: *I am easily approachable to teachers;* and #28: *I am easily approachable to students.*

Research Question 2 investigated the following:

What are teachers' beliefs regarding the effectiveness of selected teaching pedagogies used in HVWSHE: Silent sitting, Prayers, Storytelling and Music?

Two experts from the panel recommended the inclusion of teaching pedagogies into the questionnaire as the first set of questionnaire items prepared by the researcher did not include teaching pedagogies.

Four items in the questionnaire investigated teachers' beliefs regarding HVWSHE teaching pedagogies. All four items were synthesised from the *Global Overview of Sathya Sai Education* (2007). They were*:* #19: *Prayers promote positive attitudes among students in HVWSHE;* #20: *Music in the classroom helps students to learn human values;* #23: *Story telling helps students develop moral values;* and #30: *Students increase their awareness of the environment when teachers use silent sitting*.

Research Question 3 investigated the following:

What are teachers' beliefs regarding the impact of cultural and contextual factors on HVWSHE?

One of the experts from the panel recommended including items on beliefs about water in culture and tradition. Two items were synthesised from the literature in Jumsai (n.d.). These were: #9*: Discussions about the importance of water in festivals and culture motivate students to improve their environmental behaviour;* and #22: *Integrating water-based cultural practices into HVWSHE increases students' respect for the environment*.

The workshops conducted for HVWSHE reported that both class size and time were important factors that could either hinder or enable the implementation of HVWSHE (Clark, 2005). According to Lumpe and Chambers (2001), "Context beliefs are those beliefs about the ability of external factors or people to enable a person to reach a

goal plus the belief that a factor is likely to occur" (Lumpe & Chambers, 2001, p. 95). Teachers' beliefs regarding factors such as time and class size are referred to as *contextual beliefs* in this study. The questionnaire included three items for measuring contextual beliefs: #13: *The present timetable allows me to integrate human values into lessons;* #15: *There is enough class time to implement HVWSHE in my teaching;* and #18: *HVWSHE teaching methods are effective with the present class size*.

Section D investigated Research Question 4

Research Question 4 investigated the following:

What are teachers' beliefs and perceptions regarding the impact of HVWSHE on students' attitudes and behaviours?

Section D of the questionnaire consisted of two items that were constructed using the model of Fishbein and Ajzen (1975). This section was added to the questionnaire items to gain a general understanding of salient beliefs regarding HVSHE as a whole. According to Fishbein and Ajzen (1975) although a person may hold a large number of beliefs about any given object only a small number of beliefs can be considered as determinants for the individual's attitude formation. According to them, a person may not hold more than five to nine beliefs at a time about any object. But to identify beliefs that are salient, beliefs of the participant can be elicited in a free response by asking them to list the characteristics of the object. In this case, according to both Fishbein and Ajzen only the first three beliefs can be salient which determine his or her attitude. Any other beliefs elicited do not become primary determinants or salient beliefs. The last section of the questionnaire in Section D asked teachers to write down their three statements so that they can be taken as accessible beliefs for HVWSHE.

According to Ajzen and Madden (1986), the teachers' beliefs theory of planned behaviour helps in identifying teachers' belief factors that influence both intentions and behaviours. This theory has three constructs which are attitude towards behaviour, subjective norm, and perceived behavioural control. Attitudes towards behaviour refer to beliefs about the consequences of performing a particular action. Subjective norm refers to what others think about performing a specific behaviour

and perceived behaviour control refers to beliefs about behaviour and to what extent both external and internal influences will impact the ability to be involved in the behaviour (Lumpe and Chambers, 2001). All the three constructs are termed as behavioural beliefs and these beliefs are influenced by the salient beliefs. These behavioural beliefs include beliefs which report both advantages and disadvantages of performing a specific behaviour. Therefore the study used an open-ended questionnaire and constructed statements asking teachers to write down beliefs about the advantages and disadvantaged of using HVWSHE.

Participants had to write at least three statements about the advantages and disadvantages of using HVWSHE. There was no Likert scale rating for this section but a space was provided for participants to list their beliefs regarding the advantages and disadvantages of HVWSHE. The statements are provided below.

#31. Please list at least three advantages of using HVWSHE methods to help students achieve expected outcomes.

#32. Please list at least three disadvantages of using HVWSHE methods to help students achieve expected outcomes.

Validity of the Questionnaire

The questionnaire was checked by the panel of experts for content and construct validity. Content validity ensured that the items in the questionnaire covered a maximum range of questions for the test and ensured that items were linked to measure the required construct. The purpose of the questionnaire was to obtain both quantitative data and themes from the open ended items. The questionnaire on teachers' beliefs was to gain maximum information through their belief statements. Questions were designed to explore the following:

1. Teachers' beliefs about the principles and pedagogies;
2. Teachers' self-efficacy beliefs about the implementation of principles and pedagogies;
3. Teachers beliefs regarding contextual and cultural factors; and

4. Teachers beliefs about the impact of using of HVWSHE on students attitudes and behaviours.

Fishbein and Ajzen's (1975) theory of beliefs was found to be an effective guide to elicit teachers' belief of the HVIIM. The sample size was small and the questionnaire was used to elicit beliefs so that the data collected complemented the data from the interviews. The process of eliciting beliefs was differently structured in the mixed questionnaire in this study so that teachers provided answers specifically to the component from the HVIIM. The theory of beliefs and the methodological technique was adapted to guide the elicitation of teachers' belief responses for all four-research questions.

Reliability of the Questionnaire

The questionnaire on teachers' belief statements was taken from Taplin et al., (2005) after it was tested with teachers from Hong Kong who had implemented the teaching pedagogies and values based teaching principles such as cooperative learning, educare and the integration and elicitation of values. Four items were adapted for the questionnaire from *"Teachers Perceptions of Themselves as Problem-Solving Learners"* by Taplin et al. (2005). These items were as follows: #3: *I can continue to make changes to my teaching approaches in HVWSHE;* #4: *Having discussions with other teachers helps achieve the aims of Human Values-based Water Education;* #16: *I would like more opportunities to share information with other teachers about HVWSHE;* and #29: *I am able to bring in new ideas to help implementing human values within the classroom*. The sample of the initially drafted questionnaire was given to ten colleagues who were teachers from the Faculty of Education. The responses revealed that the questionnaire items had to be re-worded for better understanding. It was drafted a second time. The questionnaire was checked for reliability using a sample of nine teacher colleagues. The reliability score of .75 was obtained for the questionnaire. The validity for interviews is discussed in the latter part of this chapter.

Data collection of the Questionnaire

The researcher provided the SPW with a packet of information to disseminate to the participants. The package consisted of envelopes with the required papers and this is attached as appendices (Appendix A, B and C). The Director arranged for the administrative office of the SPW to post copies of letters and forms supplied by the researcher to all teachers trained by the SPW in a single large envelope. The package consisted of the following:

- The participant information statement for the survey (Appendix A);
- The survey questionnaire (Appendix C);
- A self-addressed white reply-paid envelope in which to return the survey questionnaire to the researcher;
- A general invitation letter inviting them to participate in Phase 1 (survey) and Phase 2, (interview) of the project;
- A blue form to indicate if they wished to participate in an interview for the project with space provided for their contact details (Appendix B);
- A self-addressed blue reply-paid envelope to return the blue form to the researcher independent of the questionnaire.

The package was sent by mail on 23rd February, 2009 to twenty two potential participant teachers in Thailand, Indonesia and Lao PDR by the SPW (Appendix A, B and C). Participants were asked to return the questionnaire by April 2009. All return envelopes ensured confidentiality as participants could retain their anonymity by eliminating their names and posting the questionnaire in a self-addressed envelope to the researcher.

5.5 Data Analysis

This section is divided into two parts. The first section 5.5.1 presents the data analysis of the questionnaire which includes Sections A, B, C and D. The second section 5.5.2 presents the data analysis of the open-ended items of the questionnaire.

5.5.1 Data Analysis of the Questionnaire

Data analysis of the questionnaire used the following steps:

Demographic data: Section A of the questionnaire was analysed using SPSS. All demographic data was analysed according to each country for their gender, age, and country, number of years they have been teaching, length of training, subjects where HVWSHE was implemented and whether they were teachers or teacher trainers.

Analysis of the questionnaire items on Likert scale from Sections B, C and D

Quantitative data from the questionnaire survey from Sections B, C and D from sixteen participants' responses were analysed for frequencies. Descriptive statistics derived from the questionnaire items using a Likert rating scale are presented for all three principles and teaching pedagogies of HVWSHE. The frequencies and percentages are reported for the attitudinal statements and the results are presented in tables and figures as well as in narrative form. Statistical analysis of the data was conducted using SPSS.

5.5.2 Analysis of open-ended items of the questionnaire

All open-ended items from Sections B, C and D were analysed using *Nvivo 8.*

The open-ended items from the questionnaire were used for the interpretive stages to explain the narrative analysis. Categories were formed using categorical strategies and emergent categories were itemised in the tables. Categorical strategies, according to Teddlie and Tashakkori (2009): "break down narrative data and rearranges those data to produce categories that facilitate comparisons, thus leading to a better understanding of research questions" (p. 253). In this study, categorical strategies were organised by isolating chunks of texts from sixteen teachers' response narratives and rearranging the data to produce themes (Teddlie & Tashakkori, 2009). The themes are presented in a table along with the percentage of the frequency of each theme.

All the open-ended items for the principles were combined and the responses were categorised using *Nvivo 8.* Teachers' belief statements for all three principles were

combined for categorical analysis. An example of the categorical strategy is provided below in Figure 5.3 using a text segment from one of the teachers' responses.

Categorical strategy

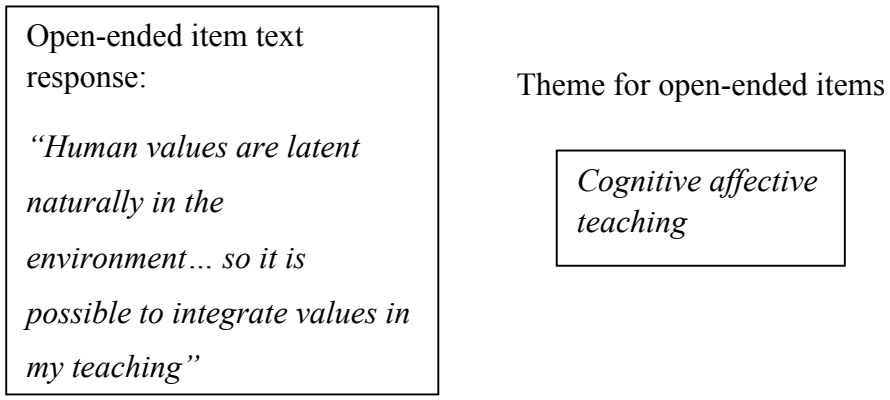


Figure 5.3 Example of a categorical strategy from a teacher's text segment

The statement *"Human values are latent naturally in the environment… so it is possible to integrate values in my teaching"* from Figure 5.3 emphasises that both knowledge content and human values are combined during teaching. It is therefore grouped under one theme, which in this case is *"cognitive affective teaching"*. This study used the open-ended questions in two ways. First the emergent themes were tabulated, and second, teachers' responses for this section were used when the findings of both the questionnaire and the interviews were integrated.

Themes obtained from all open-ended items helped to provide evidence of important aspects of HVWSHE. These are the salient features of teachers' beliefs about HVWSHE.

5.6 Design of the Interviews

The second part of the study involved interviews. Teachers' narratives of their personal experiences provided an overview of how they use HVIIM components in the classroom. This study used in-depth interviews as a strategy to obtain data regarding teachers' classroom practices with regards to HVIIM and it complemented the data obtained from the questionnaire. The benefits of collecting data through in-depth interviews are many. As Morse and Richards stated: "This is an appropriate

method for the researcher wishing to learn from the participant how to understand a process or situation" (2002, p. 55). A broad grounded theory approach for data collection enabled the researcher to describe events and situations, which are context specific. As Morse and Richards stated:

> Ethnographic data collection consists of strategies for obtaining data that will enable the researcher to describe cultural norms, perspectives, characteristics, and patterns. (2002, p. 50)

The interviews were guided by the research questions used in the survey. The structure of the interviews was guided by recommendations from Mahoney (1997). The factors were the sensitivity of the subject matter, depth of individual responses, data collection fatigue, continuity of information, extent of issues to be covered, logistics geographically and availability of qualified staff (Mahoney, 1997).

Research Questions 1 & 2

Teachers were asked to explain why and how they used the principles and teaching pedagogies of HVIIM and about their experiences when they implemented them. They were also probed on the advantages and disadvantages of using the principles and processes. Teachers were asked to narrate their personal experiences in relation to peer sharing and how they felt about the use of cooperative learning, Educare and role modelling.

From the survey it was found that teachers generally agreed that peer sharing helped them understand the use of the principles and pedagogies and so teachers were probed further on these issues during the interviews.

Teachers were also asked to comment on the advantages and disadvantages of using the principles and pedagogies. Teachers were probed on their personal experiences and how they felt about using the pedagogies and how students reacted to the pedagogies. Teachers were asked about the responses of the students.

Research Question 3

Teachers were probed on general issues they faced that affect teachers' beliefs while using the principles and pedagogies to explore the effects of cultural and contextual factors. In general, teachers were asked the following questions that served as guidelines for the interview questions:

"Can you elaborate further on that"?

"What do you think works best for you"?

Research Question 4

Teachers' beliefs regarding the impact of HVWSHE on students' attitudes and behaviours were probed using the following questions:

"Do you observe any changes with students with regard to their habits when they use water"?

"Can you elaborate more on that"?

5.6.1 Data Collection for the Interviews

Participants who responded to the invitation letter (Appendix B) for the interview phase were contacted. Fourteen teachers responded and they were sent a participant information sheet for the interview phase (Appendix D). Participants who then consented to be interviewed were contacted to discuss the date, time and a suitable venue that was convenient to the participants. Before the interviews took place all participants were provided with the consent form (Appendix B) and they were briefed on the procedures. Samples of the interview questions are included in Appendix F.

5.6.2 Data Analysis of Interviews

In the in-depth interview, specific questions were put to every teacher participant. The participants' responses were audio-taped. Recorded messages were transcribed

into narrative data without bias in a Microsoft Word document. After transcription of the data the interviewer reflected on the information provided by each respondent. A reviewer, an educator from the Sathya Sai School in Malaysia, helped review the data obtained from the in-depth interviews. The reviewer helped in editing, proof reading and confirming the accuracy of the transcribed data between August and September 2009. Corrections were made.

The analysis was done according to the following steps:

Step 1: The researcher organised a file for each participant.

Step 2: Each interview was transcribed into separate files for each participant. The interview transcripts from Thailand and Indonesia were put in separate folders. The data from interviews for each research question were organised for each participant using *Nvivo 8* and files were organised with responses from all participants for a single research question in one file. To provide an example, the responses for research question 1 were organised separately for teacher T1 from Thailand and separately for teacher I1 from Indonesia.

Step 3: According to Creswell (2003), coding consists of organising chunks of data according to the research questions. For example, one file on cooperative learning consisted of all participant responses, labelled Participant T1, T2, T3 etc for Thailand and Participants I1, I2, I3 for Indonesia, separately on one sheet. This helped to reveal the differences in response patterns for each research question.

Step 4: All the narratives were analysed for similar patterns using *Nvivo 8*. The theoretical framework also explained how the themes were used from narratives for this study. Ajzen and Madden's (1986) method to elicit a pool of belief factors was used in this study. During interviews teachers were asked open ended-questions. In this case, teachers were interviewed using semi-structured questions on the use of principles and pedagogies. These responses from teachers were all compiled according to the research questions and then the content was analysed using Nvivo.

The content analysis helped in identifying a number of themes and subset themes through the process of coding. In this case all the themes which were major were identified and only 75% of themes were selected as suggested by Ajzen and Fishbein

(1980). The rest of the minor themes were excluded according to the technique used by Ajzen and Fishbein (1980).

In order that the themes could be content analysed, narrative data for all research questions were read many times and coded. The coding process helped to generate themes. The next step was labelling the themes derived from the patterns as recommended by Creswell (2003). These are presented in Table 5.4. Themes from the segments of data helped describe the events that occurred during teaching and learning. The themes were organised for different participants and separately for both countries so similarities and differences could be examined. From the narratives of the cohort of teachers from Thailand there is evidence of emerging themes such as *"discussion, student-centred, intradisciplinary teaching approaches, teacher motivation, peer discussion"*. Themes that emerged from teachers' narratives from Indonesia were *"teacher centred, facts transmission and no peer discussion"*. Teachers' narratives about the use of cooperative learning in Thailand and Indonesia are provided below in Table 5.4.

Table 5.4: Teachers' narratives about the use of cooperative learning in classrooms in Thailand and Indonesia

Excerpts of Narratives	Emerging Themes
Teacher's narrative from Thailand *"Every teacher, for example…the teacher who teaches grades 10-12 will* ***have a meeting*** *and sometimes choose a theme, sometimes from* ***the student what they have interest in****, like water, if they choose about water,* ***every subject … you have to relate your subject with water like math****, like what we want to teach about water with math, with science, with sports with social…with everything…****it's very interesting…easy also because everyone work together*** *and students have more experience."*	"Discussion" "Student centred" "Interdisciplinary teaching approaches" "Teacher motivation" "Peer discussion"
Teacher's narrative from Indonesia *"****Sometimes I have listening comprehension … I tell them*** *about how important water is. How without water we cannot be alive. I say that so they can appreciate. Water is important… We should help water together… at home at school… you may not waste water… … because not all Indonesians have good water. Because there are some places where people who need water… because there are some situations where they become… in Jakarta the green areas become houses. I mean that they become real estate."*	"Teacher centred" "Facts transmission" "No peer discussion"

Step 5: The next step was to look for a larger category for the emerging themes.

After the themes were completed, a *"contextualizing holistic strategy"* was used as proposed by Teddlie & Tashakkori (2009, p. 25). Contextualising (holistic) strategies according to Teddlie and Tashakkori (2009) helps interpret the data obtained from narratives "in the context of a coherent whole 'text' that includes interconnections among the narrative elements" (Teddlie & Tashakkori, 2009, p. 25). Table 5.5 presents how the themes are linked to form a large category using an example of Teachers' narrative about the use of cooperative learning in classrooms in Thailand and Indonesia.

Table 5.5 Emergent categories from teachers' narratives obtained from themes

Themes	Emergent Category
Teacher's narrative from Thailand • Discussion • Intradisciplinary teaching approaches • Teacher Motivation • Peer discussion • Group work	Teaching approaches that support students learning in social settings for HVWSHE
Teacher's narrative from Indonesia • Facts transmission • Absence of peer discussion • No peer discussion	Teaching approaches that do not support students learning in social settings for HVWSHE

Step 6: The emergent categories that formed from the patterns of themes helped to link ideas and to understand teachers' beliefs. Two categories emerged in Table 5.5 from teachers in Thailand and Indonesia. They were, *Teaching approaches that support students' learning in social settings for HVWSHE* from teachers' narratives of their beliefs in Thailand, and *Teaching approaches that do not support students learning in social settings for HVWSHE* from teachers' narratives of their beliefs in Indonesia.

Step 7: The analysis was written up using rich and thick descriptions.

5.7 Presentation of Data

Analysed data from the demographic questions are provided in tables by country. Data from the questionnaire items were presented in the form of tables and graphs

for research questions 1, 2 and 3 showing the percentages and frequencies of responses.

All open-ended items were presented in the form of themes and the percentages of thematic responses obtained for research questions 1, 2, 3 and 4. Raw data was presented along with the themes in the tables.

All interview data was presented according to the research questions and according to the country of residence of the teachers.

5.8 Validity Measures

The research relied more on qualitative data because the study essentially qualitative in nature. The quantitative survey was used to support some findings from the qualitative data. The reliability of this study depends on the collection of data from a mixed method questionnaire and the narratives in the second phase. Special attention was given to ensure the validity of the data and that ethical procedures were followed.

Member checking and external audits

According to Creswell and Miller (2000) validity can be established using an audit trail. An external auditor was used to ensure the accuracy of the findings. The validity of the in-depth interviews was tested using member checking. To help alleviate researcher bias, a peer reviewer was appointed to independently identify categories from the data obtained from open-ended items, which were then compared to the categories obtained by the researcher. The categories obtained by the researcher and the peer reviewer were then checked for differences. There was a discussion and categories that did not reach a consensus by both were removed.

To check the validity of the data obtained from the interviews five to ten pages of interviews from different countries were given to two peer reviewers familiar with the study and Education in Human Values.

Drawing and Verifying Conclusions

Both descriptive statistics and the results of the qualitative data in the form of narratives were combined to report the findings. The emphasis in this study is more qualitative and the numerical analysis is presented as a support to the qualitative data. This helped to explore teachers' beliefs of both the principles and processes through teachers' narratives of their personal experiences. Bazeley (2002) stated that it is "better to progressively unveil relevant evidence on a path to a common conclusion, than to organise on the basis of method used" (Bazeley, 2002, p. 9). According to Bazeley, there are critical issues when mixed method research is used because there must be clarity of focus and a logical explanation. For this purpose the study analysed the findings by linking the thematic coding with the descriptive statistics and provided statement responses from open-ended statements as well as texts from narrative analysis. The findings helped develop new insights into teachers' beliefs regarding the use of the principles and processes for water education.

The study presented both numerical and qualitative data to explore evidence to conclude whether the implementation is effective for the three countries. A general conclusion was made from teachers' belief statements regarding the principles, pedagogies and the cultural and contextual factors. For the last research question, there were no Likert type questions. Instead, teachers were requested to write what they believed were the advantages and disadvantages of using HVWSHE. From teachers' belief statements teachers' beliefs about the usefulness and the constraints they face with HVWSHE can be highlighted. This study of teachers' beliefs regarding HVWSHE used the open-ended statements to elicit teachers' belief statements so that an overall view of teachers' beliefs and perceptions regarding the use of HVWSHE could be obtained. The qualitative data provided an overview of what teachers' beliefs were regarding HVWSHE.

Evidence of use of implementation

From the data received from interviews, teachers' belief statements and narratives were analysed for evidence of implementation. The main criteria to be assessed were as follows:

- Teaching approaches;
- Conceptual understanding of the principles and pedagogies;
- Student feedback.

If teachers' belief statements showed evidence of implementation then it was considered that the components of the models were effective. If evidence of implementation was absent from their belief statements then the implementation was considered ineffective. The next chapter presents the results of the analysis for both the questionnaire and interview phase.

Chapter Six – Findings

6.1 Introduction

The previous chapter discussed the research methods used in this study. This chapter presents the data and analyses of the data. The findings of the questionnaire and the narrative will be presented together to provide an in-depth understanding of teachers' beliefs and perceptions of the principles of HVWSHE and the process of implementing HVWSHE in their classrooms, and will conclude with an interpretation of these beliefs. Although some teachers in the study had a low proficiency in English, most could communicate sufficiently to make their open-ended written responses and interview narratives comprehensible.

The section below presents the quantitative data extracted from the questionnaires in tables and graphs for all four research questions and the qualitative data yielded from the interviews. The qualitative data from the open-ended questionnaires are provided in the next section.

This chapter will present the findings in three sections:

1. Details of the participants;
2. Quantitative data from the questionnaire and the Qualitative data from interviews; and
3. Themes and numerical data from the open-ended questionnaire.

6.2 Details of the Participants

This section presents the demographic characteristics of the teachers, who were from Thailand, Indonesia and Lao PDR. From a sample of twenty-two teachers, sixteen teachers responded to the questionnaire. Of these, eight teachers were from Thailand, six teachers were from Indonesia and two teachers were from Lao PDR.

For the second phase, fourteen teachers took part in the interviews. Eight teachers from Thailand and six teachers from Indonesia took part in the interviews, but the two Lao PDR teachers did not participate.

Details of Participating Countries and Response Rate

A total of 22 surveys were sent out. Sixteen questionnaires were returned between the 10th March 2009 and the 18th April 2009. The response rate was 73%. The number of participants from each country is presented in Table 6.1 below.

Table 6.1: Number of participants for the questionnaire from each country

No	Country	Number of Potential Participants (No.)	Returned Questionnaires (No.)	Response Rate (%)
1	Thailand	10	8	80
2	Indonesia	10	6	60
3	Lao PDR	2	2	100
Total return rate				73

The details of teachers' demographic data are given below.

Teacher Demographics – Thailand

The eight respondents from Thailand comprised two males and six females. The length of their teacher training in HVWSHE ranged from one week to 1 year. Their ages ranged from 24 to 64 years and all but one of the participants had implemented HVWSHE for a period of 6 to 9 months. Included in this were three teacher trainers from Thailand who were also teachers. The details of teachers' demographic data are given in Table 6.2.

Table 6.2: Teacher Demographics – Thailand

	Gender	Age (Years)	Teaching (Years)	Grade	Teacher Training in HVWSHE	Implemented in HVWSHE (Months)	Subjects Implemented in HVWSHE	Teacher Trainer
1	Male	43	7	6-12 years	2 weeks	6	Biology, Geography, Environmental Science	No
2	Female	34	5	10,11,12	10 months	1	Mathematics, Japanese	Yes
3	Female	36	12	12	10 days	6	English	No
4	Female	49	1	8,10,11	1 week	9	Integrated classroom painting project	No
5	Female	36	16	Primary Second-ary	1 week	6	Facts and techniques of HVWSHE, Integrate class	No
6	Female	38	16	Kinder-garten	6 months	6	English, Arts, classical dance	Yes
7	Female	24	1	Kinder-garten	1 year	8	English, Education in human values	No
8	Male	64	8	1,2,3	1 year	8	English, Education in human values	Yes

Teacher Demographics – Indonesia

Of the six teachers from Indonesia, one was male and five were female. All of them were English teachers and their ages ranged from 34 to 59 years. There were no teacher trainers in this group. Teachers from Indonesia had training sessions in HVWSHE for about six to ten days. The details of teachers' demographic data are given in Table 6.3.

Table 6.3: Teacher Demographics – Indonesia

#	Gender	Age (Years)	Teaching (Years)	Grade	Teacher Training in HVWSHE (Days)	Implemented in HVWSHE (Months)	Subjects Implemented in HVWSHE	Teacher Trainer
1	Male	34	10	1,2,3	6	6	English	No
2	Female	55	28	10	10	6	English	No
3	Female	46		3	10	9	English	No
4	Female	59	30	3	10	9	English	No
5	Female	46		1,3	10	9	English	No
6	Female	56	28	high school	10	9	English	No

Teacher Demographics – Lao PDR

The teachers from Lao PDR that participated in the survey were males, aged 27 and 28. Both were English teachers, and both had training sessions for about one to two weeks. The details of teachers' demographic data are given in Table 6.4 below

Table 6.4: Teacher Demographics – Lao PDR

#	Gender	Age (Years)	Teaching (Years)	Grade	Teacher Training in HVWSHE (Weeks)	Implemented in HVWSHE (Months)	Subjects Implemented in HVWSHE	Teacher Trainer
1	Male	27	4	12	1	Time to time	General English	No
2	Male	28	5	11	2	19	Mathematics, English	No

The number of participants from Thailand, Indonesia and Lao PDR who took part in the personal interview phase are summarised in Table 6.5.

Table 6.5: Number of interviewees from each country

#	Country	Respondents to Questionnaire (No.)	Participants in Interview (No.)
1	Thailand	10	8
2	Indonesia	10	6
3	Lao PDR	2	0

6.3 Data and findings relating to Research Questions 1, 2, 3 and 4

6.3.1 Research Question 1

What are teachers' beliefs and perceptions about the principles from the HVIIM model for HVWSHE? This research question examined three aspects:

- Teachers' beliefs and perceptions regarding cooperative learning;
- Teachers' beliefs and perceptions regarding educare;
- Teachers' beliefs and perceptions regarding role modelling.

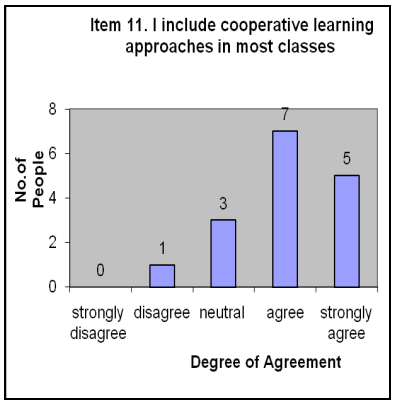
Teachers' beliefs and perceptions regarding cooperative learning

Table 6.6 below presents teachers' beliefs and perceptions regarding cooperative learning.

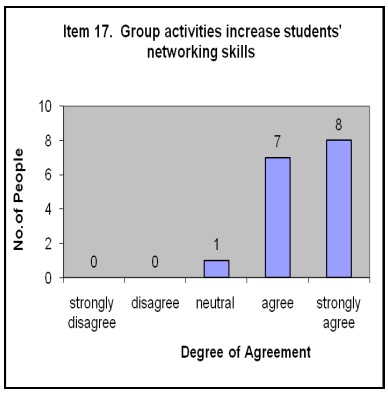
Table 6.6: Extent of agreement regarding the use of cooperative learning for HVWSHE

Statements for Classroom practices in HVWSHE	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Item 11: I include cooperative learning approaches in most classes	0	1	3	7	5
Item 17: Group activities increase students' networking skill	0	0	1	7	8
Item 21: Group activities help students to increase their social skills	0	0	0	9	7

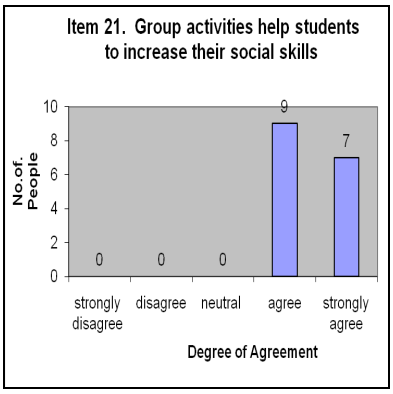
The degree of agreement of teachers' beliefs regarding cooperative learning in all three countries (Thailand, Indonesia and Lao PDR) is presented in Graphs 1, 2 and 3 provided below:



Graph 1



Graph 2



Graph 3

The findings from the questionnaire indicated that teachers generally believed that cooperative learning helps in promoting positive attitudes in students and helps students develop social behaviours. Fifty per cent of teachers strongly agreed that cooperative learning helps in improving networking skills. The details of teachers' responses regarding the use of cooperative learning are provided in Table 6.6.

Findings from the interviews were reported in narrative form. Teachers were asked to respond to questions on cooperative learning.

The interview responses from the Thai and Indonesian teachers about cooperative learning are presented separately.

Thai Teachers' responses regarding cooperative learning

When teacher T4, a teacher trainer from Thailand, was asked about cooperative learning, she responded by describing the cooperative learning she used at her school:

> *We use themes…the main emphasis is for teachers to bring out the values and when we do training we always ask them what are the values they learn… so they can use the same kind of methodology…we use a lot…like biology combining with geography and social studies…although we have a lot of water, very little water can we drink…why is it there is very little water…we are very selfish… we are using too much of the natural resources and unless we teach children, not to teach, how to teach the world better, how to teach specifically with water…this is really very important working with a group…has an advantage as teachers. I did a project with one class where they planned out a conservation plan for the school, and one of the things they came up with themselves is…like leakages…in pipes…we combine mathematics and domestic science…with the older children, we got them to do statistics on how much water is needed, for instance to grow a pound of grain versus producing a pound of meat…producing meat requires about 10 times more water. We have to think about so many changes, even changes in diet…these kinds of things, if the children do it themselves, if they find out for themselves, it has so much more meaning than if the teacher just gave them the statistics…one of the things we try to do here is get the children to do research, get them to think for themselves and … it's a very different learning process. The problem with education today is that it is just a process of giving information…there's not much learning…what we want is teach children how to learn, how to find out.*

Teacher T4, a teacher trainer, described the use of cooperative learning including evidence of group activities and student involvement. Teacher T4 felt that students needed to take responsibility for finding out solutions themselves and work together as a group. She also reported that the students were motivated when working in a group. This participant believed that students found personal meaning when they constructed their own meaning of the issues presented to them.

Teacher T1 from Thailand emphasised her beliefs about group learning. The themes used for group discussions were sometimes chosen by teachers and sometimes by students. There was flexibility in the methods they used to start a project. She also explained how the different subjects were integrated with the theme. Her experience was positive as she noted that students enjoyed the sessions:

> *Every teacher, for example, the teacher who teach 10–12, will have a meeting or sometimes they chose a theme, sometimes from the students what they have interest in, like water, if they choose about water, every subject … you have to relate your subject with water like math, like what we want to teach about water with math, with science, with sports with social…With everything…Its very interesting…easy also everyone work together and students have more experience.*

Teacher T3 stressed that group activities were essential for students as they have to be dependent on each other, and she showed a positive response to group learning:

> *They have a share group…they use a game in Thailand (lompek lompak)…they have a game with water (naam)…I think we use group learning all the time. In real social life we cannot live as only one but you must join everyone…in integrated learning the students help each other…Some students are clever and they will talk to the others…some students help each other.*

According to teacher T5, students interacted with each other and were able to come up with different ideas and understood the significance of water. They performed a role-play during the cooperative learning sessions.

Teacher T2 stated the following:

> *Just two months back I was taking the class of around 50 children and I asked them to write a sketch. There were 6 groups. I asked them the importance of water and all the 6 were in a small group…they enacted well and how children realise the importance of water! They had different ideas and they have the same theme…so many good ideas coming to them…they performed well about the*

importance of water. Parents feel that it is better if they get this education and they feel that the child is getting better in their daily habits.

Teacher T8 related her experiences with cooperative learning activities. Students worked hands-on with the herbs during gardening and older students helped the younger students. She emphasised how she had observed many times that the older students took care of the younger students and taught them what they knew. She believed that cooperative learning not only helped in scaffolding knowledge but also improved interpersonal relationships. She stated the following:

They try to grow some herbs and the older teach the younger about the herbs and the use of the herbs. I heard them many times…the older ones say "this one is useful" and you can take care…the younger ones… listen… they don't change so much for now… we have to observe.

In Teacher T1's belief statements she described her beliefs regarding students and their interest in activities. She stated the following:

I divide them into boys and girls. Sometimes I have 20 students I divide them into four groups…my experience is easy to teach students to help each other… sometimes students look for information by themselves. I advise them to find information…they use information from the library or water institute.

From their belief statements, teachers from Thailand showed evidence of using group learning. There is evidence of group interaction as well as teacher and student interactions.

Indonesian Teachers' responses regarding cooperative learning

Teachers from Indonesia related their experiences regarding cooperative learning. Teacher I3 responded that she used cooperative learning:

Sometimes I have listening comprehension…I tell them about how important water is. How without water we cannot be alive. Water is important. We may not waste water…because not all Indonesians have good water. Because there are some places where people need water…in Jakarta the green became real

estate…like town…so…in my home town for the first time when I came in 1980 there are still small rivers on the side of the road, but now there is no water anymore…government has set a rule that we should have a green environment…our school has become a green school…but now we aim for a green school for Jakarta…now we must compete with the five districts in Jakarta …south Jakarta…north Jakarta…central Jakarta…then east Jakarta and also environment should be clean…like place plastic or anything in the right place.

In teacher I3's belief statements there was no evidence of cooperative learning activities among students. She did not refer to the use of cooperative learning activities or discussions among her students. There was no evidence of group interaction among students.

Teacher I5's response regarding her beliefs about group learning highlighted the uses of water. She did not respond on cooperative learning but personally felt that students did not understand the importance of water. Teacher I5 stressed the use of water as follows:

Usually in Indonesia, we use water for housing…and the students study about water sometimes they don't realise, you know, it is very important…it is very, very important to be efficient …to be efficient…in using water in Indonesia… there are many uses…like for sports sometimes and for making plants, fish, for irrigation and for plan like electric power.

When she was probed on how she actually used group learning, she mentioned again the uses of water. There was no evidence of group work or students' involvement in the classroom with water issues. Her response was as follows:

It is very useful for human…many benefits…many profits for the human beings …without water, human beings…can't live…That's right…so I often told students about many uses of water…in Jakarta, the people must feel the crisis of water now.

Although the program motivated Teacher I1 from Indonesia, she did not respond on the actual use of cooperative approaches. She stated the following:

Students can achieve two goals by using human values. The goals are the same…they can achieve the objectives of the syllabus and the second they can preserve the environment…and the next…by using human values program they can improve their social skill and human values understanding.

Teachers from Indonesia did not explain their use of cooperative learning in HVWSHE classes. Their teaching methods were based more on transmitting facts about the use of water. Teacher I1's intention to implement water education was prompted by external factors, such as government campaigns and the competition between schools. There was no emphasis on the students' roles in their activities, nor did the teachers mention student responses or the interactive sessions between themselves and the students. Teachers' belief statements indicated that teaching approaches in Indonesia reflected a didactic approach.

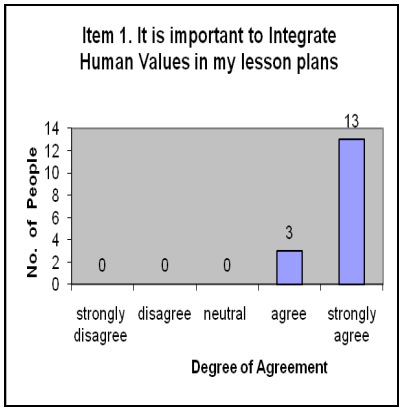
Teachers' beliefs and perceptions regarding Educare: integration and elicitation of human values for HVWSHE

The teachers' rate of agreement regarding Educare: integration and elicitation of Human Values, is provided in Table 6.7 below.

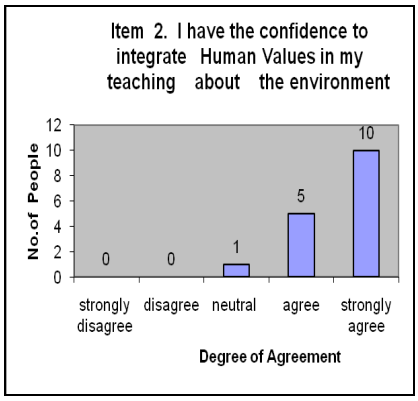
Table 6.7: Extent of agreement regarding the use of Educare: integration and elicitation of Human Values for HVWSHE

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Item 1: It is important to integrate Human Values in my lesson plans	0	0	0	3	13
Item 2: I have the confidence to integrate Human Values in my teaching about the environment	0	0	1	5	10
Item 5: I believe that teachers can elicit positive values from students using HVWSHE	0	0	0	5	11
Item 6: It is easy to integrate Human Values into all academic subjects	1	0	8	4	3
Item 7: It is possible to motivate students to practise Human Values by developing pro-environmental behaviours	0	0	0	8	8
Item 8: Students are motivated to help one another when values, such as unity, peace and love are integrated into the lessons	0	0	2	3	11
Item 10: Lesson plans must stress students' inter-connectedness with the environment	0	1	0	12	3
Item 12: Human values education promotes self-control so that students do not waste water	0	0	1	11	4
Item 14: It is possible to elicit human values from students during class	0	0	1	7	8

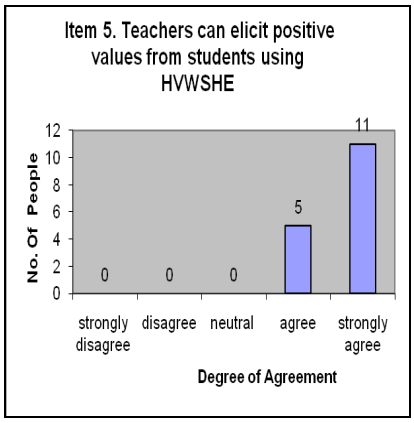
Degree of agreement of teachers' belief regarding the use of Educare: integration and elicitation of education in human values is presented below in Graphs 4 to 12.



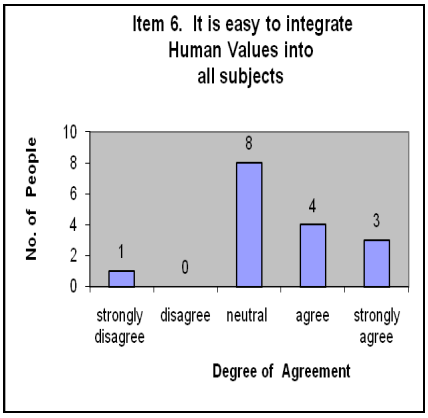
Graph 4



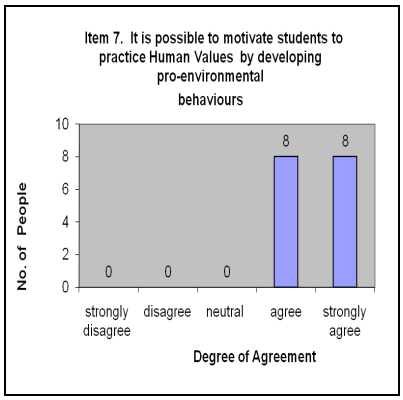
Graph 5



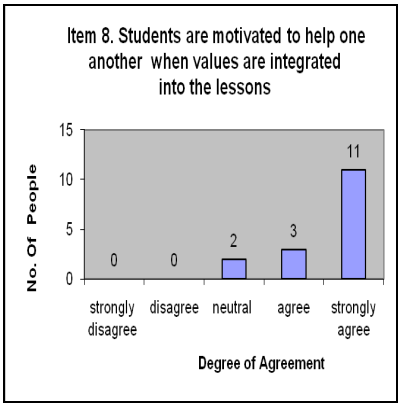
Graph 6



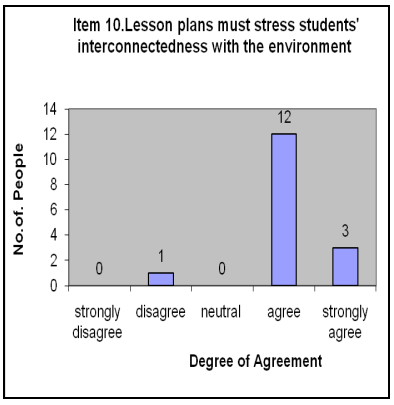
Graph 7



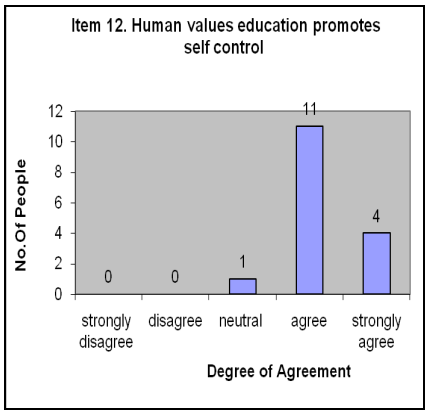
Graph 8



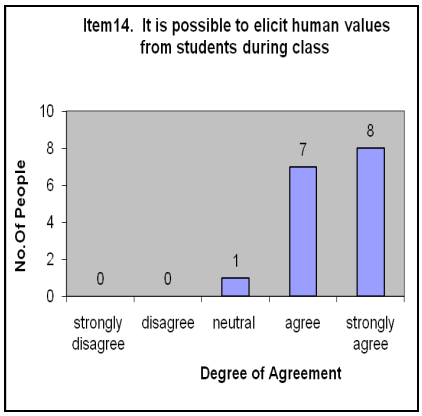
Graph 9



Graph 10



Graph 11



Graph 12

Teachers agreed that the integration of human values is important, but for Item 6, "*It is easy to integrate human values into all academic subjects*", one participant disagreed strongly. Eight out of sixteen teachers gave neutral responses to Item 6, which indicated that they faced difficulty in integrating human values in some lessons. With regards to Item 10, "*Lesson plans must stress students' inter-connectedness with the environment*", most teachers agreed that this is significant for Human Values-based Water Education.

Teachers' responses for Principle 2: Educare: integration and elicitation of human values

Thai Teachers' responses for Principle 2: integrating and eliciting human values

Teacher T1 indicated that teachers shared their experiences as she related her colleague's experience during his teaching and learning session. She was motivated by the students' feedback. She related her colleague's experiences through her belief statements. She stated that:

> *The biology teacher…he tells about his class…but his group is about biodiesel…we use recycled oil from the kitchen…it's a project in our school …after that we try to calculate its profit or loss…and we found there was only little profit…the budget is very high to buy material…he asked the student 'what did you learn from this project' and then he said, he expected responses like only " save the environment"…but the student said even if we have just small profit we*

should go on…carry on because it is good not just for our school to save, not for the environment…but for everything.

Teacher T3, a primary teacher from Thailand, explained her experience with grade two students in Thailand regarding integration and elicitation of Human Values. She explained how she used her teaching to instil good behaviours in students:

I use water, water education for grade 2. We have activity…when we learn about litres or millilitres in mathematics you must try to change the behaviour for saving the water…and I use the institute museum and take them to walk and learn about the basics in that room. After that I ask them how do you feel or what knowledge have they gained from their learning…they talk about their activity or unity or sharing…about the idea how we can save water and after that we can save energy, not only water and we ask them about education in human values…this group they say that they have unity, sharing, they are happy to learn and happy to have activity…they tell me …time is not enough for them.

Teacher T3 discussed and elicited Human Values from students. She also stated that she asked students about their ideas and understanding of their experiences. Teacher T3 also mentioned that she discussed values within the context of water issues such as preservation and conservation. Student feedback was evident from her discussion.

Teacher T2 talked about the importance of integrating good values in children. She was confident of the change in students and her belief statements revealed that she did not have difficulty with time constraints. She stated that:

It's always nice to integrate values in the classroom that gives positive attitudes to children. If it's value oriented you always use good values in the subconscious mind, only good values go into children…sometimes yes, some children you can see change in them…even the parents come and say that…Integrating values in water education…yes it's not tough, it's just the way…it's your way of taking the class I don't think it takes extra time to integrate values…I will say ninety per cent respond faster.

A few teachers found it quite difficult to integrate values for certain topics. A secondary school mathematics teacher, T5, stated the following:

> *Mathematics…some contents are difficult to integrate, some contents are difficult to use human values…like statistics.*

Another teacher from Thailand, T6, a mathematics teacher, stated that when she taught mathematics she would use water issues as examples. She stated:

> *When we use water from science and mathematical aspects the students are more interested in those topics…for example…in mathematical class when I teach them logarithm I can talk about logarithm and water.*

Indonesian Teachers' responses for Principle 2: regarding integrating and eliciting human values

Indonesian teachers' responses regarding integrating human values are provided below. When asked about integrating values, teacher I4 mentioned academic stress and time constraints were both obstacles. She stated the following:

> *Not often, sometimes…once a month…because…we don't get…time to make a group because…in Jakarta…we should do the materials, finish material for the subject…so we don't have any time to make the game or anything…sometimes I take our students to study in the park.*

Teacher I2 from Indonesia, who completed her training in Thailand, complained of the workload she faced, although she was motivated by her personal experiences in Thailand:

> *Actually when I'm teaching I didn't…it's difficult to say …I teach fourth grade and twelfth grade…my work is to prepare them for the final exams…In my teaching method I didn't put the value of water in my teaching. But when I talk to them I told them about my experience in Thailand and I told them about the students in the Sathya Sai School and about the teachers and they were very interested. In my stories, they keep asking me about my experience in Thailand.*

Teacher I5 from Indonesia who also completed her training in Thailand stated the following:

> *I get from Thailand, is real…the values show up we can feel how it is…really wonderful…it is like diamond…it is human character…about the development of a human person…in integrating values…I didn't…when I get there…it's not theoretical…it is applicable… people use it…value and respect everything in our life…nature, human being and then situation in …surrounding area.*

There were differences in teachers' responses between Thailand and Indonesia.

Teachers from Thailand related that they integrated Human Values in their lessons.

Their belief statements also revealed that they received responses from the students. Teachers from Indonesia did not explain or relate to their students' experiences or their students' problems regarding Human Values. Indonesian teachers did not mention any student feedback during their teaching and learning sessions. They also complained of the stress regarding their work.

Teachers from Thailand reported several instances of student feedback. They generally agreed that integrating human values is important and that they received help from their peers. There was evidence of peer discussion of classroom experiences among teachers and the observation of students' behaviours. Some teachers mentioned the problems they faced integrating human values in certain subjects, like mathematics, and a lack of time. Integration of human values during teaching and learning involved both cognitive and affective teaching in the classroom.

Regarding the integration and elicitation of human values, teachers from Indonesia stated that they faced the stress of heavy workloads and a lack of time to cover their syllabus. Their responses revealed that they had little feedback from students. They were motivated by HVWSHE and felt it was important for students. The open-ended items revealed that they understood the significance of implementing the integration and elicitation of human values. From their interview narratives it was evident that they were motivated by the contents of the program.

According to two Indonesian teachers, they were motivated by the contents of water education during the training. One of the teachers, I3 stated:

> *We have to know what is the importance of water… for example they teach about water in our body…then the teacher should know the techniques to teach the children…so that they can understand easily… In Thailand, they give our body as an example … in maths…in drawing…in art… in English…so the teacher should know how the methods and knowledge and the techniques.*

Teacher I2 also stated:

> *After I went to Thailand that water has more value more than saving water… it has a lot of… difficult to tell… not only we have to save water… there is lot of meaning in saving water… from Thailand, but before Thailand I know I have to save water… then for me water has no meaning …after I went to Thailand water has meaning…like there are so many things we learnt… I read a lot of wise sentences about water…it touched me very much.*

Teachers from Lao PDR were in agreement that integration and elicitation helped develop students' pro-environment behaviours. They stated that students know how to save water and protect the environment. One of the significant statements they made was that students have the ability to provide solutions because they have creative ideas and they come from different environments. Neither teacher participant took part in the interviews. This is a limitation of the study.

Teachers' beliefs and perceptions regarding Role Modelling

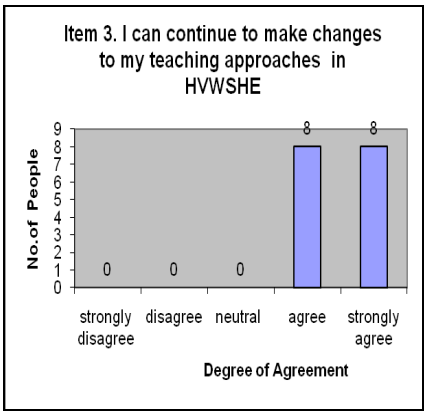
The teachers' responses were important in understanding how the teachers perceived themselves as role models in water education. The extent of agreement regarding teachers' beliefs and participations about themselves as role models is presented in Table 6.8.

Table 6.8: Extent of agreement regarding teachers' beliefs about themselves as role models

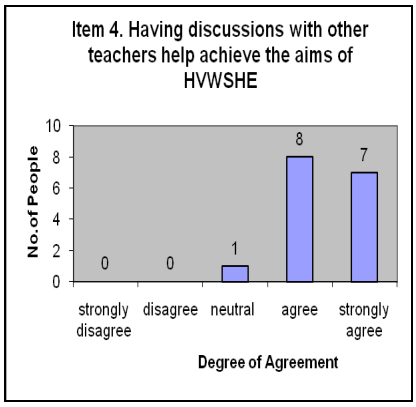
Statements	No Response	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Item 3: I can continue to make changes to my teaching approaches in HVWSHE	0	0	0	0	8	8
Item 4: Having discussions with other teachers helps achieve the aims of Human Values-based Water Education	0	0	0	1	8	7
Item 16: I would like more opportunities to share information with other teachers about HVWSHE	1	0	0	1	8	6
Item 24: I have genuine concern for others	0	0	0	2	8	6
Item 25: I have the self-confidence to be an example for students in my classroom	0	0	0	0	9	7
Item 26: I can inspire other people to network for a good purpose	0	0	1	2	10	3
Item 27: I am easily approachable to teachers	0	0	0	2	12	2
Item 28: I am easily approachable to students	0	0	0	3	10	3
Item 29: I am able to bring in new ideas to help implementing human values within the classroom	0	0	0	1	11	4

Regarding Item 25, "*I have the self-confidence to be an example for students in my classroom*", all teachers agreed that they have the self-confidence to be role models, while 14 out of 16 teachers believed that they are easily approachable to other teachers. Thirteen out of sixteen teachers agreed that they are easily approachable to students.

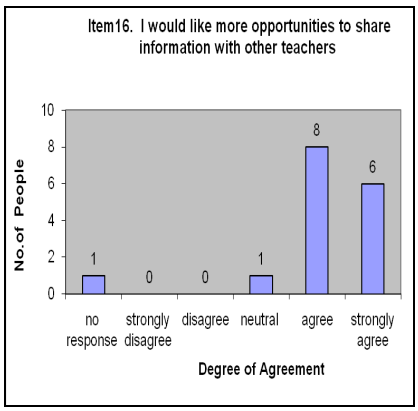
The degree of agreement of teachers' beliefs regarding role modelling for HVWSHE is presented below in Graphs 13 to 21.



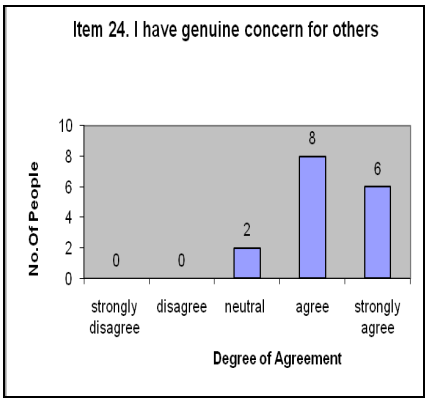
Graph 13



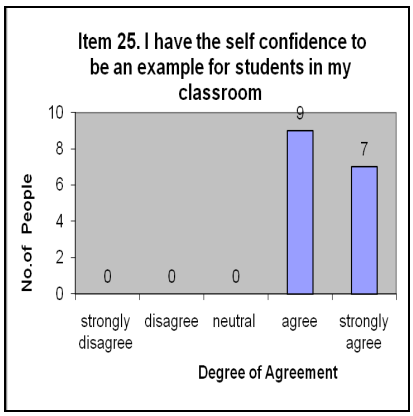
Graph 14



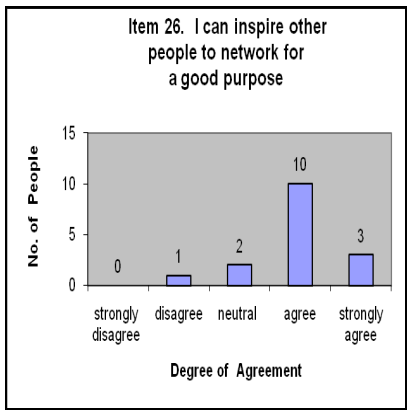
Graph 15



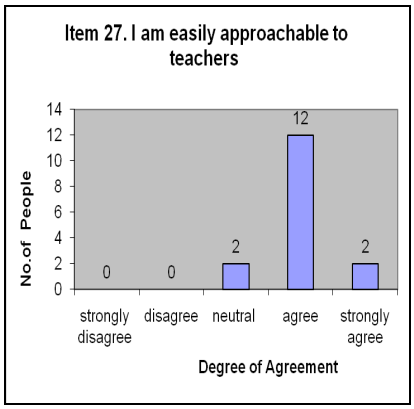
Graph 16

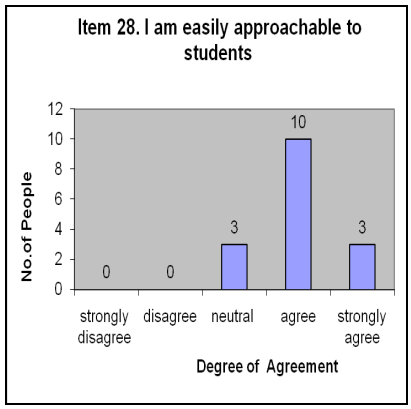


Graph 17

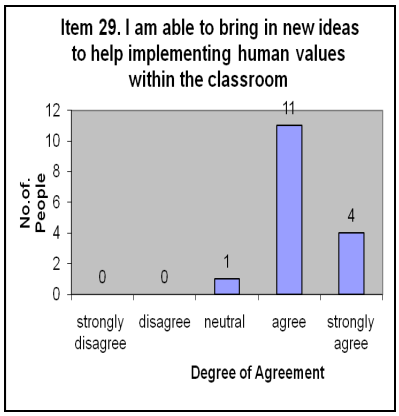


Graph 18





Graph 19 **Graph 20**



Graph 21

Principle 2: Teachers responses regarding teachers being a role model

Thai Teachers' responses regarding being a role model

Teacher T4 emphasised the need for a teacher to practise if they had to teach HVWSHE. When she was questioned about her thoughts about being a role model, she answered with the following:

> *If a teacher teaches a child and if water is essential and when the child sees teacher turning on the tap and wasting water, we can say anything and if our actions do not match what we say they don't learn from what we say but from what we do…it is important.*

Teacher T8 mentioned about being a role model in Thailand. He stated the following:

> *It's important…I always look at Dr "J"…because he is a very good example if he has a free time, a holiday, he always walks and cleans the garbage on the floor and takes it away.*

Indonesian Teachers' responses regarding being a role model

Teacher I1 from Indonesia stated the following regarding teachers being a good example:

> *As a teacher is a good example they have some responsibility as an effective…teacher should be flexible and patient…teacher…learn through heart, teacher should coordinate through…head, heart, and hands as unity of thoughts, words and deed.*

Teacher I2 stated the following:

> *After we finish we should switch off the tap as we need the water…especially I saw the big impact in Thailand…because they teach the values seriously but different…I try to be as close as Thailand…the thing I remember in my mind is the relationship between the teacher and students…they are very close…the students love the teachers very much…they love and they respect…it touched me and the teachers love the students very much.*

The responses from teachers from Thailand revealed that role modelling for teachers included modelling interpersonal relationships. Out of the six teachers from Indonesia's four teachers stated that they were motivated by their experiences in Thailand. They stated that the interpersonal relationships they observed between teachers and students motivated them.

Teachers' responses from all three countries reflected that they believed it was important to be a role model for students.

Teachers from Thailand referred to Human Values when they discussed being a role model. The cohort of teachers from Thailand appeared to be aware of the importance of being a role model. Teacher T4 mentioned the importance of practising habits related to water conservation whereas teacher T8 pointed out that he was motivated by a role model in her school. The emphasis on role modelling was evident to a certain extent as teacher T8 narrated below:

> *It's important…I always look at "Dr J"…because he is a very good example if he has a free time, a holiday, he always walks and cleans the garbage on the floor and takes it away.*

Teacher T6 stated that students have to know the value of water and the value of sharing water. She also added: *"as well as human bios"* meaning the interconnectedness of the environment.

During their training in Thailand, teachers from Indonesia were motivated by role modelling they observed the importance of practising water conservation. Teachers from Indonesia responded about the importance of having good character and behaving appropriately in front of students. The Indonesian teachers' narratives referred more to the habits and discipline of students and appeared to include fewer statements on the actual practice of using water than those of Thai teachers. Teacher I5 mentioned the following when she was asked to respond on role modelling:

> *pay attention to the student coming to school… the teacher must not come late.*

And then she referred to water issues:

> *they take the water for prayer…after we finish we must switch off the tap…we use water… as we need…not too much…yes.*

Teacher I5 then moved on to the uses of water as she referred to what she has to teach. As a role model,

> *…if they want for irrigation… people have paddy fields…we teach them how to define water for each use.*

Responses of teachers from Thailand and Indonesia indicate that there are two aspects to the teachers' understanding of being a role model. From teachers' narrations, it appears that teachers think it is important to be a role model in class. Teachers from both Indonesia and Thailand referred to the importance of teachers' role modelling punctuality and discipline. Teachers from Thailand specifically pointed out that teachers' role modelling where water issues are concerned has an impact on students' attitudes and behaviours.

Lao PDR teachers responded positively when they responded to the questionnaire about their opinions of themselves as role models. The first teacher stated that they made every effort to be an example in their classrooms as well as to integrate values in their teaching. He stated that teachers always shared and learnt from their peers when they had doubts. The second teacher was uncertain in his response as he responded as follows:

After learning, I think so I can do that

Maybe, I do not know

Both Lao PDR teachers did not take part in the interviews and it is not possible to conclude from the open-ended items what their beliefs were regarding themselves as role models. Their responses for classroom practices were missing.

The open-ended items from the mixed method questionnaire from Sections B, C and D were compiled according to the research questions. The open-ended items were analysed using Nvivo 8. Some trends were observable in the open-ended questions before thematic analysis.

All responses to all open-ended items were compiled and coded into Nvivo 8 to explore emergent themes. After several cycles of coding and analysis themes were formed using categorical strategy, as proposed by Teddlie and Tashakkori (2009).

The first step was to isolate texts that related to a certain category by rearranging data that had similar meaning. In this study, the texts that explained or belonged to a particular category were grouped together. A larger theme was used to identify the grouped data. If the number of a certain response belonged to one particular theme

and if the responses from participants belonged to the same theme, and was repeated four or more times, then it was taken as a valid theme and if it was repeated less than four times it was not considered valid.

The themes that emerged are presented in a table in the form of percentages. If the frequency of the theme was less than 4% it was not included. If a participant responded more than once to the same theme, it was not included.

All the responses from open-ended items for the principles used in HVWSHE were compiled for analysis.

Research Question 1

What are teachers' beliefs and perceptions about the principles from the HVIIM model for HVWSHE?

This research question examined three aspects:

- Teachers' beliefs and perceptions regarding cooperative learning;
- Teachers' beliefs and perceptions regarding educare;
- Teachers' beliefs and perceptions regarding role modelling.

The main theme that was obtained for research question 1 was Cognitive-Affective Teaching (integrated approach) and three sub-themes. They are presented below:

Main theme

1. Cognitive-Affective Teaching.

Sub-themes

- Interpersonal relationships;
- Motivation;
- Teachers as reflective practitioners.

Major Theme 1: Cognitive-Affective Teaching approaches

One of the main themes was cognitive-affective teaching approaches. Human values-based cognitive-affective teaching in this study includes knowledge, facts for academic achievement as well as reasoning skills for ethical attitude development. Affective teaching aims at transformational learning for improving students' self-concept and attitudinal and behavioural changes for ethical behavioural development, which develops social consciousness.

Birbeck and Andre (2009) stated that affective teaching and learning can be defined as a situation where students are given opportunities to engage with both development and understanding of their own feelings, values, attitudes and motivation related to behaviours and actions as a professional citizen. According to them, affective domain also included engaging students through supporting their affective attributes for learning. The categories obtained from the open-ended items for the Principles of HVWSHE are shown below in Table 6.9.

Table 6.9: Main category regarding teaching principles

Category	Example
Cognitive-affective teaching for development of social consciousness	"Integration of HVWSHE is a must in curriculum as this will help guide moral behaviours". "Help to community, values such as interrelationships, beauty, generosity, equilibrium and gifts in the environment can be a source to facilitate values education". "Significance of water in festivals and religion and current practices". "Knowledge of current facts and the futures". "Evolution of knowledge and skills through cooperative learning approaches". "Values such as love and unity encourages students encourages habit of preservation and conservation". "Awareness of relationships of individual and environment as key motivator". " reflective teaching important to enable human values integration and elicitation". "Respect for water is fundamental for human values" . "Interdisciplinary human values are directly related to one's own awareness and growth". "Student should feel interconnected with the environment and this can be taught implicitly and explicitly".

The proportionate distribution of teachers' responses relative to the themes that emerged from research question 1, is presented below in Table 6.10.

Table 6.10: Percentage of coding under the category according to participants' responses

Human Values based Cognitive-Affective Teaching	Responses (%)
Beliefs of knowledge of significance of water to life	5
Integration and elicitation of Human Values in academic teaching	4
Interconnectedness of water to human life and society	7
Working together to increase cohesiveness	4

Teachers' beliefs and perceptions responses include cognitive and affective statements for environmental citizenship such as:

HVWSHE focuses on water, sanitation and hygiene but it deals with human values which is very essential for present education;

...coordination of head, heart and hands;

...it helps to analyse different situations of life and work together for it.

Teachers' beliefs reflected a holistic view of Human Values-based Water Education. Teachers generally reflected the need to incorporate positive approaches for increasing awareness and skills for pro-environmental behaviours by guiding students with both cognitive and affective teaching approaches.

Some of the teachers' responses highlight teaching orientations that include the importance of affective attributes. They included statements such as:

...promotes unity with all living beings on earth;

Only good persons will help others, society, country and our world. So, Human values are required to be integrated into the lesson plans in order to produce good persons;

Discussions in the lesson plans are very important for the students' life community, the society;

...it links all components of society to work together in peace and love.

Some of the cognitive teaching orientations included textual segments such as:

beliefs of knowledge of significance of water to life;

This showed that teachers believed that students' awareness of water would be enhanced if students knew the significance of water to life.

Sub-themes

Three sub-themes were found under the main category: cognitive affective teaching approaches. They are interpersonal relationships, motivation and teachers as reflective practitioners. The percentage of sub-themes obtained from open-ended items for teaching principles is shown below in Table 6.11 and sub-themes obtained from open-ended items for teaching principles and teachers' belief statements are shown below in Table 6.12.

Table 6.11: Percentage of sub-themes obtained from open-ended items for teaching principles

Sub-themes	Responses (%)
Interpersonal relationships	4
Motivation	6
Teachers as reflective practitioners	6

Table 6.12: Sub-themes obtained from open-ended items for teaching Principles

Sub-themes	Teachers' Responses Regarding Principles Used for HVWSHE
Interpersonal relationships	"It links all components of society to work together in peace and love". "Teachers as caring individuals". "Willing to share knowledge and experience". "Ability to interact formally and informally". "Positive relationship with students is essential". "Share success and failure in using teaching approaches". "Find solutions together". "Interpersonal skills development". "Ability to contribute as much as possible".
Motivation	"Students need to be motivated". "Enjoy lessons". "Motivate students to help environment in a large way". "Cultural connections will bring in affective development". "Confidence to be a role model".
Teachers as reflective practitioners	"Increase reflective capacity". "Students' awareness of human values is permanent". "Concentration". "self-awareness practise at all levels". "It creates awareness in students and teachers on water, sanitation and hygiene on present issues and reduce the negativity around". "Ability to enter the child's representation of the world".

Interpersonal relationships

Interpersonal relationships include the relationship between students, students and teachers as well as among teachers. This also includes group dynamics that include characteristics such as sharing information, contributing help when needed and support groups for facilitating knowledge and skills.

Teachers believed that it was important that students worked together because this would increase students' social skills and help them build networking skills. Teachers' text segments included:

...sharing, interpersonal skills development;

Yes, they can interact with their friends and socialise with each other;

This can help them in building team work;

Without love and understanding there is no cooperative learning;

…inter relationships between teachers and students and their peers and motivation.

Sixty two per cent of teachers stated that they did not have the opportunity to share or learn with their colleagues. A few of the text segments are provided below:

Now we don't have any opportunity to share information so I strongly agree. But if we can have such an opportunity, those should be creative not only just information or results;

I would be so proud to share everything.

Teachers found it important to share their experiences and learn from each other. A few text statements included:

It would be so priceless to share everything good with others;

As we are the examples for our students it's most essential to train and help their awareness;

I also proposed a Human values "support group" to seek solutions to problems (for ex-discipline…) by actively using human values;

It's important that the teacher shares information in order to increase that method how to teach HVWSHE;

An open forum will lead to much exchange of ideas and also team-teaching.

One of the teachers commented that teachers have to build a relationship with students for human values education to be implemented. Another teacher stated that:

If the teacher feels the need of human values in education it is definitely easy to integrate;

It seems to be difficult if a teacher is rather far from the students; teacher can easily share or give the lesson to the students when there is a good relationship with teacher and students. So going inside the students' world is necessary.

One of the belief statements emphasised that unless teachers have a positive relationship with students, teachers may not be able to achieve their aim.

Students will have good rapport with teachers and teachers can reinforce good points of the students.

Motivation

The responses showed that teachers believe integrating human values into the lessons and motivating students will help develop positive attitudes. One of the teachers stated:

It is easy to motivate students to practise human values at an early age and save our environment where we live;

I always connect my teaching material to human values. ...students enjoy the class.

One of the teachers stated that during their teaching:

It is important to interconnect with the environment but I don't think it must be stressed…as the environment is a term that encompasses all living things and non-living things occurring naturally on earth…It means the lesson plans stress students' interconnectedness with everything, We should motivate this issue and get the involvement of the students;

Yes, once we start to listen to ourselves (heart) and practise human values, the new ideas prompt always and it is useful and unavoidable too;

This really helps to implement human values within the classroom and his own life, Students enjoy the class when there is integration of human values.

Teachers expressed the importance of guiding students to relate to the environment around them. One of the text segments stated:

Students' interconnectedness with the environment will make the student feel in a personal level which is very important to fulfil which is the objective of HVWSHE.

Teachers as reflective practitioners

This sub-theme elicited statements that related to problem-based teaching and learning. Teachers' belief statements included two important factors. These were self-efficacy beliefs and their reflections on teaching practices. Teachers' responses included efficacy beliefs such as the following statement:

> *Yes, I can share and learn from my peers in bringing an awareness of human values in work place but need to very careful in what is right and what is wrong.*
>
> *It is not always that people believe in human values and practise in their daily life.*
>
> *Different people have different thoughts. I can listen and work together, if it is positive and good for all.*
>
> *Ensure we have well understood human values education and then, we can say it is easy to integrate … I do doubt it since in my school; I still have discussions with them about teaching students with human values.*

However, when one of the teachers was questioned about integrating and eliciting human values, in their particular subject, she stated:

> *I am sure it is possible to integrate human values into all academic subjects but into some subjects, for instance, mathematics, it is not so easy to do that. However it depends on levels of our achievement.*

Regarding eliciting human values:

> *It is hard to elicit HV [human values] immediately during class although it is possible to do. And even if a teacher can recognise human values, but we cannot say the human values are elicited really and surely.*

6.3.2 Research Question 2

What are teachers' beliefs and perceptions regarding the effectiveness of selected teaching pedagogies used in HVWSHE: silent sitting, prayers, storytelling and music?

Teachers' beliefs and perceptions regarding the teaching pedagogies

Teachers' responses to the questionnaire about teaching pedagogies used for developing ethical attitudes and behaviours are provided in the tables and graphs below. The extent of agreement for the use of teaching pedagogies is provided below in Table 6.13.

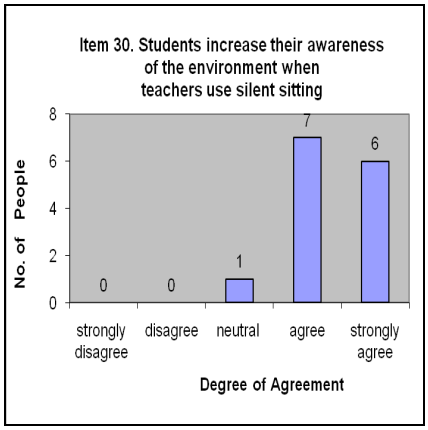
Table 6.13: Teachers' beliefs and perceptions regarding teaching pedagogies

Extent of Agreement Regarding Use of Teaching Pedagogies	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Item 19: Prayers promote positive attitude among students in HVWSHE	0	0	2	7	7
Item 20: Music in the classroom helps students to learn human values	0	1	4	8	3
Item 23: Storytelling helps students develop moral values	0	0	0	12	4
Item 30: Students increase their awareness of the environment when teachers use silent sitting	0	0	1	7	8

Of all the four pedagogies that teachers used in their classrooms it was found that teachers felt that storytelling was the most effective. The second most approved of pedagogy was silent sitting followed by prayers. In the case of music, there were four neutral responses and one participant disagreed that music helps students learn human values.

The degree of agreement of teachers' beliefs and perceptions regarding the use of teaching pedagogies are presented below in Graphs 22 to 25.

Teachers' responses regarding silent sitting



Graph 22

Thai Teachers' responses regarding silent sitting

Silent sitting is an important teaching pedagogy used in classrooms in Thailand in water education. The function of silent sitting is to prepare students to calm down and focus on their lessons. Sometimes silent sitting is also used in the form of visualising moments to help students focus on the lessons.

Teacher T3 stated that she used silent sitting to prepare students to concentrate and calm down. It was used as a preparation for them before they started their lessons. Her response to the use of silent sitting was:

> *In the classroom only one minute or five minutes…to prepare them to learn…and they will concentrate on the subject…some students cannot do silent sitting.*

Teacher T4, stated regarding her training of Chinese teachers in 2008, in her narrative that teachers' in China found silent sitting effective:

> *We just had one training from China…they say that it changed the whole way of thinking…they realised that it is more effective with the values especially with the different techniques…in China it's like chalk and board…it's an eye opener that we could do activities like singing and stories…They said that of all the things they learnt, the most important is silent sitting.*

T4 elaborated on the use of silent sitting:

I would say 99% very comfortable. The only thing that holds them back is they don't have time and if its explained properly it is not a religious activity it helps students calm down and these kind of exercises can enhance academics and I try to explain that if you take little time you have actually gained so much time… if you start from a place of focus. Definitely not silent sitting I can't teach now without silent sitting… 3–4 minutes for each class its calming the children down. Silent sitting… we use in every class.

Teacher T6 narrated that she used silent sitting sometimes. She stated:

Yes, in education in human values, of course…in water education…we do usually. After silent sitting they have good concentration and calmness also…and then they can remember well. Before the exam or teaching it is very effective. Usually it's just few minutes because we have teaching, I don't want to use a long silent sitting, but it depends on the situation.

Teacher trainer T4 mentioned the following:

Well, the techniques…Well…I have been using these techniques for many, many years…they wipe the board…they prepare to teach…in a way silent sitting is like preparing them to receive information to be concentrated…I have the experience…the feedback from children…we have evaluation…especially from older children…Wonderful experiences…it depends you know if you are doing silent sitting the person will become more concentrated we can do with water education.

Indonesian Teachers' responses regarding silent sitting

Teacher I1 stated:

In doing silent sitting they are able to transform their negative mind to positive mind and know what they are. It needs more time… it takes more time. They realise one's potential, they can develop their attitude of selflessness and selves.

Teacher I2 referred to silent sitting as similar to prayers. She reflected that:

> *Silent sitting for me it's like Zikir…that means…like we have to sit still but in our heart we mention the name of Allah…in my school for example…before we start studying we have to pray first, we have to keep silent for a while and then we start studying…but not like silent sitting…for silent sitting the teacher say something…in my school everybody has to keep quiet.*

Teacher I6 stated the following:

> *I have tried once but because it takes time…of course it did help but when students complain…I stopped…I changed my way…I don't use.*

Teacher I5 gave a similar response to I2 and I1.

> *Sometimes…for my class maybe…I often do silent sitting…but like prayer…in Indonesia…I feel the student is more silent.*

Teacher I1 and I6 felt that time was a factor and teacher I6 felt silent sitting benefited the students although students' responses stopped her from using silent sitting again.

The cohort of teachers from Thailand treated silent sitting as something that calmed students and allowed them to concentrate in their lessons. Some of them used it when they felt silent sitting was necessary to keep students calm so that they could focus on their studies. They mentioned how silent sitting benefitted students by helping increase student's concentration and memory and getting students to calm down before they learn. If students were ready to learn, teachers from Thailand mentioned that they did not use silent sitting but that they would directly begin teaching students.

Teachers from Indonesia emphasised that they usually pray before they start teaching. Some teachers mentioned that they used silent sitting to calm students but a majority of them stated that they preferred to use prayers as they felt that silent sitting was similar to prayer. From their responses, how silent sitting is actually related to water education was not clear.

Teachers from Lao PDR responded only to the initial questionnaire. The first teacher's response was:

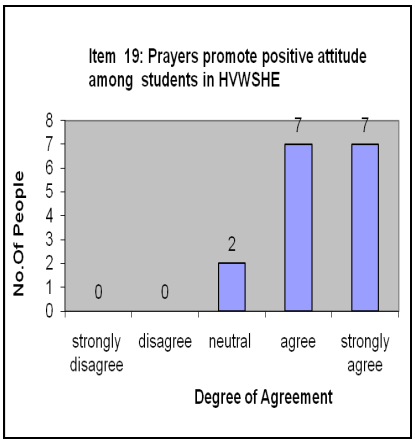
> *I am not sure what is the purpose of silent sitting, someone says when you practise silent sitting every day you will have good health and knows everything. It needs to be approved by myself.*

The second teacher stated:

> *Well, actually I do not know, but I think silent sitting will make them calm down.*

Teachers' response statements from the questionnaire did not reveal much of substance, although it appeared that they were reflecting on the benefits of silent sitting.

Teachers' responses regarding prayers



Graph 23

Thai Teachers' responses regarding prayers

Prayer is one of the main activities that teachers in selected schools in Southeast Asian countries integrate before class lessons begin.

Teacher T4 stated the following:

> *In my experience, if you have something that's very universal, people will not object to it and the whole purpose of a prayer or a quotation or saying or thought*

is to put something positive into the subconscious mind of the child…that the child can go to. Singing is another way, but for instance, when I teach the children in my school, I start my lessons, especially with the little ones, with a little universal prayer or saying, "May all people, animals and living beings on this earth be filled with love, peace and joy." It cannot affect or upset anybody of any denomination or anybody who has no religion, but it's just a positive affirmation and to think of others rather than just ourselves. But we can use quotations, we can use poetry…it all has the same affect that we're giving the children something positive in their minds and subconscious.

Well, the techniques, the methodologies are similar between education and HVWSHE…it's just the emphasis that is different. For water it's very urgent it's very good because it's made myself and the way I teach much more orientated to the environment, and how important it is, and actually, if we don't look after the environment, we're not going to have a world left, so, I mean it's something essential that we teach the children about this. They are different. One is calming down and becoming clear…becoming empty in a way, which is the silent sitting…it's like cleaning the blackboard, and the prayer is like filling up with something positive. They both have a positive effect but different purposes.

Indonesian Teachers' responses regarding prayers

Teacher I3 stated on prayers:

Always, before we start, I ask them to and also I think it's useful. Of course they can concentrate…and focus in that lesson…they calm down.

Teacher I4 stated on prayers:

The prayer, of course, before we start the lesson…The student say the prayer…before we start the lesson students do silent sitting…because prayer is different from silent sitting…prayer is for religion. But silent sitting is for all, for all religions…all of the students should have prayer before starting the lesson.

Teacher I6 stated the following:

That's right… no no because you know every beginning before teaching we always do like that, Prayers… then I imitate from the Sathya Sai way…we should have what you say meditate…yes… meditating and then meditate about their own self and how they feel creative and how they do something.

Teachers' perspectives regarding prayers were slightly different in both countries. There were also differences in their views of how prayers are actually used and the purpose of using prayer for water education. The use of prayer and its significance was not clear, as there were different opinions from different teachers.

The teachers' responses from Thailand reflected that they viewed prayers as an activity for respecting the environment. A prayer in water education was often referred to as an activity where students developed respect for nature. This cohort of teachers considered prayers as a way of showing appreciation for nature.

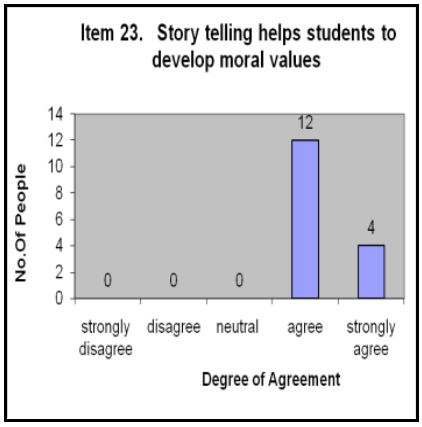
All six teachers from Indonesia referred to the use of prayers as an important pedagogy which they used every day in their classrooms. Their responses suggested that they viewed prayer more as a religious practice than did Thai teachers. They regarded prayers as an essential ritual before classes began. They referred to prayers as an important pedagogical practice before their teaching sessions.

One teacher from Lao PDR stated that prayers help students show respect while the second teacher responded doubtfully:

I had never known before but maybe it is possible.

As they did not participate in the interviews, there was little evidence of their classroom practices.

Teachers' responses regarding storytelling



Graph 24

Storytelling is one of the teaching pedagogies that is used in HVWSHE. Storytelling has been adopted as a pedagogy for water education because it helps explore the richness and practical wisdom embedded in cultures.

Thai Teachers' responses regarding story telling

Teaching pedagogies, such as storytelling, were seen as a tool for students to think over and decide the moral of the story, as well as helping students understand issues related to water which would stimulate their thinking. Teachers' belief responses also stressed that stories must be appropriate for the ages of the students.

Teacher T6 stated the following:

> *For mathematics…we can make a drama not only for mathematics…we can make students enjoy…I think so…because just questions of mathematics is not interesting…so if we have a story we can put in many values.*

Teacher T4 stated the following on the use of storytelling:

> *Is very effective with younger children…the children remember it better than telling facts and figures…it's been used since time immemorial for teaching…Especially with older children we should use more factual stories with older children, less fantasy or different creative ideas with older children. Of course we pick up a story that will really go to the point that you want the*

children to think about but one might…In my opinion, we should get the children to think about the story, we should not tell the children what the moral of the story is or what the meaning of the story is…we should ask them a lot of questions. I find it more effective and it becomes more interesting we and they learn from each other when we ask children they will have different ideas.

Teachers T4 also stated the following:

Three to four minutes for each class it's calming the children down. It's not necessary that we tell stories every time… if we can think of a story that would be very specific to bring out the point that you want to teach, then use a story but we don't have to be stuck by the same techniques…they are to be used when appropriate or helpful…every time.

Indonesian Teachers' responses regarding storytelling

Teachers from Indonesia responded positively about the use of storytelling as a pedagogy. Responses from teacher I3 and I4 are provided below.

Teacher I3 stated:

Yeah I always asked them to look up the Internet. I give them values for storytelling…you see the differences between the water in the city and the water when you have picnic…all the uses are there.

Teacher I4 reflected on her use of storytelling for water education:

Yes, sometimes…actually based on water or environment…No, no, no sometimes…about storytelling…sometimes only about hero of Indonesia.

Storytelling is an important aspect of water education that has been practised in different types of communities over generations. Primary students are able to engage themselves with the environmental issues if they are provided with direct experiential learning and fictional images. This can be done through storytelling about ancient ways of how collective wisdom helped in the conservation and preservation of water. Storytelling can be used in many different ways with

secondary students. Students can research or compose stories from real situations using resources such as newspapers and the internet.

Teachers from Thailand, Indonesia and Lao PDR felt that storytelling was very important as a pedagogy. Their responses from the open-ended questionnaire revealed that they believe storytelling is very beneficial to students for water education. All teachers agreed that storytelling was beneficial to everyone. Seventy-five per cent of teachers believed that storytelling helps develop moral values while 13% of teachers believed that storytelling teaches good examples. Some teachers mentioned that the stories have to include content, which is values-based and stories should not be used that are irrelevant to the aims of values-based water education. A few teachers from Thailand also mentioned that they used storytelling in disciplines such as mathematics and as a tool to integrate human values.

One of the most important observations from the responses of two Thai teachers was that there should not be an emphasis on the moral of the story, but students must be given time to mull over the significance of the story. Students' feedback regarding storytelling was not only encouraging but teachers felt that storytelling made personal meaning to the students. Teachers also mentioned that older students prefer stories about real life situations involving water issues from different contexts in life, whereas younger students preferred more imaginative stories.

Teachers from Indonesia used storytelling as a pedagogy, but most of them did not connect storytelling to water education, although they remarked that it motivated students.

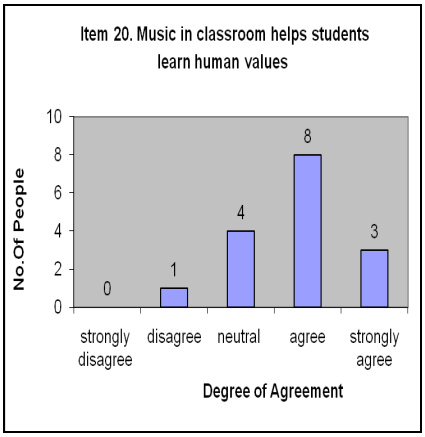
Teachers from Lao PDR stated that it depends on the type of stories used. If stories had moral values in them then the students would benefit from the stories. One of the teachers remarked:

> *Again, it depends on the kind of story. If we tell them about the morals and sure their morals will develop.*

while the other teacher stated:

> *...in different human values kind of stories there are good examples for students.*

Teachers' responses regarding music



Graph 25

Thai Teachers' responses regarding music

Teachers' responses towards the use of music in their classrooms appear to be positive. They agreed that music could facilitate development of students' ethical attitudes and behaviours. Teacher T1 stated the following:

> *Student, like teenagers, like music…if the song is good we integrate values in the song…it is very good for them to memorise and input in their consciousness…when we have a good song they are interested sometimes…you know two to three years ago we have one group they are interested in music…still do and they have to go for competition and they go for national competition for music…they made a song by themselves for competition about global warming and they did a very good song.*

Teacher T4 stated the following about music:

> *Music is another…apart from silent sitting, it's probably the most effective. I don't just use singing, I use a lot of music…if I'm talking about water we have sounds of water…it's very soothing…again like silent sitting as soon as we put on music, not like rock, we need to use lots of discrimination…I use a lot of classical music, new age kind of music, different ethnic music that's calming…in fact, the children ask for it…if I don't turn on music, they'll say, 'can we put on some*

music?' Immediately the class becomes quiet and more centred. If you learn something with music and rhythm, it's more fun and we can remember it better.

Yes, I explained, sometimes we don't use music, there's a lot of difference. They ask for it. I specifically find a lot of difference when they use artwork, from very disruptive classes, they become very calm, peaceful, very creative, very focused. Both secondary and primary… the younger ones need it more, especially the older ones, if they've had this kind of training for a long time, they're more focused already…the older ones are not so keen on singing…

Teacher T6 felt that the use of these teaching processes might not be effective unless they are integrated with the academic subjects. She stated that:

singing or story telling is not enough for them…we need ideas…but if we use academic topics…when we use 'water' from science and mathematics class students learn…for example, when I teach logarithm I can talk about logarithm …and about water…we have to share water…so that we can teach students to share water…with love and so on…sharing…I think it is cultivated with love.

Indonesian Teachers' responses regarding music

Teachers' responses from Indonesia indicated that music is used as a learning tool to practice listening. However, their responses did not indicate much about the significance of the use of music for water education.

Regarding music, Teacher I2, stated that:

I think the same…music…storytelling help students to develop values.

Sometimes I use music. Sometimes to practise listening…of course I choose my music…not all music…but lyrics that have meaning…for example, Beatles, like I choose the lyrics that give the listeners something, ya, to think…not just any music, no…and then I play the cassette and they listen…they have to fill in the blanks and then they talk about the lyrics…then we listen together.

Teacher, I4 stated on music:

Music…of course…the students very interesting, sometimes boring… students study everyday…sometimes I give music…I bring the tape recorder. And then I give them song…and they heard…sometimes …they compose music…they tell about what is the meaning of the song.

Music as a teaching pedagogy was seen as important by all teachers from both Thailand and Indonesia although some teachers in Indonesia, teachers I2 and I3, stated that they, the teachers, do not have the skills to sing and sometimes students are told to sing.

Music was a pedagogy extensively used by teachers in Thailand. They stated that music was used as a tool and that students composed music for water education. According to teachers in Thailand, music was beneficial but teachers were critical about the music used and they emphasised that music had to be integrated with human values so that students were able to reinforce good values in their memory. Teachers from Thailand mentioned how they used music to encourage students to be interactive, as students composed their own music on environmental issues such as global warming. Teachers also used music as a method to reinforce values in the students' subconscious minds. Teacher T4 stated that students asked for music and that music had an impact on primary students during silent sitting and artwork.

In Indonesia, music was used as a co-curricular activity or used to relieve students' boredom and not specifically used for water education.

Teachers from Lao PDR stated that the effectiveness of music in water education depended on the type of music that was used and that music helped students to remember human values.

Open-ended responses for research question 2 were analysed using Nvivo 8.

Teachers perceived effectiveness of using teaching pedagogies are provided in Table 6.14 below.

Table 6.14: Teachers' perceived effectiveness of teaching pedagogies

Teaching Pedagogies	Teachers' Responses to Open-ended Items	
	% believed that…	
Silent sitting	13	it helped increasing calmness.
	13	silent sitting increased awareness.
	6	silent sitting increased memory.
	13	silent sitting increased concentration.
	6	silent sitting helps motivation.
	13	silent sitting increases intuitive capacity.
Prayers	25	prayers helped students to have a positive attitude.
	25	prayers provided respect.
	3	prayers helped improve self–discipline.
	3	prayers motivated students to help others.
Storytelling	75	storytelling helps develop moral values.
	13	storytelling teaches good examples.
Music	38	music helps integrating human values in lessons.
	31.5	choice of music was important.
	13	music helped relax the mind.

HVWSHE teaching pedagogies were applied in some classrooms. A large proportion of teachers believed that the teaching pedagogies helped the students to develop positive attitudes. Some of the findings are given below.

Silent sitting

Teachers believed that silent sitting helped to increase calmness, memory, concentration, motivation and intuitive capacity. The percentage of teachers' belief statements and their open-ended responses regarding silent sitting are provided below. Thirteen per cent of teachers believed that pedagogies such as silent sitting increased calmness and awareness, 6% of teachers believed that silent sitting helps motivation and increases memory and 13% of teachers believed that silent sitting increased concentration.

Teachers' stated several reasons for using silent sitting. They were:

> *Brings students' mind to a calm and, hence more ability to grasp the intuitive aspects of learning.*
>
> *Yes, it increases children's concentration and motivate them to think positively and do something good in life.*

It also increases the interest on the subject and children can be easily handled during class hours.

…silent sitting will train students… more concentration.

…silent sitting in a natural environment or using visualisations can further help.

Some teachers who never used it responded:

I haven't done it with my students.

Well, actually I do not know but I think silent sitting will make them calm down.

Prayers

The percentage of teachers' belief statements and their open-ended responses regarding prayers are provided below:

Twenty-five per cent of teachers believed that prayers helped students to have a positive attitude, twenty-five per cent of teachers believed that prayers helped individuals to respect and three per cent of teachers believed that prayers helped improve discipline and motivated students to help others.

Teachers generally felt that prayers helped students to be positive and have good results. Teachers' responses included:

You can show respect to everyone through prayers.

I think that prayers can give student discipline but this is like manners. Of course, if we can have prayers from our heart, prayers promote positive attitudes…but it is very hard.

I think that prayers can give student discipline but this is like manners.

Of course if we can have prayers from our heart prayers promote positive attitude but it is very hard.

Gives more positive energy to students.

I believe prayers always promote a positive attitude, at the very least they remind us of something good and, ideally, they connect us to the positive within us and or a higher power.

There was one doubtful response from the belief statements that stated:

I have never known before but it may be possible.

Storytelling

The percentage of teachers' belief statements and their open-ended responses regarding silent sitting are provided below:

Seventy-five per cent of teachers believed that story telling helps develop moral values while 13% of teachers believed that story telling teaches good examples. Some were concerned about the intent of the use of storytelling. A few of their comments are given below:

Students can realise morality through stories because they listen and see the stories objectively.

I agree if the stories are carefully chosen and prepared and used to elicit values and thinking from the students.

Another teachers' response was:

I agree unless we overly moralise with them. Let's not overdo a good thing also let the child state the moral or just mull it over in his or her own consciousness.

Music

The percentage of teachers' belief statements and their open-ended responses regarding music are provided below:

Thirty-eight per cent of teachers believed that music helps integrate human values in lessons and 31.5% believed that the choice of music is important while 13% of teachers believe that music helps relax the mind. Teachers' responses were generally positive regarding music although they were concerned about the kind of music used to facilitate HVWSHE. Teachers' belief responses stated:

To promote and convey human values message music is one effective way and easy for students to remember the human values in the context in the music.

Music touches our heart subconsciously, so it elicits human values from students.

I think mostly but it depends on the kind of music.

Through listening the music some students can be enchanted to learn the human values.

Another teacher explained her views on music being used in classrooms as follows:

It totally depends on the type of music. So much music promotes violence, bad language and noise. I think silence is most essential! It seems like this generation is afraid of it, it is so rare! Soft pleasant music during a self-study/project activity can have a calming effect.

6.3.3 Research Question 3

What are teachers' beliefs and perceptions regarding the impact of cultural and contextual factors on HVWSHE?

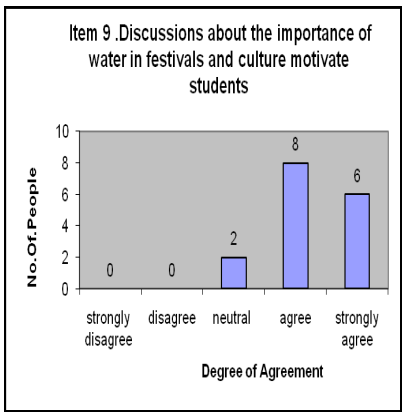
Teachers' beliefs and perceptions regarding the impact of cultural and contextual factors on HVWSHE

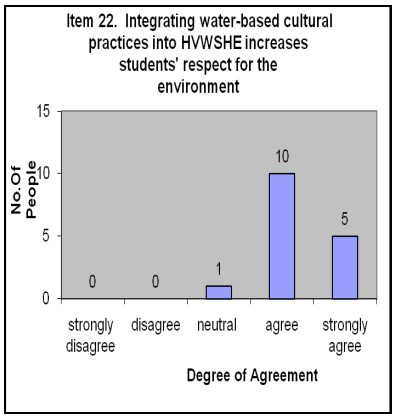
The extent of teachers' beliefs and perceptions regarding the impact of cultural and contextual factors on HVWSHE is presented in Table 6.15 below.

Table 6.15: Extent of agreement of cultural aspects of water

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Item 9: Discussions about the importance of water in festivals and culture motivate students to improve their environmental behaviours	0	0	2	8	6
Item 22: Integrating water-based cultural practices into HVWSHE increases students' respect for the environment	0	0	1	10	5

The degree of agreement of teachers' beliefs regarding the impact of cultural factors on HVWSHE is presented below in Graphs 26 to 27.





Graph 26 **Graph 27**

Regarding Item 22, "*Integrating water-based cultural practices into HVWSHE increases students' respect for the environment*", fifteen out of sixteen teachers agreed with the statement. Most of the teachers agreed that cultural aspects of water are important for HVWSHE.

What are teachers' beliefs and perceptions regarding the impact of cultural and contextual factors on HVWSHE?

Teachers' beliefs and perceptions regarding cultural factors

As HVWSHE includes cultural aspects of water education, teachers were also interviewed regarding their views on this aspect of the program, as it is pertinent to the teaching and learning process in parts of Southeast Asia.

One of the prominent factors mentioned, that helped students understand the significance of water, was the cultural aspects related to water.

Thai Teachers' responses regarding cultural factors

When T4 was asked to elaborate on how HVWSHE used the topics of water and culture, she mentioned:

> *Wonderful…if you look at almost all the cultures…so many traditions that deal with water…you will know and how important water is, like the Thai…the main festivals are all around water…like the Thai new year, it's called the Water Festival, and traditionally, it's the idea of the hottest season and having the relief*

of water…the coolness of water…and now with the problems with water shortages, with global warming, etc., it is very good opportunity when we're talking about the festivals to also bring in this element of the value…okay, we do play with water, but we shouldn't to an excess because we have to save water, we can't just waste it even in ceremonies…it all goes hand in hand.

Also we do prayer with water…And it's so interesting with so many cultures even religious ceremonies, such as baptism one of the first ceremony … one of the first thing is to do with water…They enjoy it…again it depends how you teach…if you teach in a dry way giving facts and figures it's not very interesting but if they can see pictures or if they can really feel how it is and get them to find themselves, to do some projects…what are their cultures and traditions in their own different countries.

Teacher T7 stated about her festival:

Loy Krothong about water…student like festival, teacher has a main topic about festival…it is important…Thai culture…important for many people because it teaches student that water is important, very important. They save water by saying prayers, yes…they like.

Loy Krothong is a festival celebrated in Thailand to honour and also pay gratitude to the goddess of water. This festival is considered of great significance to Thai people because during this period they float decorated rafts in the river to apologise to the Goddess of water and seek forgiveness for the mistakes or harms they have made to the river.

Indonesian Teachers' responses regarding cultural factors

Teacher I4 from Indonesia stated about culture and traditions:

…like in Thailand … any group dance… for them "to be together" … sometimes… I make them know about the culture, the material is there in education about the culture about the dance, about the song… (Malay) local songs, local dances… the different types of lyrics… and then many types of (materials).

The Saman dance is a popular dance from Indonesia and it is usually an opening dance for many important occasions. Eight to twenty dancers kneel in rows and it involves different movements and the name originates from a great scholar of Aceh Province, named as Sheikh Saman.

When teachers from Indonesia responded about their beliefs regarding water in culture and traditions, their responses did mention the use of water in culture and traditions as a tool in water education. Indonesian teachers' referred to the dances they used in their country but did not particularly relate them to values-based water practices.

Cultural factors

The theme obtained from the open-ended item was "motivation through affective development".

From the open-ended items, one of the teachers felt that during the discussions of culture and traditions and water and the significance of water should be highlighted. The other comments were that students feel at a personal level when they discuss water and the cultures and traditions associated with it. Another teacher stated that students' could link their experiences with their personal lives.

A teacher stated the following:

> *Integrating water based cultural practices into VWSHE is sustainable …because culture is a way of life of people-the behaviours, beliefs, values, and symbols that they accept and that are passed along by communication and imitation from one generation to the next.*

Sixty per cent of teachers stated that integrating water based cultural activities helped increase students' respect for the environment.

Some of the open-ended responses were as follows:

> *…cultural connections will easily bring home the affective development;*
>
> *…culture has strong connections with human society;*

...students show this fact.

Teachers' responses and the themes derived from the analysis are shown in Table 6.16 below.

Table 6.16: Theme for water in culture and traditions

Theme	Responses to Open-ended Items
Motivation through affective development	"they care about their environment". "culture has strong connections to human society". "students show this fact". "yes, to some extent children can be motivated depending on the home, school environment and cultural practices". "depends on how it is done but the potential is definitely there".

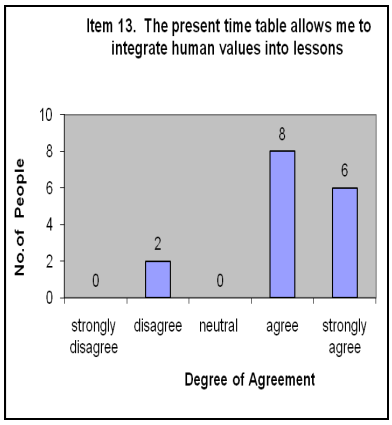
Teachers' beliefs and perceptions regarding the impact of contextual factors

The extent of teachers' beliefs and perceptions regarding the impact of contextual factors on HVWSHE are given in Table 6.17 below.

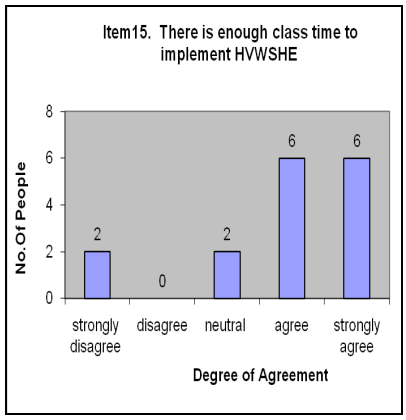
Table 6.17: Extent of agreement regarding contextual factors

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Item 13: The present time table allows me to integrate human values into lessons	0	2	0	8	6
Item 15: There is enough class time to implement HVWSHE in my teaching	2	0	2	6	6
Item 18: HVWSHE teaching methods are effective with the present class size	0	0	1	14	1

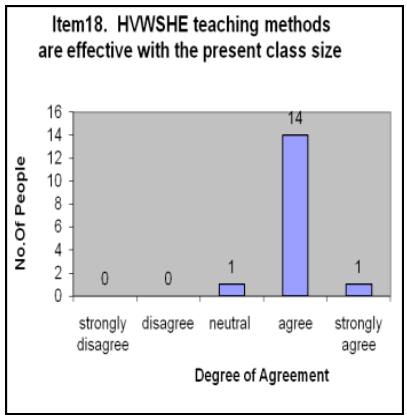
The degree of agreement of teachers' beliefs and perceptions regarding the impact of contextual factors on HVWSHE is provided below in Graphs 28, 29 and 30.



Graph 28



Graph 29



Graph 30

Regarding contextual factors, two teachers disagreed regarding Item 13: "*The present timetable allows me to implement Human Values into lessons*". Two teachers strongly disagreed with Item 15: "*There is enough class time to implement HVWSHE in my teaching*".

For Item 15, two of the sixteen teachers believed that they did not have enough time to implement HVWSHE and two of the sixteen teachers were neutral when they were asked whether they had enough time to implement HVWSHE. For Item 18, 15 of the 16 teachers agreed that HVWSHE teaching methods are effective with present class size.

Teachers' beliefs and perceptions regarding contextual factors

Thai teachers' responses regarding contextual factors

Teacher trainer T4 emphasised her personal experiences while working with teachers. She mentioned that teachers need support from the school administrators and there is a need for whole school implementation. She mentioned that:

> *Yes and no … of course it's easier if you have freedom and time then you can expound on things and also if you don't have really huge classes and again if the teacher is being an example, the teacher is a living example, somehow the values will come over… it's not necessary to have a lot of time…of course it's a great challenge to have a very large class of students, whatever you're teaching*

Teacher T 5 stated:

> *not enough for materials… other than that something I want… students know more… testing water …very difficult… we don't have materials to show them… number of students 20 okay about time… for one period is not enough… I use for one week or two weeks*

Teachers' from Thailand referred to the use of water in culture and tradition in their lessons. They stated that festivals related to water and the significance of water are used as important contexts for teaching and learning. Teachers believed that bringing aspects of culture into water education enhanced students' personal meaning making. They related to a water festival (Loy Krothong, Songkran) that they celebrated in their school between October and November. Students' lit handmade candles and floated them in water as an act of worship and paid respect by thanking water as water is life sustaining. According to teachers from Thailand, students are motivated when they are involved in experiential water activities such as those at water festivals. Students also engaged in experiential activities to understand how important water is through celebrations and events connected to water through games.

From the responses of the cohort of teachers from Indonesia it appeared that there was little evidence of the use of water in culture and traditions in their lessons, as

they did not mention using water in culture and traditions in the classroom. Two teachers from Indonesia mentioned a dance that did not relate to water festivals or cultural practices. It appeared that teachers did not relate to the cultural aspects of water in their classroom experiences.

Teachers from Lao PDR had differences in opinion. One of the teachers stated that he was not sure how to use water in culture and traditions, whereas the other teacher stated the significance of water. According to this teacher, beliefs, values and symbols and their associated cultural behaviours are passed on by communication and imitation from one generation to the next. The two teachers from Lao PDR made positive statements about integration of water in culture and festivals. This was evident as one of the teachers mentioned:

> *Discussions about the importance of water is the thing we can do everywhere, every time especially in festivals and culture even where many people participate in, so that it can be good opportunity to talk, we can also play games.*

However, only two Laotian teachers responded to the questionnaire and none to the interviews so it is not possible to reach a conclusion about the Laotian teachers' beliefs regarding the use of water in culture and traditions.

Indonesian teachers' responses regarding contextual factors

Teacher I4 stated:

> *Actually uh when I am teaching I didn't… it is difficult to say…*
>
> *I didn't I mean… it is not difficult… I teach 4th grade, 12 grade… my work is to prepare them for the final exams.*

In this study, teachers identified class size, work overload and lack of time as some of the factors that hindered teachers from implementing HVWSHE principles and processes.

Teachers from Thailand had fewer problems, because of the help they received from peers during theme teaching and their belief responses stated that the Water Institute and their integrated lessons helped facilitate water education. Three teachers

complained of lack of time for completing lessons while one teacher complained of the lack of resources for water education.

The responses of some teachers from Indonesia indicated that they had problems with stress due to the size of the syllabus they have to cover and three teachers complained of having to cover the entire syllabus and the responsibilities they had to students and parents.

Teachers from Lao PDR responded positively when they were questioned about the time required for using HVWSHE and the size of the class. One of the teachers said:

> *Like all academic subjects HVWSHE teaching methods have to be changed depending on class size.*

while the second teacher was not sure. However, they did not participate in the interview sessions.

Contextual factors

Contextual beliefs refer to all environmental factors that influence achieving a goal. They include physical environment, human environment and socio-cultural environment (Ford, 1992). Contextual beliefs are defined as follows:

> Context beliefs are those beliefs about the ability of external factors or people to enable a person to reach a goal plus the belief that a factor is likely to occur. (Lumpe & Chambers, 2001, p. 95)

Contextual factors can be defined as factors such as objects or people that help or become an obstacle to attain the goal in the study. In this study contextual factors refer to academic workload, size of the class and the time taken to accomplish a goal. The size of the class was an important factor for teachers while using the teaching pedagogies.

The Table 6.18 below shows the percentage of teachers' beliefs about contextual factors from their open-ended items and the themes obtained.

Table 6.18: Teachers' beliefs of contextual factors from open-ended questions

Contextual factors	Teachers' belief statements in response to open-ended questions (%)
Class size	13
Academic workload	11
Time	10

Class size

Thirteen per cent of teachers believed that class size was an important factor when applying these techniques. Regarding class size, a teacher commented:

> *It is always easier to manage smaller groups than one large class.*

When teaching pedagogies are applied in HVWSHE, one teacher responded:

> *…the present class size is very big 44–55 children in one class with many sections like A, B, C… mostly taught in traditional method. Slowly schools are bringing changes, new methods with fewer children for better quality. For these schools HVWSHE teaching technique can be very useful. In big groups the teachers need to be very careful and effective. But it is not impossible.*

Academic workload

Eleven per cent of teachers indicated that academic workload was a factor. Emphasis on academic subjects was one of the main problems teachers mentioned. One of the teachers stated:

> *Too much academic subjects;*

and another teacher commented:

> *In teaching English to young children there is a lot to cover and values cannot always be easily explained… but we can look for ways to do so.*
>
> *Even briefly and we should remember that our lives must exemplify values.*

Regarding teaching pedagogies, one of the teachers stated:

I think we can do under any time table and any class but we need ideas to do it.

Time

Ten per cent of teachers explained that time was a constraint. When teachers were questioned about whether they had enough class time, their response was*:*

I doubt it, since in my school I am the only English teacher now, so it's difficult to implement; meanwhile I have to prepare them for the National test.

Another teacher stated:

There is always a lot in the syllabus of each subject to cover therefore, it's difficult to say that there is enough time, but we should make the effort.

It takes effort to do it, be creative, active and up to date.

Other responses included:

Takes time to create the teaching aids…I teach and I also have other task outside school, have family to take care of my own study and else.

One of the teachers' belief statements proved quite affirmative about integrating human values as the teacher stated:

As long as the lesson plan is well prepared before teaching. I always integrate HVWSHE in my teaching implicitly and explicitly.

6.3.4 Research Question 4

What are teachers' beliefs and perceptions regarding the impact of HVWSHE on students' attitudes and behaviours?

For Research Question 4, teachers responded to the open-ended items. For this question, teachers were asked to list the advantages and disadvantages of using HVWSHE to help students achieve expected outcomes. Thai, Indonesian and Laotian teachers' open-ended responses about the advantages and disadvantages of

using HVWSHE to help students achieve expected outcomes are provided in Table 6.19.

Table 6.19: Themes and teachers' belief statements regarding HVWSHE

Themes	Teachers' Responses Drawn from their Open-ended Statements
Improvement in attitude and behaviours by increasing students' awareness: 81%	"So HVWSHE is important for character building and behavioural change". "Integration of HVWSHE is a must in curriculum as this will help guide moral behaviours". "Help to community values, such as inter-relationships, beauty, generosity, equilibrium and gifts in the environment can be a source to facilitate HVWSHE in students". "promotes unity with all living beings on earth". "If HVWSHE is used fully considering all factors mentioned, the result of behavioural change is certain". "HVWSHE helps the students to feel and change their behaviour regarding water, sanitation and hygiene". "HVWSHE focuses on water, sanitation and hygiene but it deals with human value which is very essential for present education". "Coordination of head, heart and hands". "It helps to analyse different situations of life and work together for it".
Student outcomes: 44%	"Level of professional teacher education varies; hence student learning outcomes will vary greatly". "Human values cannot be measured scientifically". "Teachers' intention and students' outcomes are different". "Easy to achieve outcomes along with positive results". "Both academic and human excellence can be achieved". "Change in children can be seen easily in their activities". "HWVSHE provides a framework of reference to evaluate their own and others' behaviours. "It develops habits to think, decide and act accordingly".

Teachers' responses on the advantages and disadvantages of HVWSHE are provided below in Table 6.20.

Table 6.20: Teachers' beliefs and perceptions regarding advantages and disadvantages of HVWSHE

Advantages of HVWSHE	Disadvantages of HVWSHE
"Calms mind and centres students' mind".	"Need very close support from school administration".
"Enables for interpersonal skill development which promotes cognitive and affective learning".	"Size of the classroom matters because of lack of individual attention".
"Exposes students to traditional values and teachings".	"Being a role model is very important as otherwise HVWSHE is ineffective".
"Exposes students to positive role models".	"It is sometimes difficult to find suitable methods for topics and outcomes".
"Save water and preserve environment".	"Teachers' intention and students' outcomes are different".
"Caring about the environment".	"Human values cannot be measured scientifically".
"Easy to achieve outcomes along with other positive results".	"Human values have to be felt and practised in life".
"Students' awareness of human values is permanent".	"Time limitations".
"Both academic and human excellence can be achieved using HVWSHE".	"Level of professional teacher education varies, hence student learning outcomes will vary greatly".
"Promotes a sense of responsibility and the knowledge that everyone of us makes a difference".	"Teachers' intention and students' outcomes are different".
"Can contribute to the well-being of the whole".	"Classroom ethos must have elements of human values build in it".
"It creates awareness in students and teachers on water, sanitation and hygiene present issues".	"It cannot be guessed or evaluated. The negative evaluation can bring negative impact on one's life".
"HVWSHE not only deals with students but it is for the teachers and parents as well".	"It is a long process of transformation but sometimes short too depending on the person. Its outcome can be seen through behavioural change only".
"It links all components of society to work together in peace and love".	

From the teachers' responses it is evident that teachers saw both positive outcomes as well as the difficulties they faced regarding implementing and assessing HVWSHE in their own classrooms. It is evident that the important indicators here for helping understand the impact of HVWSHE, were curriculum content, contextual factors, cognitive-affective factors, classroom ethos and concerns regarding assessment factors. At the same time teachers referred to HVWSHE as creating awareness in students, achieving both academic outcomes as well as contributing to society and the preservation of the environment.

Table 6.21 below shows the percentage of teachers' belief responses regarding the impact of HVWSHE on students' outcomes.

Table 6.21: Percentage of teachers' belief responses regarding the impact of HVWSHE on students' outcomes

Belief responses	Responses (%)
HVWSHE helps increase students' awareness	81
Measuring student outcomes could be a constraint	12
It is possible to measure student outcomes	31
Student outcomes as a significant factor for HVWSHE.	44
Practise is more important for role modelling, without which HVWSHE may not be successful	44
Teachers' responses felt that contextual factors were important for the success of HVWSHE	31

In the initial survey, the analysis of teachers' beliefs regarding the impact of HVWSHE revealed that 81% of teachers believed that the program increased students' awareness of water issues in the environment. Teachers' belief statements reflected some important issues regarding assessment and student outcomes. Forty-four per cent of teachers were concerned about student outcomes, and another 44% felt that practise is more important through role modelling, without which implementation of HVWSHE will not be successful. Thirty-one per cent of teachers felt that contextual factors were important for the success of HVWSHE.

What are teachers' beliefs and perceptions regarding the impact of HVWSHE on students' attitudes and behaviour?

Teachers' beliefs and perceptions regarding the impact of HVWSHE on students' attitudes

Thai Teachers' responses regarding the impact of HVWSHE on students' attitudes

Teacher T1, a grade twelve teacher, from Thailand, related her experience:

> *The biology teacher told us, we use oil for recycling from the kitchen…or something like that…it's a project in our school…after that we tried to calculate profit or loss…or something like that…we find very little profit compared to what we buy outside…he asked the students… "what did you learn from the project" …he expected… like "save the environment" but the student said "even if we*

have just small project we should carry on…because it is good not just for our school…to save…not only for environment but for everything".

When teacher T4 (teacher trainer) was asked how she evaluated the changes in attitudes and behaviours of students with regards to water, she replied:

Well, you watch their habits, a lot is observation, we do a lot of surveys to see how much water is being used, e.g. children play around with water…How much water is used? How much is reducing…? we also have a lot projects…we get the students involved…we do something called rainwater harvesting…we don't buy a lot of water, any water…all the water we treat ourselves…we're lucky there is a lot of property…we have a lake, we have alternate kinds of energy, we talk about the environment…they are aware of the global warming.

Teacher T6 stated the following:

Students, they take care of water…even paper and recycling things.

She further referred to the changes in herself, she stated the following:

I have also changed…through teaching water education…for example for saving water after every meal we have to wash our plates…my attitude has also changed through teaching.

Indonesian Teachers' responses regarding the impact of HVWSHE on students' attitudes

Teacher I1 from Indonesia believed that HVWSHE is good for students, as she remarked the following:

Water education is good…and especially for students for their attitude and behaviour, for example, the students can achieve two goals by using the human values. The goals are the same. They can achieve the objective of the syllabus and the second they can preserve the environment…and the next, by using human values program they can improve their social skill and human values understanding and others…they become better people.

Similarly, teacher I4 stated the following on the impact of HVWSHE on students' attitudes and behaviours:

> *Help my students…with human values my students can make a good student…good character.*

In the interviews teachers T4 and T6 mentioned issues they discussed with students in class. Teacher T6 mentioned the impact of HVWSHE on her personal attitudes and practices. The response from Teacher I4 revealed that she was motivated by the training she received in Thailand and understood that it was beneficial, although there was evidence that she had discussions with students in the classroom or elicited student feedback on water issues.

The section below first presents the cohort of Thai teachers' beliefs and perceptions regarding the impact of HVWSHE on students' attitudes and behaviours followed by the beliefs and perceptions from the cohort of teachers from Indonesia and Lao PDR.

Thai Teachers' response statements and interviews from teachers in Thailand revealed that they believed that HVWSHE had an impact on students' attitudes and behaviours, as they mentioned in the questionnaire that there would be no positive effect if teachers did not practise and role model appropriate behaviours. Thai teachers referred to the positive impact of HVWSHE although they mentioned that changes in students' attitudes and behaviours occurred slowly. According to them, students have begun to understand that they need to conserve water. From the responses of three teachers it was understood that teachers were both motivated and surprised by student responses and when teachers observed students' behaviours in the classroom and during collaborative interactions. Teachers' response statements also referred to the use of discussions, using a problem-solving approach on water issues and the impact of students' responses on teachers. One of the most significant factors referred to by the cohort of Thai teachers was the motivation of students and the impact of HVWSHE on the teachers themselves.

The response statements made by the cohort of Indonesian teachers reflected that they believed HVWSHE is beneficial to students and improves students' attitudes and behaviours. Other benefits of HVWSHE that teachers recognised were an

improvement in students' social skills and an improvement in students' attitudes and behaviours regarding the preservation and conservation of the environment. Teacher I1 from Indonesia stated:

> *...goals are the same…they can achieve the objective of the syllabus and the second they can preserve the environment…and the next, by using the Human Values program they can improve their social skill ...*

Teacher I2 reflected on the motivation she felt after observing the impact of HVWSHE on the relationship between teachers and students in Thailand as she stated:

> *...the teachers love the students very much…they love and respect…it touched me….*

Teacher I3 emphasised the shortage of water in Jakarta and how turning the green fields into real estate has removed water sources. She also explained the Government campaign by stating:

> *Government has set up a rule that we should have green environment…our school has a green school but ...now we must compete with the five districts in Jakarta…South Jakarta, North Jakarta, Central Jakarta, East Jakarta… and also Environment has to be clean.*

From teacher I3's response it is evident that the school was engaged in the Green School Campaign. From such statements it appears that teachers were engaged and motivated by the campaign. In their statements teachers commented very briefly on students' responses by saying that students are caring more for the environment. This cohort of teachers from Indonesia made few comments on their involvement in problem-solving sessions with students and on students' direct involvement with water issues.

Most of Indonesian teachers' narratives reflected that their teaching was by traditional methods, providing students with the facts and benefits of water. Their responses from the interviews revealed that they had few interactive sessions. Teachers' narratives on their pedagogical practices appeared not to reflect the

implementation of HVESHE practices and it was less likely that this cohort of teachers from Indonesia used problem-solving approaches in their teaching.

The researcher could not reach any conclusions regarding the two Laotians teachers' beliefs and perceptions about the impact of HVWSHE on students' attitudes and behaviours. In the open-ended items on the impact of HVWSHE on students' attitudes their responses about HVWSHE were not clear. This may be because they may not have understood the question clearly as one of them responded named the following as advantages of HVWSHE:

...silent sitting, music, storytelling;

while another teacher stated in the questionnaire:

Do not waste water, do not be selfish, do not do violence.

The next chapter discusses the findings of the study and their implications for the implementation and practise of HVWSHE.

Chapter Seven – Discussion and Conclusion

7.1 Discussion

Teachers' beliefs regarding the principles and processes of HVWSHE for some Southeast Asian countries are discussed here in detail. This study presents the discussion on the specific principles and pedagogy, acknowledging the limitations that there is an overlap of both the principles and pedagogies in actual practice. The findings are discussed in detail in the section.

7.1.1 Research Question 1

What are teachers' beliefs and perceptions about the principles from the HVIIM for HVWSHE?

Principle 1: Teachers' beliefs regarding cooperative learning

There was a significant difference in the responses of teachers from Thailand and Indonesia. Teachers from Indonesia relied heavily on facts and were more examination driven compared to the teachers from Thailand. Cronin-Jones (1991) found initially in their study that teachers were not interested in implementing cooperative learning because of noise levels but when one of the teachers started giving up her complete control over the class she reported that she started seeing results and was getting used to it. Teachers from Indonesia reported the lack of time and pressure to cover the syllabus and these factors will cause teachers to lose motivation to use the new reform. Indonesian teachers referred to their individual duties and did not have much to say about working with their colleagues. Teachers from Indonesia also referred to discipline being interrupted and their need to cover the syllabus as well as in managing students. This finding confirms the assertion of Herreid (1998) that the main obstacles for cooperative learning pedagogies are the constraints of time, fear by teachers that they may not be able to complete the syllabus, and the size of the class.

The whole-school-based approach and grounding from their training enabled Thai teachers to implement cooperative learning in their classrooms. During the

interviews most of the teachers from Thailand mentioned the use of cooperative learning approaches, which were interdisciplinary because they used terms such as "integrated classes" and "teaching lessons using water issues for mathematics and science". The cohort of Thai teachers did not give negative reports on the use of cooperative learning activities and were motivated because of the help and cooperation they received from each other. According to the responses from teachers in Thailand the use of integrated approaches and problem-solving approaches has motivated students. Involving students in problem solving will automatically help teachers focus on student-centred teaching and improve student skills (Kolmos, 1996).

Indonesian teachers' belief responses indicated that their teaching approaches were not aligned with practices that enabled student learning in social settings, neither did teachers from Indonesia report on student feedback or that they used problem-solving approaches. Waugh (2000) stated that teacher receptivity of any new reform depends on how practical the changes. Although Indonesian teachers were motivated by the training they received in Thailand; questions emerge as to whether cooperative learning approaches are part of their teaching repertoire. The questions emerging from this study are whether the use of traditional approaches is an obstacle to the implementation of HVWSHE and whether cooperative learning approaches are used enough in classrooms for water education.

Further evidence of the use of cooperative learning is shown in teacher narratives from Thailand when one of the teachers spoke of how students helped other students especially during the herb planting projects.

HVWSHE aims to improve collaborative networks for water issues. If cooperative learning approaches are not used in classrooms and teachers only use traditional modes of teaching to enhance individual capacity for academic achievement then as Stevenson (2007) stated, the aim of environmental education is distorted. HVWSHE aims not only to impact the cognitive dimension but also the affective dimensions. Lovat and Clement (2008) stressed that teachers may need to be aware of their own capacities so that their inspiration and their relationships with students can bring about the positive effects of cooperative learning. It may not be sufficient that teachers are trained but that training has to be ongoing so that teachers are able to

sustain their motivation with complete cooperation from the Administration. Somphone (2009) emphasised that the success of the projects for ESD was due to sharing tools and this was seen as a positive factor from the report of findings from the cohort of Thai teachers.

Teachers from Lao PDR did not mention the use of cooperative learning in HVWSHE. As interviews could not be conducted there was insufficient evidence to reach a conclusion regarding their use of cooperative learning for water issues and it is not possible to draw conclusions about the use of cooperative learning for water issues in Lao PDR.

Principle 2: Teachers' beliefs regarding Educare: integration and elicitation of human values

Leming (1981) found that quality teaching is an essential component of values education. When the school climate, students and staff practice contain core values there is a sense of self-esteem, well-being and security within the educational system. The cohort of Thai teachers on the whole commented on their ability to elicit and integrate values into the curriculum and their narratives showed some evidence of group discussion that resulted in reflective discussion. The response from students also had an effect on teacher T1. When teacher T1 narrated the example of a biology teacher remarking a project about recycled oil, there was evidence of both peer sharing and student-centred learning. Similar evidence was found in the narratives of teachers T2 and T3.

The main assumption here is that the effectiveness of quality teaching depends on whether teachers focus on both cognitive and affective teaching. Lovat and Clement (2008) asserted that when the learning environment includes a loving ambience, cooperative relationships and a workforce that aims at attainment of a common goal, then teachers will experience transformational teaching experiences.

Although Indonesian teachers' responses to the questionnaire revealed that they agreed that the principle of integrating and eliciting human values helped increase students' awareness their interview responses did not reveal any evidence that they were doing this.

It was understood from teachers' responses that, unlike in Thailand, assessment procedures did not include ongoing assessments such as observation of students' attitudes and behaviours. Indonesian teachers' responses also gave no indication that they used in-depth discussion in their teaching.

Referring to the work of Habermas, Lovat stated that while there is value in knowledge content an element of self-reflection is required for an individual to understand and grasp the implicit values hidden in the subject. If, as the responses suggest, teachers from Indonesia did not include discussion or critical reflections, their practice is not aligned with the aims of HVWSHE. According to Dasoo (2010), when a school adopts values education, there is a particular discourse of using these teaching pedagogies. Narratives from the cohort of Indonesian teachers revealed that they were significantly stressed with an assessment-driven curriculum and maintaining discipline. There was no evidence that they used pedagogies for values integration or elicitation. If HVWSHE is to be fully implemented in Indonesia then these concerns will need to be tackled and teachers will need support to properly implement this particular pedagogy.

Teachers from the Lao PDR agreed that Educare is important and beneficial to student learning about water issues and makes students aware of the importance of conservation and preservation of water. However, because neither of the teachers participated in the interviews it is not possible to come to any conclusion regarding their use of Educare.

In general, responses regarding the use of values integration by teachers in Indonesia were low during the interviews and they did not have evidence aligned to the HVWSHE curricular reforms. Ratcliffe (2005) and Hilderbrand (2007) stated that it is not unusual for teachers to be reluctant to integrate values in their teaching. This could be because of sensitive issues involved with discussion of social conflicts in classrooms.

There may be other reasons that could impact teachers' teaching of HVWSHE in Indonesia. Both Educare and the pedagogies could be seen as coming from a different religious background, in this case from a Hindu or Buddhist perspective.

Educare is based on the assumption that: “Human values are hidden in every human being. One cannot acquire them from outside; they have to be elicited from within” (Saibaba, 2001a, p. 151). This is quite different from the assumptions underlying traditional Islamic and Christian beliefs, which take a common approach that good values are not inherent in individuals but are externally drawn from scriptures and religious texts (Stepanyants, 2008). For teachers from these backgrounds there may either be nothing to elicit or even the possibility that wrong values might be elicited. On the other hand, teaching right values is likely to be a moral and spiritual imperative for teachers with traditional Islamic and Christian beliefs.

Another reason could be that teachers were not clear about the integration of values and this may be due to their lack of conceptual understanding of how to integrate values. Further research is needed to determine if teachers are unwilling to implement Educare and pedagogies such as silent sitting and music because they are culturally inappropriate, as well as research into what adjustments could be made to HVWSHE to make it compatible with a wider range of cultures and traditions.

Teachers’ reluctance to engage in values integration could be due to practical difficulties and/or may be because they believe that the model may not be suitable to their culture. Teachers’ understanding of the use of music and silent sitting also raises issues, which are explained later. While teachers from Indonesia welcomed the use of prayer and storytelling, their reluctance to use music and silent sitting stood out. Teachers from Indonesia may have regarded the use of silent sitting as being culturally inappropriate and this may have been a reason why they were reluctant to use HVWSHE in their classrooms in addition to the practical difficulties they face with academic stress and class size.

Principle 3: Teachers’ beliefs as a role model

Dasoo (2010) emphasised the importance of modelling values as a component of values education in schools. Chawla and Cushing (2007 stated that committed people who worked for the environment motivated adults while Arnold, Cohen and Warner (2009) stated that when adults and youth worked as role models for others and provided resources and information, it would motivate others in protecting the

environment. These ideas were reflected in the responses of the participants in this study.

Teachers from all three countries recognised the significance to water education of teachers being role models. Teachers from Thailand revealed some evidence of values education impacting them as an individual and on their professional lives when they practised and used the five core human values. Teachers from both Thailand and Indonesia mentioned examples of role models from the school in Thailand and were struck by the relationship between teachers and students there. Teacher T1 indicated that she was motivated by the Director of the school who works during the holidays to keep the environment clean and Teacher I5 commented on their observation of role modelling with regard to the integrity of an individual and their treatment of nature in Thailand. Teacher trainer T4 stated that students learn what to do and what not to do from teachers' actions. The only significant difference that emerged from the narratives of Thai and Indonesian teachers was that teachers from Thailand emphasised the importance of role modelling quality teaching for values as well as role modelling values for environmental sustainability, in this case preserving and conserving water.

The Indonesian teachers referred to the teacher-student relationships in Thailand as an additional factor that had an impact on their motivational beliefs. It is likely that Indonesian teachers had very few discussions with their students and this could be the reason why teachers' responses did not show evidence of student feedback on that subject.

Teachers from Lao PDR did not respond to the interviews and so a conclusion cannot be made regarding their beliefs about themselves as role models.

A finding that emerged from the interview reports of Thai teachers and from one of the teachers' statements on the disadvantages of HVWSHE was that *if teachers did not role model human values when they teach or practise these values in their daily life then the implementation of HVWSHE may not be effective.* Taplin et al. (2005) reported similar findings where teachers began to understand the importance of the implementation of human values only after they had started practising them and implementing them in their classrooms for EHV.

The themes that emerged from the initial open-ended questionnaire revealed teachers' beliefs regarding the principles such as *knowledge of significance of water to life* and *interconnectedness of water to human life and society*, *interpersonal relationships*, *motivation* and *teachers as reflective practitioners*. This shows that teachers' beliefs include both cognitive and affective beliefs.

7.1.2 Research Question 2

What are teachers' beliefs and perceptions regarding the effectiveness of selected teaching pedagogies used in HVWSHE: Silent sitting, Prayers, Storytelling and Music?

Teachers' beliefs and perceptions regarding the effectiveness of selected pedagogies used in HVWSHE

Teachers from Thailand, Indonesia and Lao PDR had different views on implementing and using the HVWSHE pedagogies. Teachers from Thailand had a better conceptual understanding of why the pedagogies were used than teachers from Indonesia. From the initial survey it was found that teachers from Thailand, Indonesia and Lao PDR supported the view that teaching pedagogies are useful for water education.

Silent sitting

The cohort of Thai teachers and two Indonesian teachers were generally positive about the use of silent sitting but the Indonesian cohort was clear that they did not use silent sitting. One of the teachers from Indonesia mentioned that they had used silent sitting once and found it problematic as there was a lack of support and although it was a good idea they generally use prayers to practice silence before the start of lessons. Teacher I6 complained about the lack of time. When carefully reviewed, it can be noted that silent sitting has different connotations, which are more culturally related because teachers may have felt that the use of pedagogies such as silent sitting have their philosophical underpinnings in either Hindu or Buddhist religions because the Education in Human Values program has its roots in India. For example, one of the teachers, I1 had clearly stated that they did not use

silent sitting and only used prayers. This could be because it comes from a different religion and because silent sitting is not part of their religious practice or of their traditional teaching approach. Teacher I1 also stated that using prayers helped in transforming students' attitudes and behaviours and that this is seen as culturally appropriate to her. Similarly teacher I4 indicated that although she felt that silent sitting was beneficial, she still preferred to use prayers in her classroom. She stated that silent sitting helps and she thinks it will transform students, but she does not use it. Teacher I4's response towards prayers was positive and she agreed that prayers would transform students and that it is a pedagogy that they use every day in class which she sees as effective for student transformation.

Taplin et al. (2005) found that teachers from China took time to adopt silent sitting, but that no significant cultural issues arose. This could be because meditation is a widely accepted practise in China, which has roots in both Taoism and Buddhism. Taplin et al reported no instances of teachers not wanting to use silent sitting or prayers. This was not the case with the responses from Indonesian group of teachers.

According to Plawecki (1992), the beliefs of groups of people are influenced by their own communication styles, cultural beliefs and behaviours that are socially accepted in their own community. Indonesian teachers' beliefs are rooted in their own religious and cultural practices, which are distinct from those in some other regions of Southeast Asia. Indonesian teachers may find it difficult to adopt different communication patterns and behavioural practices because their beliefs are deeply rooted in Islamic religious beliefs. Teachers' responses in general revealed their reluctance to use silent sitting although they did not explain further probably because it is a culturally sensitive issue.

The aims of silent sitting have to be discussed so that there is more clarity in the conceptual understanding of why this pedagogy is used. UNESCO (n.d.), UNESCO-APNIEVE (1998), the Earth Charter and the Sathya Sai Schools have adopted this pedagogy as an important aspect in the learning processes for environmental education. The use of specific components of HVIIM was considered as an important aspect by most of the teachers from Thailand but not by the Indonesians and this issue may have to be investigated further if HVIIM is to be implemented in schools in Indonesia.

Teachers from Lao PDR did not respond to the interviews and so a conclusion cannot be made regarding use of silent sitting there.

Prayers

The use of prayer as a pedagogy was welcomed by both cohorts of Thai and Indonesian teachers. Various proponents of environmental education for sustainable development have insisted on the use of religious and spiritual discussions as a basis to develop a positive human–nature relationship (Beringer, 2006; Dahl, 1996; Haigh, 2006; Hitzhusen, 2006; Salomone, 2006). Others who found that prayer provides peace were Bryza (2005) and Kurtus (2009).

Teachers' responses from Thailand generally indicated that they used prayer to bring positive thinking to students. Teacher T4 stated that values such as love, peace and joy could help bring positive thoughts to students' minds when they prayed in the classroom. Responses from the Indonesian teachers indicated that prayer is a very important ritual before classes start. Teachers from Thailand and Indonesia considered prayers helped to transform students' attitudes. The use of prayer as pedagogy is widely accepted in both Indonesia and Thailand otherwise teachers from either of these communities may have found the use of prayers to be problematic. This reveals that these schools may not follow strict secular practices and have their own religious traditions. If this is the case, the question of teachers from different religious communities or of teachers in a truly secular or multi-faith education system, accepting teaching practices with Buddhist or Hindu origins, must be faced. The proponents of HVWSHE will need to address this issue if it is to be successfully implemented internationally.

From teachers' responses it can be concluded that teachers from both Thailand and Indonesia used prayers in the classroom, but they had different perceptions as to why they used them in HVWSHE. Thai teachers regarded silent sitting as a secular activity, while they viewed prayers as a means of thanking and respecting nature, rather than communicating with a deity. Indonesian teachers viewed both silent sitting and prayers as a religious activity and saw prayers as an alternative to silent sitting.

Teachers from Lao PDR did not take part in the interviews and so a conclusion cannot be made regarding their use of prayer in the classroom.

The use of silent sitting and prayers as advocated in the *Facilitators & Trainers Guidebook* (UNHABITAT, 2005) and silent sitting as a teaching pedagogy in HVIIM (Jumsai, 2003) may have to be made more relevant to different cultural contexts.

Storytelling

From the interviews it was evident that storytelling was one of the pedagogies that teachers from all three countries agreed was beneficial to students.

Teachers from Thailand and Indonesia were very positive about the use of storytelling in classrooms. However, a few teachers from Thailand stated that the story should be appropriate and should interest students. Gupta and Singh (n.d.) had similar results from their study of the use of story as pedagogy. According to them, stories for primary schools could use imaginative thinking tools whereas for older students technology and socially interactive activities should be included to engage students. Agelidou (2010) emphasised that story telling should be age-related.

Teachers' responses from Thailand indicated that teachers used story telling to lead students into reflecting on and understanding the human values and issues connected with a story. Teachers from Indonesia used storytelling to relate to water issues but they did not integrate or elicit values from the lessons. Again teachers from both Thailand and Indonesia considered storytelling as the best pedagogy that motivated students.

Teachers from Lao PDR did not take part in the interviews and so a conclusion cannot be made regarding teachers use of storytelling.

Music

The cohort of teachers from Thailand was critical about the type of music that should be integrated into the lesson. Some Thai teachers reported that the use of music was beneficial but stated that it has to be integrated with human values so that students are able to not only engage themselves but also to internalise the positive values in

the lyrics. Students were motivated by music and sometimes students asked for music during lessons and before lessons started so they could calm down. Ho (2006) asserted that even though music is integrated in their educational system it is important to clarify what kind of music can be used for student improvement. UNESCO (n.d.) and UNESCO-Earth Charter International (2007) also emphasised that music helped students to connect to nature and provided creative tools to respect and love nature.

Indonesian teachers' responses revealed that music was used during class time but it appeared that they did not use music for water education or to reinforce values. They stated generally that music is used and sometime it is pop music. Teacher I5 from Indonesia stated that reading the Quran is like music. Regarding songs, she played any music, which indicated that Teacher I5 did not use the specific value songs which HVWSHE uses to facilitate the learning of values with water. One of the teachers interviewed by Taplin (2005) commented that she felt that music was not a good way to implement human values and she regarded silent visualisation as more beneficial when she used in her classroom. These mixed views about the use of music as a pedagogy indicate that further research is required into teachers' beliefs about the use of music for values education in HVWSHE.

The conflicting views on the value of music could be due to two factors; a lack of skill on the part of teachers, and second, because music is not considered a very important academic discipline in several Southeast Asian countries. It is also likely that while teachers feel music is important, it is not compulsory to teach music in the classroom, so it is used only as an extracurricular activity and to help students relax.

Teachers from Lao PDR stated that the effectiveness of music in water education depends on the type of music that is used and that music helps students remember human values. It can be concluded that although teachers believed that music can help students reconnect with nature, teachers from Indonesia, Thailand and Lao PDR would review and look at the best methods of using music in the context of water education.

Analysis of the significance of teaching pedagogies from the interviews and the open-ended themes revealed that story telling was considered most effective, with

75% of teachers stating that it helped develop moral values. There was evidence from analysis of both the open-ended items and the interviews that teachers used storytelling for water education.

Responses from teachers from Indonesia did not reveal that they received any student feedback regarding water education. Teachers' belief analysis of the significance of prayers revealed that only 25% of teachers thought prayers contributed to positive attitude and respect, 38% of teachers believed that music can help in teaching human values and 13% of teachers agreed that music relaxes the mind. However 31.5 % believed that the choice of music was important. Only 13% of teachers believed that silent sitting helped in calming and relaxing the mind.

The responses from the questionnaire revealed that the teachers' degree of agreement regarding the use of pedagogies had low responses in the open-ended items when compared with the responses during interviews. The percentage reporting benefits from pedagogies such as music and silent sitting in the questionnaire was low compared with that for storytelling and prayers. Although teachers stated that there were different benefits from silent sitting such as increasing calmness, awareness, memory, concentration etc, the response rate ranged from 6–13%.

The percentage that responded positively to the use of music to teach human values was 38% from the questionnaires, while 31.5% believed that the choice of music was important. The benefits of using prayer for HVWSHE had a written positive response rate that ranged between 3–25%, which was fairly low compared with that for storytelling, which was the most preferred pedagogy. There was a significant response in the open-ended questionnaire for the benefits of storytelling as 75%. About 13% stated that storytelling is used for teaching good examples.

The positive response rates for other pedagogies were less than 50%. Teachers from Thailand generally felt that the benefits of the pedagogies were positive as indicated in the interviews although the written response rate for the benefits of the pedagogies had less than 50% of the total responses, indicating that they may be facing difficulties in using the pedagogies.

The use of the pedagogies may need to be discussed regarding their benefits and cultural implications as well as transferring their use into different communities in

Southeast Asia for water education. There may be a need to list why these pedagogies are used and for what purposes and how their uses are aligned with the theoretical underpinnings of HVWSHE and their acceptance or adaptation into their communities. This may make it clear how and why teachers use them in their classrooms and the need proper support and training to be provided for their use in classrooms to support the successful implementation of HVWSHE.

7.1.3 Research Question 3

What are teachers' beliefs and perceptions regarding the impact of cultural and contextual factors on HVWSHE?

Teachers' beliefs and perceptions regarding the impact of cultural and contextual factors on HVWSHE.

Cultural Factors

A great deal of importance is given to traditional and cultural events in Thailand and Thai teachers stated that cultural practices are commonly integrated into teaching in Thailand. Kahn (2008) emphasised the importance of cultural literacy, which is to develop an ecopedagogy, because cultural literacy develops a broader understanding at an anthropological level of meaning about how people live within shared communities. These communities have their own cultures and traditional meanings. Teachers from Thailand were aware of the significance of water in their communal practices and they taught their students through festivals and functions as reported in the interviews. However, teachers from Indonesia did not indicate that they incorporate cultural events or practices into water education.

In Indonesia as in Malaysia, there are no water related festivals or practices which may indicate that it is likely that such practices are not part of Islamic tradition or that these practices may have become redundant due to the transformation and urbanisation of societies. This brings into question the relevance of water in culture and traditions for water education in societies which lack water related festivals or practices.

Ng (2007) reported the results of training teachers in HVWSHE from several parts of Southeast Asia, including teachers from Islamic and non-Islamic backgrounds. Teachers were introduced to the concepts of how water in culture and tradition can be used to teach students an environmental awareness of HVWSHE. There were positive reports from teachers of their conceptual understanding of cultural implications of water practices in different cultures.

Abrams (2000) and Bouggera (2005) highlighted the importance of myths, symbols and rites for protecting the environment. Further discussions have to be held regarding the use of culture as pedagogy and how to develop it as a process for developing positive attitudes and behaviour in water education.

Contextual factors

Teachers from Indonesia considered that they used student-centred methods and this could be the reason why they had issues with lack of time and problems with completing the syllabus. The study of teachers' beliefs by Lumpe, Haney and Czerniak (1998) stated that teachers' belief that there was a lack of time, resources and support was an obstacle to teachers' progress with new reforms while the study of Beck et al., (2000) revealed teachers cited lack of time and pressure to cover the syllabus as an obstacle to reform. Studies by Teo et al., (2008) and Chen (2008) revealed that although teachers believed they were using student-centred approaches they were actually transmitting knowledge and apart from time and lack of support from their administration, classroom size was an obstacle for reform implementation.

Thai teachers reported positive experiences compared to the cohort of teachers from Indonesia even though teachers from Indonesia were motivated by their experiences during training in Thailand. Although contextual factors were important to Indonesian teachers, they were less important to Thai teachers. It is important to note that although one teacher from Thailand stated that she did not have enough time, the rest of the teachers did not report any workload stress. The factors that could have impacted positively on Thai teachers' beliefs could be positive interpersonal relationships between teachers and students as well as good collegial relationships between the teachers themselves. Almost five out of the eight Thai teachers reported

that other teachers helped them solve issues and one teacher remarked on the help they received from others for integrating values.

The projects which were taken up by the Lao PDR for ESD and the Asia Pacific Cultural Centres for UNESCO used both student-centred approaches as well as intradisciplinary methods of teaching. They reported that these projects developed more confidence in teachers and students.

The leadership in Thailand has helped with the implementation of HVWSHE in many ways. The Director of SPW showed exceptional qualities as a role model during the teacher training in Thailand, which motivated teachers from both Indonesia and Thailand. Teachers from Thailand also stated that teachers helped them solve issues that they faced when they had to integrate values into their lessons and this teamwork is another important factor for teacher motivation.

The analysis of themes from the open-ended items regarding the contextual and cultural factors revealed that teachers considered class size, academic work and time as a constraint. The responses from the interviews revealed that teachers from Indonesia considered all three factors as obstacles while only two teachers from Thailand regarded academic work and lack of time as obstacles.

7.1.4 Research Question 4

What are teachers' beliefs and perceptions regarding the impact of HVWSHE on students' attitudes and behaviours?

Teachers' beliefs regarding the impact of HVWSHE on students' attitudes and behaviours

The study of teachers' beliefs regarding the impact of HVWSHE on students' attitudes and behaviours revealed that there is increased motivation and participative learning within the Thai school system. Teachers from Thailand used teaching strategies that help transformational learning such as integrated approaches, clarification of values and discussions of socially critical issues, which ended in reflective strategies. Teaching strategies must include transformative strategies and instructional practice must go beyond increasing awareness and knowledge so that

students must be provided opportunities for ownership and empowerment (Hungerford-Volk, 1990). Teachers' responses from Thailand reflected that HVWSHE had given a degree of independence to students and this could be one of the positive factors that helped students to improve their attitudes and behaviours.

UNESCO-APNEIVE (1998) stated that such intrapersonal strategies could help if they include proper feedback and assessment procedures. This was the main challenge noted among all teachers dealing with HVWSHE. From the initial open-ended questionnaire it was found that teachers were concerned about the assessment procedures for HVWSHE as some teachers mentioned that human values could not be measured. When teachers were questioned about the impact of HVWSHE on students' attitudes and behaviours, teachers' belief responses from Thailand and Indonesia both referred to measuring student outcomes as one of the major factors that concerned them. Many teachers were unable to articulate how it would be possible for them to assess changes in students' values, attitudes and behaviours. This is a major concern for the implementation of HVWSHE and indicates a need for specific guidelines and training for teachers in evaluation methods for assessing values, attitudes and behaviours of students.

There was very little evidence of student feedback after the implementation of HVWSHE in the belief statements of the group of teachers from Indonesia although they stated that students were improving after the use of the HVIIM. Further research is needed to explore whether students from Indonesia have actually had any transformational changes because teachers also reported about the Green Campaign, which could be a contributory factor. More research needs to be conducted through observations and pre-tests and post-tests to understand the nature of implementation of HVWSHE. Conclusions about the extent of implementation of HVWSHE in Lao PDR cannot be inferred from teachers' responses because they did not participate in interviews.

Although many proponents of environmental education for sustainable development have emphasised the implementation of pedagogies which include creative tools and thinking to develop environmental awareness in students (Jumsai, 2003; UNESCO-APNIEVE, 1998; UNESCO-Earth Charter International, 2007), there is little discussion about how these tools can be used in multicultural societies. More

research is also needed to find how much these principles and pedagogies work together to help in the successful impact of HVIIM.

Analysis of themes of teachers' beliefs showed that 81% of teachers believed that HVWSHE helped increase awareness in students and raised their social consciousness while 44% of teachers believed that HVWSHE improved student outcomes.

Teachers' responses from their open-ended statements generally revealed that they felt that HVWSHE is important for character building and behavioural change because HVWSHE helps students develop moral and social values and increase their environmental awareness. According to teachers' responses, HVWSHE provided opportunities for students to develop unified positive values regarding water practices, because the discussions about situations in life can help to raise social consciousness.

Teachers' responses indicated that a teachers' level of professionalism impacts the teaching of HVWSHE and this may result in different student outcomes. Another response suggested that teachers' intentions with respect to the effect of values integration, could be different from the actual student outcomes.

There is currently no methodology for measuring human values and there are doubts as to whether this is possible, so the question of assessment is problematic concerning students' formative development. However, there were some positive responses about student outcomes. Teachers stated that HVWSHE helps students change their attitudes and behaviours and that students can gain academic knowledge as well as character transformation. It was also reported that HVWSHE helps teachers to develop new habits in students.

The concerns regarding student outcomes for water education have to be addressed during the training of teachers' for HVWSHE. If teachers have doubts about assessment procedures then they may not be confident in implementing HVWSHE. There were indications from teachers' responses that while they could see change in students' attitudes and character they did not know how to measure this. This is similar to the findings of Ratcliffe, Harris and Mcwhirter (2005)who reported that teachers have significant difficulty in integrating values into science education and

including both summative and formative assessments. Similarly, Stevenson (2007) reported that there are disadvantages in using assessment for individual excellence as this may impact students and they may not have collective responsibility toward the environment nor will they develop participatory approaches which are important outcomes of environmental education. This view is contradicted by Buissink-Smith, Mann and Shephard (2008), who stated that assessment is important because it is the affective development that may impact students' future decision-making about environmental issues.

Surprisingly, during the interviews teachers did not provide any information on the assessment, while in the open-ended items from the questionnaire they reported assessment among the disadvantages of HVWSHE. This may be because teachers were asked whether they faced any problems when they applied the principles and pedagogies and were not asked about disadvantages. Although it was exploratory, this study revealed a number of interesting findings regarding the use of HVWSHE for water education.

7.2 Methodological implications of this study

The theory of beliefs by Ajzen and Fishbein (1980) has helped guide the framework for exploring teacher's beliefs used here. In this study teachers' beliefs were elicited through a questionnaire, and the results revealed that teachers from Thailand, Indonesia and Lao PDR were all motivated by the training. During the interview sessions, teachers were prompted to respond more about the principles and pedagogies. Teachers from Thailand and Indonesia responded positively and were motivated by each of the principles and pedagogies and reported that they were sure it had a positive impact on students' attitudes and behaviours.

The interview data, however, did not give exactly the same results for the pedagogies compared to the questionnaire, when they were asked to elaborate how they felt about each of the principles and pedagogies.

Teachers described the problems they faced along with the factors that brought success to the implementation. For example, teachers found cooperative learning very useful but during implementation, Indonesian teachers' response patterns

revealed that they did not receive feedback from students nor was there any evidence of discussion. This pattern continued with pedagogies such as storytelling and music for water education. The pattern was noticed only when the responses were analysed holistically after coding.

All teachers from Indonesia and Thailand simultaneously agreed that storytelling was the most used pedagogy followed by music. Their responses were similar in both questionnaires and interview sessions regarding these two pedagogies, but not in respect to prayers and silent sitting.

With silent sitting and reflection, it was only in the interviews that teachers from Indonesia, with one exception, stated that they did not use it in class. The whole group of Thai teachers on the other hand stated that they found it useful for enabling students to focus. These different responses came from the interview sessions, but were not elicited in the open-ended items. Teachers believed that silent sitting is useful but they did not use it during implementation for other reasons. They did not elaborate further and this could be because the cohort of Indonesian teachers felt that silent sitting is not used in Islamic societies and the pedagogy was therefore not suitable for their classrooms. However, it should be noted that they were too polite to explain why they did not want to use it and mentioned that the use of prayer was sufficient.

Teachers may not have responded in the open-ended items but they explained their decision to not use silent sitting only during the interviews. This could be because they were prompted to respond. The use of open-ended items may not be enough for future exploration of a teachers' beliefs study. In the Asian regions it is not common for people to express exactly what they feel if it is culturally sensitive, unless they are prompted. Indonesian teachers' responses during the interviews revealed that they held a different view compared to that in their belief responses to the questionnaire. This suggests that questionnaires alone are insufficient for eliciting teachers' beliefs.

Future research may need to use more than a questionnaire to elicit teachers' beliefs. Other techniques such as interviews or observations should be used to confirm

whether belief responses arise because of motivation and teachers agree that their beliefs are aligned with their practices.

7.3 Limitations

This study helped understand teachers' beliefs and perceptions about the use of selected components of HVIIM in their classrooms. However, the present study has some limitations. The cohort of teachers had training times of different durations. The length of the training time may have had an impact on the extent of their conceptual knowledge of water education. Pedagogies for education in human values have been implemented for more than ten years in Thailand, and Thai teachers' understanding of the use of these pedagogies is more in-depth when compared to teachers from Indonesian schools. The lack of observation of teachers' implementation of HVIIM in classrooms is another limitation of the study. For most teachers from Thailand and Indonesia, English was not their first language and this may have been a limitation on the results of the interview data. The use of the Delphi method for the questionnaire did not follow a completely iterative process and there was a lack of availability of experts. This was because of time constraints due to the nature of the research.

7.4 Recommendations for future implementation of HVWSHE

Future implementation of HVWSHE will have to take into account the following important issues:

- Training of teachers;
- Teachers' practices when using HVWSHE in the classroom;
- Introduction of HVWSHE in new settings;
- Training and specific guidelines in evaluation methods for assessing values, attitudes and behaviours.

Training of teachers

The first recommendation relates to the training of teachers in HVWSHE. It is important for teachers to have an in-depth conceptual understanding of the integrated

learning concept and why it is being used for water education. This study, as with previous studies such as Clark (2005), found that teachers had difficulty in understanding the concepts of HVWSHE unless they received support on an ongoing basis. HVWSHE training will need to include support groups of expert teachers who help new teachers understand the philosophy behind the use of the principles and the significance of the teaching pedagogies, sustain motivation and develop more positive self-efficacy beliefs. In earlier studies by Taplin et al., (2005) the issue of integrating principles of cooperative learning and integration as well as eliciting values was initially a concern for teachers because of the time taken before seeing changes. Teachers initially struggled through a phase of fear of losing control over the tasks that the syllabus required and the skills they had to adopt. It was only after a period of time that teachers were at ease with using the pedagogies and their evidence of transformation in students that motivated them to use the new principles and pedagogies.

Only training may not be enough, but teacher modelling as well as ongoing support from facilitators, could provide motivation and support for teachers until they are confident in implementing without further help.

Teachers' practices when using HVWSHE in the classroom

The second recommendation is that further improvement of teachers' practices with HVWSHE will be enabled if teachers include the affective objectives as part of the teaching and learning process. Teachers would realise how beneficial this teaching approach is, if they can include constructivist approaches in teaching and learning. The contents of the subject and affective teaching and learning have to be balanced during the teaching and learning process when water issues are being discussed in the classroom. This will enable student feedback as students play an important role in dynamic interactions in the classroom. Workshops from the SEAMEO countries reported that teachers either did not add the affective objectives or did not elaborate on the affective teaching contents in terms of methodology and reflective discussions (SEAMEO).

Introduction of HVWSHE in new settings

The third recommendation relates to the implementation of HVWSHE and training of teachers in new settings. Regarding the implementation of HVWSHE in particular settings, Robottom and Kyburz-Grebor (2000) emphasised that the starting point of curriculum development is very important because curriculum content can only be culturally sensitive if the curriculum is conceptualised, developed and implemented within certain cultures. The implementation of pedagogies such as silent sitting and prayers will have to be discussed within the particular cultures. Although these pedagogies have been found to be useful for awareness of inner peace and focus by many proponents of environmental educationists (UNESCO-APNIEVE, 1998; UNESCO, n.d.) teachers may not necessarily implement them in their own cultures in Southeast Asia because of the "cultural connotation" they carry and the religious practices from which these cultures originate.

As Southeast Asia has a diversity of cultures, religions and traditions, it is important that HVWSHE teaching pedagogies and practices are reviewed to find the best way HVIIM can be used in local situations for water issues. As Quisumbing (n.d.) stated:

> One cannot underestimate the role of education for international understanding, which consists merely in knowing more about different peoples and their cultures – their geography, history, economy, government, value systems but more in understanding and gaining insight into the factors and motivations underlying their behaviour and appreciating their cultural patterns, traditions and customs, values and beliefs. (p. 1).

Training and specific guidelines in evaluation methods for assessing values, attitudes and behaviours must be provided for teachers.

The fourth recommendation is to train teachers by providing them with specific guidelines and training in evaluation methods for assessing student outcomes. More than half of the teachers from Indonesia and Thailand remarked that they did not know how to assess student outcomes for human values. These issues should be highlighted during the training sessions and must be recommended in the policy and

curricular changes so that when teachers from different countries are trained they are aware that assessment procedures are an important aspect of HVWSHE.

7.5 Recommendations for future research

Recommendations for future research include the following:

- Research on the use of the principle of Educare to elicit values;
- Research on the use of silent sitting and prayers for HVWSHE;
- Research on contextual factors for HVWSHE;
- Research on curricular changes;
- Research on different techniques and triangulation;
- Research on interpersonal relationships between teachers and students;
- Research on the role of leadership in HVWSHE;
- Research on teaching approaches in HVWSHE.

Research on the use of the principle of Educare to elicit values

It is recommended that further research be undertaken regarding the principle of Educare. This teaching principle may not be applicable in teaching contexts in traditional Islamic and Christian religious societies.

Research on the use of silent sitting and prayers for HVWSHE

It is recommended that further research be undertaken on the cultural implications of pedagogies from HVIIM, particularly prayers and silent sitting. Further investigation is required into the use of both prayers and silent sitting in classroom practice and their use in both secular and religious schools.

Research on contextual factors for HVWSHE

More study is required on the impact of contextual factors such as large class sizes, time limitations and the stress involved in covering the syllabus when implementing the principles and pedagogies for HVWSHE in different cultural contexts and

educational systems. The overcrowded classrooms and lack of proper infrastructure will hinder classroom implementation as noted by Bhandari & Abe (2000).

Research on curricular changes

Research on teachers' beliefs regarding curricular changes is also recommended because the content of the curriculum needs to be considered with the aims of HVWSHE in mind. If the goal is to achieve a social reform type of change then the curriculum should incorporate pedagogical changes such as cooperative learning methods and transformative pedagogies.

Research on different techniques and triangulation

It is advisable that future research on HVWSHE is done to include different techniques in triangulating the data obtained for teachers' beliefs as this would help to evaluate the teaching and learning processes. The use of a standard survey questionnaire does not provide an insight into teachers' practices in classrooms as shown in this study. A qualitative study would help in exploring teachers' belief responses. The use of the Delphi method for the development of the teachers' belief questionnaire helped provide a broader understanding of the indicators required for the implementation of HVWSHE, although this study acknowledges the limitations of the procedures used for the Delphi method.

Research on interpersonal relationships between teachers and students

More research should be undertaken on teachers' beliefs regarding interpersonal relationships between teachers and students, particularly since teachers from Indonesia mentioned this as a motivating factor during their training in Thailand. Research should investigate whether the extent of interrelationship between teachers and students has an impact on student learning, students' acceptance of what is taught and student's valuing of water issues.

Research on the role of leadership in HVWSHE

Leadership played an important role for teachers from Thailand who mentioned the importance of role–modelling. Further research should be undertaken on teachers'

beliefs regarding role-modelling and its effect on the development of pro-environmental behaviours in students, and how this affects student outcomes when using HVWSHE.

Research on teaching approaches in HVWSHE

More research should be done on teachers' beliefs regarding their teaching approaches in HVWSHE. The theme *Cognitive-Affective* T*eaching Approaches* was an important outcome from the analysis. Although values cannot be taught directly teachers can guide student learning through values clarification processes and impact student learning through discussions of real issues related to water. Such discussions and implementation of problem-solving approaches is only possible if teachers can enable learning in social contexts. Transmission of facts and a lecture mode of teaching will not enable effective implementation of HVWSHE.

7.6 Conclusions

HVWSHE is an educational program used in both Southeast Asian schools and internationally that teaches about water issues by integrating human values. HVWSHE teaching and learning processes aim to stimulate learners and raise their social consciousness to enable them to make better choices and to develop pro-environmental behaviour. The schools in Thailand have adopted water education as a separate discipline in formal education, which has enabled environmental education. This may not be the case in Indonesia and Lao PDR. Most teachers who attended the interview from Indonesia were English teachers who underwent training in Thailand. As Gough (1997) and Gough and Robottom (1993) emphasised, unless environmental education is given a formal place in school education it is highly unlikely that teachers will be able to explore this field.

This study has found both similarities and significant differences between the beliefs of teachers from Thailand, Indonesia and Lao PDR about the principles and pedagogies of HVESHE, the impact of cultural and contextual factors on HVWSHE and the impact of HVWSHE on student behaviours.

Principles

Cooperative Learning

In their interviews teachers from Thailand mentioned the use of integrated classes, theme teaching and the facilitation of group work through a problem-solving approach. They also reported several times how students reacted and responded to their teaching. Teachers from Indonesia did not indicate the use of interactive sessions specifically for water issues. Narratives of Indonesian teachers revealed that they were more teacher-centred in their approach than Thai teachers.

Educare

There is good evidence that Educare is used in Thailand, because Thai teachers indicated several times in their narratives that they integrated human values into their teaching and elicited human values from students. Thai teachers believed that Educare benefited students and they could see the transformation in themselves and students. Generally for HVWSHE, teachers stated that students were responding positively although it took time to see the transformation in students. Teachers also believed that teaching using Educare concepts is not easy with subjects like mathematics and science.

Integration of values in subjects was easier when teachers shared information and helped each other integrate information and skills across the interdisciplinary subjects. Their general response was that integration and elicitation of values was possible to attain aims of HVWSHE but there must be cooperation among teachers and students as well as the administrative systems in schools.

Teachers from Indonesia agreed in the questionnaire that Educare was important but did not mention including human values in their lessons or eliciting values from students during their interviews. This may be because the philosophical principle underlying Educare is in conflict with traditional Islamic and Christian beliefs about the origin of values. Cultural issues regarding Educare need to be investigated and in some settings it may need to be abandoned or replaced with an approach to values more consistent with that of the local culture and/or religious beliefs.

Role Modelling

Of the three principles, teachers from Thailand mentioned that role modelling was the most important factor for the success of HVWSHE. Teachers from Indonesia were aware that role modelling is important and were impressed by examples they saw of it in Thailand. Indonesian teachers seemed to be aware of role modelling polite behaviour but did not give any indication of applying role modelling to water education.

Pedagogies

During interviews, it was found that there were differences of opinion between the Indonesian and Thai teachers about the use of HVWSHE pedagogies. Three out of eight teachers from Thailand recognised the significance of the teaching pedagogies and how they are related to the integrated learning concept. No Indonesian teachers discussed the significance of the pedagogies or their theoretical underpinning.

Silent Sitting and Prayers

While prayers are regarded as distinct pedagogies for HVWSHE the responses from the Indonesian teachers linked both together. All Thai teachers reported using silent sitting and saw it as an essential tool in HVWSHE. Thai teachers regarded silent sitting as a secular activity and viewed prayers as a means of thanking and respecting nature.

Indonesian teachers viewed both silent sitting and prayers as a religious activity and saw prayers as an alternative to silent sitting. All reported that silent sitting was good but said that they prayed to Allah at the start of each school day and thus saw no need for silent sitting. This raises the issue as to whether silent sitting and prayers are appropriate in schools with particular religious associations.

Storytelling

Storytelling was the most popular pedagogy and was regarded as important by teachers from Thailand, Indonesia and Lao PDR. Thai teachers reported using storytelling in water education and used stories to promote values. They considered

that young students require imaginative fiction while older students required more factual material. Indonesian teachers said they used storytelling but that students were more interested in their own and their teachers' personal life experience.

Music

Both Thai and Indonesian teachers reported using music in the classroom. Thai teachers considered music had a positive effect on students, but only songs with good values should be used. Indonesian teachers reported using music but did not refer to values-based music in classrooms.

Water in Culture & Traditions

Teachers from Thailand reported that they used the theme of water in culture and traditions and they understood that culture and traditions promote the affective development of students. They also reported positive responses from students to water in culture and traditions. Indonesian teachers did not report using this theme in their narratives. They did mention local culture but not in relation to water education. This is because water festivals are not held in Indonesia and are not common to all cultures. Consequently, alternative ways of developing values-based water education in Islamic and other cultures, without cultural events related to water, will need to be developed.

Contextual Factors

While there was some reference to problems with a lack of time and excessive workload Thai teachers did not generally report that contextual factors have a negative impact on their implementation of HVWSHE. In fact many reported receiving strong support from both school administration and fellow teachers.

This is in stark contrast with the Indonesian teachers who all mentioned a lack of time and the constraint of covering the syllabus. More than half of the Indonesian cohort mentioned in the questionnaire that they would like support and to share with other teachers but none reported receiving support at the interview.

Impact of HVWSHE on Student Behaviour

Teachers from Thailand referred to their observations of student behaviour several times during the interview sessions. This could be due to the implementation of formative assessment procedures in the curriculum. Teachers from Indonesia did not report such procedures when they reported their activities in the classroom. From interviews with the Indonesian teachers it was clear that teachers were concerned about the water problems in Jakarta and felt that the need for teaching about these issues in the classroom was urgent.

Support for Teachers

More than half of the teachers from the whole cohort who responded to the questionnaires reported that they would like to have shared forums where they can discuss their experiences in HVWSHE. The responses suggest that while there are support mechanisms for teachers in Thailand there is little support available to teachers in Indonesia. The results of this study suggest that this is a major problem, which requires action.

Teacher training for HVWSHE should include support groups and teacher modelling in individual countries so that teachers are motivated, continue to use those teaching principles and pedagogies that are culturally appropriate, and not give up because of initial setbacks or failures. As Clark (2005) noted after the initial implementation of HVWSHE in Africa, teachers may support the program but without teacher training and academic guidance they may not be able to use HVWSHE effectively.

This study results emphasised that teaching processes play an important part in helping students develop appropriate attitudes and to increase their empowerment and motivation. Changing social and environmental problems both locally and globally that affect the physical, economical and religious situations, impact the cultural literacy of a place. This calls for ongoing study and dissemination of information so that water issues can be dealt with.

Regarding water issues, social justice is an integral aspect of sustainable development policies. It is important to consider how religious traditions and customs are transformed into daily practice in communities through teaching and

learning processes (UNESCO, 2006). However, even if these aspects are included according to the report of UNESCO (2006) attention has to be paid to including teaching themes related to sustainable development, which incorporate fragmented sections that include different disciplinary strands for holistic understanding.

The questions that emerge from this study are many. How important is it to bring cultural literacy into socially critical issues and how can they be addressed to cover both local and global cultures? How can these aspects be addressed if policy changes are not made locally so that HVIIM can be adopted for intergenerational equity? Teachers' beliefs are therefore very important because if teachers were to adopt new methods they must interest them, there must be a difference in the program and they must include a clear assessment procedures (UNESCO, 2006).

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Appendices

Appendix A: Participation Information Statement Sheet for the Survey

The University of Sydney

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Participation Information Sheet: Phase 1 (Survey)

A study of Teachers' beliefs and perceptions of Human Values Based Water Education in some South East Asian countries

Dear Participant,

(1) What is the study about?

This study seeks to better understand teachers' beliefs and perceptions of human values based water education (HVWSHE). Teachers' beliefs and perceptions influence the effective implementation of new curricula. The study intends to explore teachers' beliefs and perceptions including their beliefs about the principles of HVWSHE, the specific teaching methods used in HVWSHE and the impact of HVWSHE on students' attitudes and behaviours.

(2) Who is carrying out the study?

The study is being conducted by Ms Suma Parahakaran, a PhD student, under the supervision of Dr Armstrong Osborne who is a Senior Lecturer in Faculty of Education and Social Work at the University of Sydney. This study will form the basis of Suma's thesis for the degree of Doctor of Philosophy and will be submitted to the Faculty of Education and Social Work at the University of Sydney

(3) What does the study involve?

You are being invited to participate in a survey. You are requested to keep a copy of this form. Your response to the survey indicates your agreement to participate in the study. Your participation is voluntary. Once you have responded to the survey please send the questionnaire in the unmarked white envelope addressed to the researcher.

The survey consists of filling in four-part anonymous survey about your beliefs and perceptions of HVWSHE. The survey consists of tick box and short answer questions, which will take forty-five minutes to an hour. The survey consists of Section A (9 Questions; age, gender, details of training, details of teaching etc) and Section B, C, D (30 Questions).

(4) How much time will the study take?

The Survey questionnaire will take forty minutes to an hour to complete.

(5) Can I withdraw from the study?

By completing and posting the survey questionnaire you have agreed to participate in the study. As the questionnaire is anonymous your response cannot be withdrawn or changed after it is posted.

(6) Will anyone else know the results?

No information of a personal nature will be revealed at any stage before, during or after the study. There is nothing on the survey form to identify you as the participant. The survey forms will be kept in a secure place and destroyed after a period of time. A summary and a general report of the study will be made available to you and your school. Further reports may be presented at conferences, submitted for publication and as part of course requirements at the University, but individual participants or schools will not be identifiable in such materials.

(7) Will the study benefit me?

The results of this study will provide important information that may assist in improving human values based water education. The information will assist teachers, educators, curriculum developers, administrators and water educators to improve the implementation of HVWSHE. However, there is no guarantee that there will be benefits from the study.

(8) Can I tell other people about the study?

You are welcome to tell other people about this study. If they wish further information, they can contact Ms Suma Parahakaran by email at spar3099@edfac.usyd.edu.au, or by telephone at +61-2- 9351 6355 (Sydney) or + 601-37467979 (Malaysia). They can also contact me, Dr Armstrong Osborne at + 61-2-9351 6266 or a.osborne@edfac.usyd.edu.au

(9) What if I require further information?

Should you require further information Ms. Suma Parahakaran will be able to discuss with you in detail and answer all questions you have regarding the questionnaire. If you would like to know more at any stage of the study, please feel free to contact Ms. Suma Parahakaran at + 60137467979 (Malaysia) or +61-2- 9351 6355 (Sydney) or email me at spar3099@edfac.usyd.edu.au. You can also contact me, Dr Armstrong Osborne, at 61-2- 9351 6266 or a.osborne@edfac.usyd.edu.au

(10) What if I have a complaint or concerns?

Any person with concerns or complaints about the conduct of a research study can contact the Manager, Ethics Administration, University of Sydney on + 61 2 9351 4811 (telephone); +61 2 9351 6706 (facsimile) or **gbriody@usyd.edu.au** (email)

This information sheet is for you to keep

Appendix B: Invitation To Take Part In Interview For Stage 2 of The Project

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'A study of Teachers' beliefs and perceptions of Human Values Based Water Education (HVWSHE) in some South East Asian countries'

Dear Teacher,

I am happy to invite you to register as being available for interview in stage 2 of the project. Interviews will be held from June to August 2009. If you would like to be in the list of participants for stage 2, please write your contact details on the attached form.

Depending on the response selected volunteers will be contacted between April and May 2009 to take part in an interview. You will be sent a 'Participant information Statement' and a 'Consent form' to your address. You will have a week to decide on your participation and return the consent form to me in a reply paid envelope.

Once I receive your consent form I will contact you to make arrangements for the dates, time and place for the interview.

Thanking you for your cooperation

Yours sincerely

……

Suma Parahakaran

Yes, I would like to be invited for an interview:

interview

Name: …… **Date** ……

Address: _____

Email Address: _____

Phone number: …… **Mobile:** ……

Chief Investigator: **Dr Armstrong Osborne**

+ 61-2-9351 6266

a.osborne@edfac.usyd.edu.au

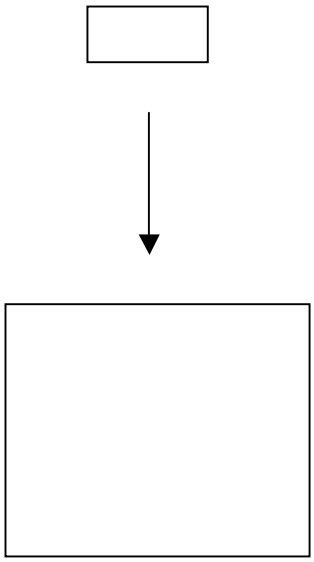
Researcher: **Ms Suma Parahakaran**

+61-2- 9351 6355 (Sydney)

+ 601-37467979 Malaysia

spar3099@edfac.usyd.edu.au

Please put this page in the reply paid envelope and post it to me.



Appendix C: Questionnaire

Section A

Instructions: Use a blue/black pen or pencil and mark your response as shown or type in 'yes' or 'no' accordingly

Please answer each question to the best of your ability

1. Gender Male ☐ Female ☐

2. Age: ……

3. Country: ……

4. How many years have you been teaching? ……

5. What grade levels do you teach? ……

6. How long was your teacher training in HVWSHE? ……

7. For how many months have you implemented HVWSHE? ……

8. In which subjects do you implement HVWSHE?

Please write each subject on the lines below and the number of hours per week you teach HVWSHE in each subject in the check box.

…… ☐

…… ☐

…… ☐

…… ☐

…… ☐

…… ☐

you are requested to indicate the extent of your agreement or disagreement.

Please write down clearly what you feel about implementing HVWSHE in your classroom.

9. Are you a trainer of teachers (TOT) or Teacher Educator? (trainer of teachers and teacher educator implies that you train teachers)

Yes: ☐ No: ☐

Section B

Teachers Beliefs and Perceptions Survey

For each item below, please indicate the extent to which you Agree or Disagree with the statement, using the scale provided. Please use the space below each question to give reasons for your rating.

I believe that

1. It is important to integrate Human Values in my lesson plans.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

2. I have the confidence to integrate Human Values into teaching about the environment.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

3. I can continue to make changes to my teaching approaches in HVWSHE.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

4. Having discussions with other teachers helps achieve the aims of human values based water education.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

5. I believe that teachers can elicit positive values from students by using HVWSHE.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

6. It is easy to integrate Human Values into all academic subjects.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

7. It is possible to motivate students to practice Human Values by developing pro - environmental behaviours.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

8. Students are motivated to help one another when values such as unity, peace and love are integrated into lessons.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

9. Discussions about the importance of water in festivals and culture motivate students to improve their environmental behaviours.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

10. Lesson plans must stress students' interconnectedness with the environment.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

11. I include cooperative learning approaches in most classes.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

12. Human Values Education promotes self –control so that students do not waste water.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

13. The present timetable allows me to integrate human values into lessons.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

14. It is possible to elicit human values from students during class.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

15. There is enough class time to implement HVWSHE in my teaching.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

ı. You are requested to indicate the extent of your agreement
ɔr disagreement.

ɔ. HVWSHE methods refer to: -
ːilent sitting /reflections
ɔrayers/quotations
ɡroup activities
ɡroup singing
ːtorytelling

16. I would like more opportunities to share information with other teachers about HVWSHE.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

17. Group activities increase students networking skills.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

Section C

☐

For each item below, please indicate the extent to which you Agree or Disagree with the statement, using the scale provided. Please use the space below each question to give reasons for your rating.

I believe that:

18. HVWSHE teaching methods are effective with the present class size.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

19. Prayers promote positive attitude among students in HVWSHE.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

20. Music in the classroom helps students learn human values.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

21.Group activities help students to increase their social skills.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

22. Integrating water-based cultural practices into HVWSHE increases students' respect for the environment.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

23. Storytelling helps students to develop moral values.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

I believe that

24. I have genuine concern for others.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

25. I have the self-confidence to be an example for students in my classroom.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

26. I can inspire other people to network for a good purpose.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

27. I am easily approachable to teachers.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

28. I am easily approachable to students.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

29. I am able to bring in new ideas to help implementing human values within the classroom.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

30. Students increase their awareness of the environment when teachers use silent sitting.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
☐	☐	☐	☐	☐

Please explain the reasons for your rating

……
……

SECTION D

31. Please list at least three advantages of using HVWSHE methods to help students achieve expected outcomes.

……

……

……

32. Please list at least three disadvantages of using HVWSHE methods to help students achieve expected outcomes.

……

……

……

Appendix D: Participation Information Sheet Phase 2 (Interview)

The University of Sydney

Dr Armstrong Osborne

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Participation Information Sheet: Phase 2 (Interview)

A study of Teachers' beliefs and perceptions of Human Values Based Water Education in some South East Asian countries

Dear Participant,

(1) What is the study about?

This study seeks to better understand teachers' beliefs and perceptions of human values based water education (HVWSHE). Teachers' beliefs and perceptions influence the effective implementation of new curricula. The study intends to explore teachers' beliefs and perceptions including their beliefs about the principles of HVWSHE, the specific teaching methods used in HVWSHE and the impact of HVWSHE on students' attitudes and behaviours. Phase 2 of the study uses an in-depth interview to expand on the findings from the initial survey phase.

(2) Who is carrying out the study?

The study is being conducted by Ms Suma Parahakaran, a PhD student, under the supervision of Dr Armstrong Osborne who is a Senior Lecturer in Faculty of Education and Social Work at the University of Sydney. This study will form the basis of Suma's thesis for the degree of Doctor of Philosophy and will be submitted to the Faculty of Education and Social Work at the University of Sydney

(3) What does the study involve?

You are invited to take part in an interview between September and December, 2009. I will contact you by email or phone to arrange a suitable date, time and place. I am happy to arrange a suitable venue according to your convenience. The researcher could make arrangements in public places such as cafes or tea houses chosen by the participants.

In the interview I will ask you a series of questions about HVWSHE. The interviews will be recorded. The interview tapes will be numbered, but your identity will remain confidential. Interviews will last from forty minutes to an hour.

Any information of a personal nature will be kept confidential as only the researchers will have access to the audio tapes. The tapes will be transcribed, but there will be no information on the transcripts to identify you. The tapes and transcripts will be kept secure in Faculty of Education and Social Work at the University of Sydney and destroyed after seven years.

(4) How much time will the study take?

Interviews will take between forty minutes to an hour.

(5) Can I withdraw from the study?

You can stop the interview at any time and withdraw from the study. There will be no disadvantages /penalties or adverse consequences for not participating or for withdrawing prematurely from the research.

In the event that you decide to withdraw during the interview the audio recording be erased and the information provided will not be included in the study.

(6) Will anyone else know the results?

No information of a personal nature will be revealed at any stage before, during or after the study. The interview tapes will be kept in a secure place and destroyed after a period of time. A summary and a report of the study will be made available to you and your school. Further reports may be presented at conferences, submitted for publication and as part of course requirements at the University, but individual participants or schools will not be identifiable in such materials.

(7) Will the study benefit me?

The results of this study will provide important information that may assist in improving human values based water education. The information will assist teachers, educators, curriculum developers, administrators and water educators to improve the implementation of HVWSHE. However, there is no guarantee that there will be benefits from the study.

(8) Can I tell other people about the study?

You are welcome to tell other people about this study. If they wish further information, they can contact Ms Suma Parahakaran by email at spar3099@edfac.usyd.edu.au, or by telephone at +61-2- 9351 6355 (Sydney) or + 601-37467979 (Malaysia). They can also contact me, Dr. Armstrong Osborne at + 61-2-9351 6266 or a.osborne@edfac.usyd.edu.au

(9) What if I require further information?

Should you require further information Ms. Suma Parahakaran will be able to discuss with you in detail and answer all questions you have regarding the questionnaire. If you would like to know more at any stage of the study, please feel free to contact Ms. Suma Parahakaran at + 60137467979 (Malaysia) or +61-2- 9351 6355 (Sydney) or email me at spar3099@edfac.usyd.edu.au. You can also contact me, Dr Armstrong Osborne, at 61-2-9351 6266 or a.osborne@edfac.usyd.edu.au

(10) What if I have a complaint or concerns?

Any person with concerns or complaints about the conduct of a research study can contact the Manager, Ethics Administration, University of Sydney on + 61 2 9351 4811 (telephone); +61 2 9351 6706 (facsimile) or gbriody@usyd.edu.au (email)

This information sheet is for you to keep

Appendix E: Participant Consent Form For Phase 2 (Interview)

The University of Sydney

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Web: www.usyd.edu.au/

Participant Consent Form for Interview (PHASE 2)

I, …… (PRINT NAME), give consent to my participation in the research project.

A study of Teachers' beliefs and perceptions of Human Values Based water education in some South East Asian countries

In giving my consent I acknowledge that:

The procedures required for the project and the time involved have been explained to me, and any questions I have about the project have been answered to my satisfaction.

I have read the Participant Information Statement for Phase 2 and have been given the opportunity to discuss the information and my involvement in the project with the researcher.

I understand that I can withdraw from the study at any time, without affecting my relationship with the researcher, the University of Sydney and the Society for Preservation of Water now or in the future.

I understand that my involvement is strictly confidential and no information about me will be used in any way that reveals my identity.

I understand that being in this study is completely voluntary – I am not under any obligation to consent.

I understand that I can stop the interview at any time if I do not wish to continue, the audio recording will be erased and the information provided will not be included in the study. I consent to

i) Audio-taping YES ☐ NO ☐

ii) Receiving Feedback YES ☐ NO ☐

If YES, please provide your details, i.e. mailing address, email address at the bottom of the page.

Signed: ……

Name: …… Date: ……

Feedback Option

Address: _____

Email Address: _____

Chief Investigator: Dr Armstrong Osborne
+ 61-2-9351 6266
a.osborne@edfac.usyd.edu.au

Researcher: Ms Suma Parahakaran
+61-2- 9351 6355 (Sydney)
+ 601-37467979 Malaysia
spar3099@edfac.usyd.edu.au

Appendix F: Interview Questions

Name of Interviewer_____

Date_____

Name of Interviewee_____

Sample In-depth Interview Guide

"Good morning. I am _____ (introduce self)".

"This interview is being conducted to get your input about the teaching processes in your classroom with regards to human values-based water education which you have been involved in. I am especially interested in your views with regards to the program".

"If it is okay with you, I will be tape recording our conversation. The purpose of this is so that I can get all the details but at the same time be able to carry on an attentive conversation with you. I assure you that all your comments will remain confidential. I will be compiling a report, which will contain all staff comments without any reference to individuals. If you agree to this interview and the tape recording, please sign this consent form."

"I'd like to start by having you briefly describe your responsibilities and involvement thus far with the HVWSHE" *(Note to interviewer: You may need to probe to gather the information you need)*.

"I'm now going to ask you some questions that I would like you to answer to the best of your ability. If you do not know the answer, please say so."

Section A
Teaching Principles
a) Cooperative learning
b) Educare: Integrating human values in the lesson plans, eliciting human values from the lessons
c) Role modelling
Questions were asked in detail about the above aspects as outlined below.
threats and benefits
disadvantages and advantages

Section B

"What do you think of the teaching pedagogies that you implement in the program?"

"What aspects of the different methods do you take as significant contributors to helping students develop values?"

"Can you elaborate more on that?"

"What do you think works best for you when you use the particular method?"

"What types of concerns have you had or have heard about regarding the availability of materials and equipment?" *(Note to interviewer: You may need to probe to gather the information you need)*

Section C

Impact of Human values based water, sanitation and hygiene education on students' attitudes and behaviour

"Do you observe any changes with students with regards to their habits when they use water?"

"Can you elaborate more on that?"

"What types of concerns have you had or have heard about regarding the availability of materials and equipment?" *(Note to interviewer: You may need to probe to gather the information you need)*

"What other problems are you aware of?" *(Note to interviewer: You may need to probe to gather the information you need)* "What do you think about HVWSHE at this point?" *(Note to interviewer: You may need to probe to gather the information you need - e.g., "I'd like to know more about what your thinking is on that issue")*

"Is there any other information about the impact of the program that you think would be useful for me to know?" *(Note to interviewer: If so, you may need to probe to gather the information you need)*

http://www.nsf.gov/pubs/1997/nsf97153/c3app_b.htm…(Mahoney, 1997)

Appendix G: Sample Interview Transcripts from Indonesia

Three sample drafts of the Interviews transcripts are presented below. The bolded texts are presented in the findings section.

Interview transcripts from Indonesia

Researcher: Can you tell me about your experience with cooperative learning?

I1: Okay… uh… cooperative learning… in group learning students are motivated to help one another with value such as love, unity and peace are integrated into lesson… into lessons… so… so… as a teacher… as a teacher, as a teacher as a facilitator, should let students learn by ,stimulating their creating, discovering their own resources, and challenging to think for themselves, actively taking part and doing their own resources, and giving back…water education is good… and especially for students for their attitude and behaviour, for example …

…Students can achieve two goals by using human values. The goals are the same…they can achieve the objectives of the syllabus and the second they can preserve the environment…and the next…by using human values program they can improve their social skill and human values understanding.

and others they become better people… they become human excellence … I suppose…"

Researcher: When you use cooperative learning do you find any change in the students?

I1: cooperative learning, ok? …uh… I think for cooperative learning there must be cooperation between teacher and parent and school… in this matter, it should encourage parent commitment and participation. There are 3 principles for parents, uh… parents must walk your talk, then let your child cure (create) his or her own group her or him and love and lord… as a teacher must concentrate more on students and then teacher can be compared to water tanks and students to connected to it. Then teacher can be compared to gardener planting the seed and watering with love and trust.

Researcher: Are there special experiences while doing group activities?

I1: when doing group activities maybe, uh, students must bring the water and don't drop any water, then cooperate with their friends until the last friend and it must, the student must not drop the water anymore…

Researcher: *When you say drop water, what does it mean?*

I1: If they drop water, it means that there are no cooperative.

Uh… group learning? So… they help each other, they are cooperative… sharing… .uh… and team work…

Researcher: *Ok…What about your experiences when you draw out or integrate values in the lesson?*

I1: From? In the lesson…Yes… I integrate values…socialise to students or to minutes to water, then students not allowed to open the tap… then… I teach English lesson.

Researcher: *(prompted again on values education) how do you integrate values education in your lesson? What subject do you teach?*

I1: English…

Sometimes… ok we must keep the water clean… then don't the garbage… (sampah).

Researcher: Tell me your experience as a role model:

Researcher: *As a role model what kind of values must the teacher have?*

I1: As a teacher as a good example they have some responsibility as a effective…teacher should be flexible and patient…teacher…learn through heart, teacher should coordinate through…head, heart, and hands as unity of thoughts, words and deed.

Researcher: *Have you used silent sitting in your classroom?*

I1: Yea… no silent sitting…

I agree silent sitting helps students to develop human values… by doing silent sitting students can draw out inherent values from within…it improves concentration and then strengthen the memory.

And for silent sitting, bring the light to head, heart, hand, mouth ear and eyes…so education system need to concentrate more on students transformation rather than acquiring information.

In doing silent sitting they are able to transform their negative mind to positive mind and know what they are. It needs more time… it takes more time…They realise one's potential, they can develop their attitude of selflessness and selves.

Researcher: *Have you used silent sitting or prayers in your classroom?*

I1: Uh… as a before activity begin we pray, we never do silent sitting… but I agree silent sitting is very good…

Researcher: *Prayers…do you use them before every class or before the school starts or…?*

I1: Praying… uh… before beginning the lesson and at the ends of the lesson or beginning of the lesson … the last we pray and then last we pray together.

Researcher: *How does prayer help?*

I1: Hmm ok, For praying yea… by praying every morning, it helps students to develop human values… it encourage students to transform their inherent negative values within to positive values and uh the result they realise who they are… for prayer promote positive attitude among students, it encourages students to understand, they have the same goals, the same dream, the same purpose. So they are willing to help each other.

Researcher: *Can you tell me your experiences with storytelling…*

I1: Storytelling I think storytelling tends to help students to develop moral values. Giving examples through storytelling is more effective in learning and approachable to students.

Researcher: *How often do you use storytelling?*

I1: Uh. Sometimes… every week…

Researcher: *What kind of stories do you tell them?*

I1: Indonesian story and we tell in English as I'm English teacher…

Researcher: *What are your experiences when you use music?*

I1: Music? I think the same… music… storytelling help students to develop values.

Researcher: *Who composes the song?*

I1: I'm not good at singing…

I cannot sing… I'm not good at singing… yea… I interesting in singing, but. I'm not good at singing…(laughs)

Researcher: *So how do you use music?*

I1: sometimes I ask the students to sing a song…

Researcher: *Do teachers share with each other*?

I1: Yes… of course… I always sharing about my problem… with my colleagues…my feelings…

Researcher: *Do you do it very often?*

I1: Yes… of course.

Researcher: *Your experience with Indonesian culture and tradition…*

I1: Culture? For example. The gardener planting the seed … the gardener must watering with love and trust…

Researcher: *What about culture ? like Hari Raya? How do use this for values education?*

I1: Oh… culture… ! uh… I ask the student tell about water… their experience in Aidilfitri

Researcher: *Do you face any problem when use teaching techniques etc such as silent sitting, prayers, group activities?*

I1: Yes… of course… the problem with silent sitting… it needs more time… ya… takes more time…

Researcher: *what about the size of the classroom?*

I1: for one class forty students…

Researcher: *when you use HVWSHE do you see any change in the students? Such as behaviour or attitude changes?*

I1: Uhh… it makes the students better behaved …and better person…They don't waste water…

Researcher: *Do you see any other change in their habits and behaviour?*

I1: yes… students become better than before…

Researcher: *better means?*

I1: They don't waste water…then they keep the class or school clean…

Researcher: *Is there anything else you would like to say about values education? Any special experience?*

I1: Uh… actually after coming from Thailand I try and try to apply human values to my students you think it's working?

Uh…but they are going slow… (berjalan sedikit …sedikit…)

(30 mts interview)

Thank you

Interview 2

Participants 1

Participant 4: 2.35 pm (25mts)

Researcher: What are your experiences with cooperative learning?

I4: I make group learning for our students to make …learn together and then make group of group of study or sometimes for the games… for the cleaning of school and our class…

Researcher: When you use cooperative learning do you find any changes in the students?

I4: My students is very respect about the group learning because they can learn new experience… new group because I make different groups sometimes I make 5 person a group next time I change the person so they have new character for the friend they like that because they can give each other, give each other … experience, then anything… When I teach sometimes as the material like…depends on the subject…

Researcher: Ok…What about your experiences when you draw out or integrate values in the lesson?

I4: When I sit when with a group … depends on the subject. Integrate human values …Yes

Researcher: (prompted again on values education) How do you integrate values education in your lesson? What subject do you teach?

I4: Like …they enjoy, they can give something to me, to their friends… and then…, they make new character.

Researcher: ***How often do you integrate values…***

I4: **Not often, sometimes…once a month…because…we don't get…time to make a group because…in Jakarta…we should do the materials, finish material for the subject…so we don't have any time to make the game or anything…sometimes I take our students to study in the park…**

Researcher: As a role model what kind of values must the teacher have?

I4: I think it is very important for a teacher making a top model … everything the student do the teacher should know so teacher has to be a good model… be a group model … like make a good character for the model …teacher as a model …

Researcher: Have you used silent sitting in your classroom?

I4: **Sometimes yes… the first I make the silent for all of the class… in the group…big group ya… I make the silent sitting sometimes in the class sometimes but it is not very often …Just not much time not for long but I make them do the silent sitting… it's very good… Yes, yes… my students is now after silent sitting they can have good character… good change in behaviour…**

Researcher: Do you see any change in students?

I4: The students change character like honest …like that …making honest… making on time…they make a good character…

Researcher: Have you used silent sitting or prayers in your classroom?

I4: The prayer, of course, before we start the lesson…The student say the prayer…before we start the lesson students do silent sitting…because prayer is different from silent sitting…prayer is for religion. But silent sitting is for all, for all religions…all of the students should have prayer before starting the lesson.

Researcher: Can you tell me your experiences with storytelling?

I4: **Yes, sometimes…actually based on water or environment…**

Researcher: How often do you use storytelling in HVWSHE?

I4: No, no, no sometimes…about storytelling…sometimes only about hero of Indonesia.

Researcher: ***About values education? What kind of stories do you tell them?***

I4: sometimes when we get day of education date, like 2nd of May is Education Day, sometimes I make students for storytelling about education and then … the student I

give the students to write the story, they go to the library, so check about story telling… the students discuss …the students change and discuss with another group … make another group … I only I heard yaa… about students telling the story… maybe I give a response.

Researcher: What are your experiences when you use music?

I4: Music…of course…the students very interesting, sometimes boring… students study everyday…sometimes I give music…I bring the tape recorder. And then I give them song…and they heard…sometimes …they compose music…they tell about what is the meaning of the song…"

Researcher: So how do you use music? With values?

I4: sometimes then I ask who is the song… but it is the easy, easy (ones)… what is in the music…

Researcher: Your experience with Indonesian culture and tradition…

Researcher: What about culture? like Hari Raya? How do use this for values education?

I4: I'm yeah… I'm a uh… exco for dances …only especially from Aceh… I give the students about the culture… culture of the dance… That is the group … maybe you mean the Saman Dance from Aceh. Do you know about Saman Dance? like in Thailand … any group dance… for them 'to be together' … sometimes… I make them know about the culture, the material is there in education about the culture about the dance, about the song… (Malay) local songs, local dances… the different types of lyrics… and then many types of (materials)…

Researcher: Do you face any problems when you use teaching techniques etc such as silent sitting, prayers, group activities?

I4: Sometimes many problems…any students don't understand what I say, sometimes I make boring…students don't understand about what I say or what I make…

Researcher: *Anything special when you use HVWSHE…*

I4: in Thailand… ? oh in Indonesia… our students I give the … Human value for (Malay) courteously… the washing hands… I give the sample ya for human value… like I showed the honest example but I don't know what I say!

Researcher: ***When you use HVWSHE do you see any change in the students? Such as behavioural or attitude changes?***

I4: Yes sometimes… they change about their behaviour their character… and then talking … be honest and then good, kind… and then many kinds.

Researcher: Does it help students …HVWSHE ?

I4: Yaa, it is very … help my students …with human values my students can make a good student … good character… help peningkatan (improvement)…a good grades… with human values … many kind of thinking.(creative thinking).

Researcher: Is there anything else you would like to say about values education? Any special experience?

T4: because sometimes make them diligent, they want to be a good students… sometimes they make changes… I have one student …one student very …not good… but when I tell them when I come to Thailand… they are interested about what I say, she make a change about herself…so they get changes about her score, about the… character…their behaviour… I tell about the qualities they interact … they get good character…

They go to the sawah (paddy field), they go to the mountain…I give the use of water… they go to see waterfalls. It is in the mountains…the water flows in the mountains… I tell them that waterfalls is used in the villages…

Thank you

Interview transcripts from Indonesia

Interview 3

(3.55 pm)

Researcher: ***Can you tell me about your experience with cooperative learning?***

I6: Actually I have tried in my school… especially for focus on human values, it is very useful because we look at the student as a human… not only as an object…do you put your children in small groups? sometimes in group, sometimes on their own.

Researcher: When you use cooperative learning do you find any changes in the students?

I6: They learn to cooperate and sometimes they have to do for self-confidence ya… they can share idea with friends… .hm… and any idea… they must consult consider with others… in group learning the first process, boys mainly…in this case… they must not disturb other class. They do not have to disturb classes.

Researcher: ***what are your experiences? Like when you're teaching values when you're doing water education.***

I6: No actually …no usually in individual…

I use for my students… just like a human… I speak to him and I respect my students… So far I haven't planned don't apply in group.

Researcher: what about your experiences when you are integrating human values?

I6: When student must speak to other students they must use polite language to teachers… .politeness in front of class…ya… in my lesson plan… with my students they need encouragement… I encourage my students.

Researcher: Can you elaborate more on that?

I6: because when they don't feel bad, they will say to teachers, 'Ahh…sorry, I don't like it,'…something like that… students will feel freely when they feel something bad…ya, respond.

Researcher: Tell me your experiences as a role model for water education?

I6: Yes teacher should be a role model…because of if the teacher becomes a model they can in fact they can affect the student… because one teacher can affect forty characters… the teacher must be honest and disciplined and polite and humble…

Researcher: Do you face any problems when you integrate values?

I6: Of course I have some problem… sometimes my students don't understand …lost control… when they behave like…bad habit this is not good… at first my student ignore it… It needs a longer time to make him understand they take time he takes a lot of time to understand… takes time to do…

Prompted again…What about being a role model ?

I6: Become a model… oh ya… in front of students teachers have to be good… in every kind of way.

Researcher: Have you used silent sitting in your classroom?

I6: I have tried once but because it takes time…of course it did help but when students complain…I stopped…I changed my way…I don't use.

Researcher: what about silent reflections?

I6: Reflections… yes… it means at the end of teaching what do you learn today what you get today? Hmmm… ya… I think I use it but … I discuss with my students for example. Do you learn about values here? What value …no…what do you learn here? I never discuss about the value of humans…actually when they have problems… do you remember what I teach as such.

Researcher: What about integrating human values for water education?

I6: Actually it's similar with in Taman siswa education…it is not quite different. …so I use it…Yea… because teacher must respect the students as a human being, teacher as a role model. And then …Yeah actually it is different, maybe because in water education they use water, but in taman siswa…they need it is daily activity they have to behave…art… I don't have any special teaching. Because I share with my principal … my principal agree… our school we have the plan for it.

(Taman Siswa is a Values education program in Jakarta schools)

Researcher: Can you tell me your experiences with storytelling?

I6: Storytelling …Yes… storytelling…but I'm whenever I focus on human values. I ask students to tell stories… their benefits their hobbies… their effect to others…what you can get to for other and they do according to the situation… stories… uhh depends on situation and sometimes I ask your favourite person? Why you adore him or not her… what make you adore her? Sometimes, What's your memorable experience…sometimes I ask about your family, your father, mother, depend on situation…topic.

Researcher: What about sharing information with teachers?

I6: Ya sometimes ya… some special case about students… why …something bad affected her or by him… usually I brought my students and then I ask … some of the problem…actually … first they lie sometimes after three meetings they confess about the truth.

Researcher: Do you use music in classroom for HVWSHE?

I6: Music… uhh depend on the students, sometimes pop… how do you use? sometimes yes… what benefits example…what benefits you can apply to daily activity in your life? At least once a month…students like music… because they don't feel bored… and teaching music …and especially music related to their age or related to rock, pop or… idol.

Researcher: What about culture in water education?

I6: I use culture in my teaching when they speak to teachers…when they speak to friends… how they have to behave? they have to be polite…

Traditions… my school we are near with the tribe…? We use the culture… sometimes…and yea… especially when they behave with others…especially on politeness.

Researcher: Do you face any problems when you use teaching techniques etc such as silent sitting, prayer, storytelling etc?

I6: yeaa we are based on water it is difficult to apply in water… sometimes …difficult to apply

Researcher: Which pedagogy do you use most in classroom?

I6: Group activities…Reflections and storytelling… which is more effective? Storytelling – because they have to speak in front of the class and face their friends… It gives them courage…

Researcher: Do you notice any changes in students' habits or behaviours relating to water education?

I6: They behave to teacher …they are more polite than before… … after one month they become more polite…

Researcher: Attitude and behaviour…when students use water?

I6: not really …(remember) hmm

Researcher: Do you have anything else to tell me about your experience with HVWSHE?

I6: nothing…

Researcher: What about in your experience in Thailand?

I6: Its good in Thailand… the results start not only from teachers but from students itself… the sixth grade helps the fifth grade and it is similar in Taman Siswa…the students help also… I usually try for my students. … you must share with your friend… help your friend… apply to my student…when my student in lower knowledge they get help from friends…

Thank you very much…

Appendix H: Sample Interview Transcripts from Thailand

Interview 1

Participant 1

7.50 am

Researcher: Let me begin by asking about cooperative learning…

T1: About cooperative learning? yes I use that …

Researcher: When you use cooperative learning do you find any changes in the students?

T1: I saw the student they have more they have more…experience about learn to understand each other and they have more … unity … and then when they study they try to help their friend they not just want to be number one…themselves … they try to help everyone to go together.

Researcher: Can you tell me more about it?

T1: Uh in my subject we can do every class we can put in your class hmm learning system like we can told them the first when you go to your classroom how we can study .Uhmm sometimes usually we should have lesson plan first ya? sometimes we can't do sometimes the situation is not good, we can change.

Researcher: and are there any special experiences while doing group activities?

T1: Hmm like now I teach sport…grade 12, we separate two groups to competition we have competition in many sports I ask them what sport you want to study or play with each other something like that they choose many things after that we competition…uh and I saw that whenever we win or lose everyone is happy not serious no problem they just be a friend…That one I use when we have integrated class.

…I divide them into boys and girls. Sometimes I have 20 students I divide them into four groups…my experience is easy to teach students to help each other… sometimes students look for information by themselves. I advise them to find

information…they use information from the library or water institute .I divide them into four groups.

Researcher: Can you tell me more about integrated classes?

T1: Every teacher, for example, the teacher who teach 10–12, will have a meeting or sometimes they chose a theme, sometimes from the students what they have interest in, like water, if they choose about water, every subject … you have to relate your subject with water like math, like what we want to teach about water with math, with science, with sports with social…With everything…Its very interesting…easy also everyone work together and students have more experience

Researcher: What kind of response do you get from students?

T1: Student have many activities and they are happy as they have many activities, different from when they study in their classroom. Usually when we have integrate lessons they go outside we have games sing a song sometimes in science. Sometimes they have projects… many things they have…

Researcher: What about your experiences when you integrate or draw on human values from the lesson?

T1: Uhh the integrate we want them to have more learning by doing. You know in the classroom they have academic all week this lesson for them to relax they do practical this point they know they cannot separate the subject everything in your life we cannot separate now Thai now English we try to teach them to relate to connect they know the real of education

Researcher: Do you integrate human values while teaching?

T1: Umm the integrated lessons we have student to be in a group this subject we have a worksheet like English group we have the English base …Thai base… the teacher have their own evaluation they have to teach them with their subject… they have to evaluate each subject like everything we have a big project …

Like this theme everything every subject

"Water is life"

“One drop of water”

Last week talk about

“One drop of water”

Like home academic group…they make ice-cream from earth the ice-cream and Thai they make a poem

Researcher: Do you see changes in students’ attitudes and behaviours when you use integrated approaches?

T1: The first thing I saw when we separate the group student group like grade 10 and 11 we mix together we can see the older one help the younger one because sometimes the content is more difficult for the younger one they look after each other they look after the team or something like that …Hmm…The big thing is unity

Researcher: How do you integrate or elicit human values?

T1: Whenever we have activity with them we try to let them think about what they learn from the lesson with this activity from everything they do or everything they saw. We should teach them to think what value you have or how

Researcher: What are your experiences?

T1: You know we are very surprised you know… when you do little by little here we have grade 1 they are very small … if we try to teach like this little by little they know by themselves this lesson sometimes we have expectations… like sometimes how what objective we want them to understand sometimes they can understand more than we expect its very surprising you know…Like in my classroom like education in human values … in education in human values education is teacher classroom grade 12

Researcher: Do you have any special experiences that you can tell me?

T1: About some situation usually the older one will talk too much the younger one will have activity sing a song, sometimes we have visitor come to our school and ask them the questions we cannot prepare… up to them to ask the student they can’t prepare anything …one thing they asked them …Like this school in Thailand is very

famous here…They ask the student "what things you want to change in our school"; "what thing you have which makes you unhappy here"

"One boy…he said I was afraid of his answer…worry about… how he answers… then he said "everything here is sathya school life he change even one thing it is not Sathya school … sometimes he feels unhappy but he has to follow because it is Sathya sai school"

Researcher: Can you tell me more about the integrated classes?

T1: The biology teacher…he tells about his class … his group is about biodiesel, we use the oil use the recycle oil from the kitchen or something like that. … it's a project in our school …after that we try to calculate profit or loss, we found there was only little profit… from what we used outside… the budget is very high to buy some material something like that …he asked the student what did you learn from this project and then he said, he expected like only "save the environment" but the student said "even if we have just small profit but we should carry on because it is good not just for our school to save, not for the environment but for everything …"

Researcher: What about teacher as a role model for HVWSHE?

T1: Teacher as role model – is very important whatever you are the student copy you …the first the teacher should be change the mind. The teacher not just teach student we are learner also we should think like from your students and we can understand them we are not just the teacher…but we should let them…we understand them everything is easy … like listen to them more…you know… the student, you know… everyone wants someone to listen to them if we go to class we talk we listen to them we do not know about them if we listen to them we can know more if you have the problem we can direct we know how to teach this boy this girl not just academic but their behaviour, it is easy to warn, them if they do something not good after that we can have heart to heart talk…Like we know we have water in our body if water in our body is not good can show something someone can show if not good… is very same thing like education in human values in ourselves we should develop our mind we develop everything else…by example.

Researcher: Do you use silent sitting for water education?

T1: Uhmm…Yes yes every time we start with silence…like we can give them before they learnt to study they should have ready to study and they have to concentrate themselves … like have to …not too much… because in our school we have the…prayer hall we have it completely in the morning but… in the classroom each subject they just sit only silent… few minutes sometimes students are not ready to study silent sitting they are talking… they are shouting… silent sitting can help them to calm down sometimes the teacher can talk about "we are going to study everyone can concentrate". From physical we can see they calm down in our classroom and you know in the longer term I ask the student or we can observe the student behaviour has changed little by little sometimes some students is very naughty is not calm down…very very and then when we do this every day more and more they can calm down everyone like time, different time …some student they can change short term but some have more time to change but everyone change…we can see students we know everything because we are with the student every time. We can see the change with them …Yes… and uhh its more than that they have more memorise their memory power is better very good for academic very good for everything they can experience, and they can concentrate.

Researcher: What about prayers? Can you tell me how do you use prayers?

T1: My classroom we have Buddhism Muslim and sometimes I have Christians when we pray I let them do all their prayers when we use they can respect each other and Muslims. …they pray… they are quiet and do the same thing… they just silent and the Muslim, they prayer the Christian they learn to understand each other the tradition is not different they understand each other … When we pray we have more concentration… also when we say the word have we say the word of prayer is very very good word and remind them to understand and understand.

Researcher: Do you use story telling? Can you tell me your experiences with storytelling for water education?

T1: The younger one is very happy when they listen to the story like grade 1234 like every grade but should have different stories but the older ones should have real story or something like that… not just imagine, can motivate them any story telling…any stories… but sometimes we have especially with water also, in my classroom I have a picture to see the pollution, they have never seen before, the river

has so many rubbish, they can't believe before we saw picture make them think about it…

Researcher: Is storytelling effective?

T1: Yeaa very effective like some time they never heard before and when they heard about the story it makes them more interesting they can have new will for them …after that every time when we finish activity we ask them what did u learn from this, value will come out.

Researcher: Can you elaborate more about the use of storytelling?

T1: Yes like I told you we should choose the story the student …the younger one they have anything is more funny or what they imagine but older one we should have like they like real story… sometimes the story for the younger one they say it is not real one like the older one. Sometimes I use like this… student do by themselves… like "you try to do by yourselves". And this one can be more interesting they share, come to share with their friend this one is interesting and then their age the same age sometimes we are the older than them your story they don't like that if they can find by themselves the same ages the interest enjoy teacher to be a learner also.

Researcher: What about music? Do you use music in your classroom?

T1: Yeah…I love it … hmm you know, …Student, like teenagers, like music…if the song is good we integrate values in the song…it is very good for them to memorise and input in their consciousness…when we have a good song they are interested sometimes…you know two to three years ago we have one group they are interested in music…still do and they have to go for competition and they go for national competition for music…they made a song by themselves for competition about global warming and they did a very good song.

Researcher: That sounds like fun! What are the activities they do with water?

T1: …they play by themselves…About water in our exhibition we have water music about water, like do remi we made a new instrument, student they can play music.

Researcher: Do you share your experiences with other teachers?

T1: Share experience? is very important when we are here stay here like brother and sister the teacher here…when we have experience, impressed or have a problem we talk to each other we share. Like is not formal sometimes informal…

Researcher: That must be good…

T1: Yes…very very hmm…

Researcher: Do teachers share with each other?

T1: Yes and sometimes when have some suggestions like the teacher who has more experience help or suggest, help each other and make other have more progress. I feel we don't have enough time for work here hmm I feel …for that one… here its combined we cannot separate sometime when we teach them about value or behaviour its combined with their daily life…without their realisation sometimes we suggest academic outside of classroom if we want to do everything.

Researcher: What about the use of culture and traditions in HVWSHE?

T1: In Thailand we have many ancient culture… with water… like a for example we have Loy krothong festival like in November we have that month like everyone is interested so we choose this festival for our theme for our study the theme.

Researcher: Can you elaborate more on that?

T1: students are very interested they have more ideas from students because every year have this but we should change our idea… every year we can do more… the foreign also…because here we have foreigners they taught us about …like a even if we have loy krathong group… English group have another everything about water in their country, they teach student also, so we know more about water about other traditions.

Researcher: What about the size of the classroom?

T1: I think the number. Just about 20–25 is better. If bigger many students sometimes we can't control some activity if you have cooperative learning you can have theme teaching sometimes the teacher they talk to each other this s a big class okay you have Thai you have social and then we work together with a small size then they have 2 period they work together, we can do that also

Researcher: Can you tell me about the impact of HVWSHE on students' attitudes and behaviours?

T1: hmm I understand the impact is first in their mind their understanding about water … when then it gets bigger … like now grade 12 they the first when they study here make them understand their life more and when they understand more they look around they want to go help another one…

Researcher: Is there anything else you want to tell me about?

T1: They "follow steps our kings"… they go to have activity with the student with another school because they understand they can touch know how useful about education in human values by themselves make them help other school now they go to help students about 10000 students around our school. Help… they the first they let the student have meditation, prayer and everything we do here… first … they talk about the problem of youth in Thailand they have fashion let the student understand how problem now in Thailand they talk about who is carry on the problem… our king knows everything and he worry about the population, his population … after that they have some discourse about how to…how to daily life right conduct…how to do the right and then without the problem you can… after that they can have activity like games and play role play also every five technique they use in their project and the feedback is very good because by youth by youth same age …if he goes to lecture for the student they lose interest we can't speak the same language… student can do good make the student outside

Researcher: Can you tell me more about it?

T1: This project is by our student they think about themselves. when they change they worry about the student outside they consult with the teacher "we feel like this, we want to do this and our teacher and Dr J yes if we want to do …now 1000 students listen to them next month they go to Ubom Raajathaani

Researcher: So, is there anything else?

T1: that one we went with Dr. 'J' he goes to many places to training…hmm some place just have only teacher but some place have many kinds many groups not just

teacher they are the NGOS sometimes Governor sometimes many officials and many kinds make them have more awareness.

Researcher: Do you face any problems with HVWSHE?

T1: Hmmm everything start from teacher first yeah… we have the past time we have more problems we have problems with our school … like a responsibility like following rules from students, some students … like last year like we have problems with unity after that this year we are strict with the teacher like teacher should raise your mind first and do everything you want student to do … suddenly everything changed… the teacher they have they think of themselves and try to do hard work like everything they do … and they come to everything you want student to do you do you have to do first you don't change everything …this year it is very good … environment has changed… .in the teacher should have awareness of water if we realise deeply in our heart we can change if teacher doesn't save in our daily life …We trust that like when you teach students to save water, or switch on the tap the student tap on or like that you switch off everything we should have awareness. We can have more technique like we can have here we have unit of water we can save in our room or not…about water.

Thank you very much

8.45 am Thailand time

Interview Transcripts from Thailand

Interview 2

(T4: Teacher trainer)

15 August 2009, Participant 4: 9.15 pm

Researcher: Let me start by asking about cooperative learning or group learning… Can you tell me something about it?

T4: is when many teachers work together on the same theme and children through the theme. We have done a lot of themes with water…we tell them how to do this … we do different group work so they have the experience of doing different group work.

Researcher: Can you tell me your experiences as a teacher trainer with water education? How do you use cooperative learning for water education?

T4: We do a lot of group work. Working with group is very important, it has to be workshop style so you get as much input from them as possible, not just lecture…that's when it gets interesting. The training is different if it is a very big group, you can't do much group learning because the group is too big, like if you're teaching 2–300 people…if you've got a small group, where you can split them up into groups… and get them to discuss talk about an issue, plan together…it's very effective. You can talk about specific issues regarding water when we do workshop type activities they understand much better because it's not just listening to a lecture and going in one end and going out the other, about it's the real understanding and they can express themselves…it's when we take part…it's when we a part of the process that we really understand, if we're just listening to lectures it's very hard to understand. The actual countries we have visited are Indonesia, Sri Lanka, India, Nepal, Laos and Cambodia. Other countries we certainly have done smaller trainings.

Researcher: Can you elaborate more on that?

T4: They work in a group they realise … I trained in many countries. Most teachers realise that there is a need to change in education.

The main purpose of education is to better society many teachers are looking for something especially with teachers who use the old type of education for some it takes a while but what makes the difference is by the end of training the process is started. They are very responsive … Well… yes I can remember many of the workshops I remember one response we got from Indonesia

"The group was too big, with the smaller groups there has been good response. With the teachers, the teachers come away from the workshop, they are very excited…they need to be supported it's important to have training for principals in schools…Well, it's hard to say when you putting them into practice. On the whole it is positive and if they are not being supported, but if the whole school is trying to work towards the whole goal, but if it's one teacher alone it is very tough."

T4: But people who have come to the institute for a week's training are from so many different countries.

Researcher: What are your experiences with teachers when you use HVWSHE for teacher training?

T4: "We just had one training from China…they say that it changed the whole way of thinking…they realised that it is more effective with the values especially with the different techniques…in China it's like chalk and board…it's an eye opener that we could do activities like singing and stories…They said that of all the things they learnt, the most important is silent sitting."

"We use themes…the main emphasis is for teachers to bring out the values and when we do training we always ask them what are the values they learn… so they can use the same kind of methodology…we use a lot…like biology combining with geography and social studies…although we have a lot of water, very little water can we drink…why is it there is very little water…we are very selfish… we are using too much of the natural resources and unless we teach children, not to teach, how to teach the world better, how to teach specifically with water…this is really very important working with a group…has an advantage as teachers. I did a project with one class where they planned out a conservation plan for the school, and one of the things they came up with themselves is…like leakages…in pipes…we combine mathematics and domestic

science…with the older children, we got them to do statistics on how much water is needed, for instance to grow a pound of grain versus producing a pound of meat…producing meat requires about 10 times more water. We have to think about so many changes, even changes in diet…these kinds of things, if the children do it themselves, if they find out for themselves, it has so much more meaning than if the teacher just gave them the statistics…one of the things we try to do here is get the children to do research, get them to think for themselves and … it's a very different learning process. The problem with education today is that it is just a process of giving information…there's not much learning…what we want is teach children how to learn, how to find out."

Researcher: do they like using cooperative learning?

T4: They work from a group they cannot generalise… when I trained in many countries many teachers realised that they are looking for something and especially if teachers who have burned out from the old way of education thinking of drawing out of what makes them different is by the end of the process has started…

Researcher: Does the size of the group matter?

T4: Well yes I could remember many of the workshops we have done I remember one of the response we got from Indonesia…not enough workshop but with a smaller group has

"We have never been taught before"… the important thing is to follow up they come from the workshop they are very excited it is also important to have training for principals and with schools.

Well it's hard to say when you are doing workshops on the whole it is positive there is one teacher in one school if the whole school is trying to work for the same goal they feel that they are being supported.

Researcher: What about teacher as a role model for HVWSHE?

T4: **If a teacher teaches a child and if water is essential and when the child sees teacher turning on the tap and wasting water, we can say anything and if our actions do not match what we say they don't learn from what we say but from what we do…it is important.**

The most important thing is practising values whether it is and if you are not practicing it doesn't work… the teacher is essential

Researcher: What about the teaching pedagogies for water education?

T4: I have been using this technique for many years.

I shall give you an example if you are starting the class what the teacher does they white board and prepare to teach in a way silent sitting is like that it is preparing them to be quiet and to be concentrated and feedback from students we did evaluation and especially with older students they felt that it has helped them progress them in their life and academically.

Researcher: What about your experiences with silent sitting?

T4: Wonderful experiences it depends you know if you just do silent sitting and do teaching but if you do activities with students you can do with water education we tell them students to express through art about what they felt and its children come out with art not only with art.

Researcher: How do you integrate values during your lessons?

T4: I have a bowl of water…It's not about water it is about bringing about values for teachers to bring out values in the children and we pass. We suddenly realise how essential water is how beautiful water is looking at it makes is feel water is more peaceful the child becomes more concentrated.

Researcher: Do you think silent sitting is a religious activity?

T4: I don't think that's true it's not religious activity something that is spiritual something that is religious something that is wholesome something for the spirit something for the heart it's there in some religion. It is spiritual.

I would say 99% very comfortable. The only thing that holds them back is they don't have time and if its explained properly it is not a religious activity it helps students calm down and these kind of exercises can enhance academics and I try to explain that if you take little time you have actually gained so much time… if you start from a place of focus. Definitely not silent sitting I can't

teach now without silent sitting… 3–4 mts for each class its calming the children down. Silent sitting… we use in every class…

Researcher: what about the use of Prayer?

T4: In my experience, if you have something that's very universal, people will not object to it and the whole purpose of a prayer or a quotation or saying or thought is to put something positive into the subconscious mind of the child…that the child can go to. Singing is another way, but for instance, when I teach the children in my school, I start my lessons, especially with the little ones, with a little universal prayer or saying, 'May all people, animals and living beings on this earth be filled with love, peace and joy.' It cannot affect or upset anybody of any denomination or anybody who has no religion, but it's just a positive affirmation and to think of others rather than just ourselves. But we can use quotations, we can use poetry…it all has the same affect that we're giving the children something positive in their minds and subconscious

Researcher: what is the significance of using prayers?

T4: We have to be careful it may not be appropriate to have prayers but if you have something that is universal and the whole purpose of a prayer or saying or quotation or thought something that …for instance when I teach my children in my school especially with the little ones I say may all cannot affect anybody but it is just a appositive affirmation rather than we can use quotations poetry to teach.

Researcher: How different are the teaching pedagogies used for education in human values and HVWSHE?

T4: Well, the techniques, the methodologies are similar between education and HVWSHE…it's just the emphasis that is different. For water it's very urgent it's very good because it's made myself and the way I teach much more orientated to the environment, and how important it is, and actually, if we don't look after the environment, we're not going to have a world left, so, I mean it's something essential that we teach the children about this. They are different. One is calming down and becoming clear…becoming empty in a way which is the silent sitting…it's like cleaning the blackboard, and the prayer is like filling up with something positive. They both have a positive effect but different purposes.

Researcher: What do you think about the use of storytelling?

T4: Is very effective with younger children…the children remember it better than telling facts and figures…it's been used since time immemorial for teaching…Especially with older children we should use more factual stories with older children, less fantasy or different creative ideas with older children. Of course we pick up a story that will really go to the point that you want the children to think about but one might…In my opinion, we should get the children to think about the story, we should not tell the children what the moral of the story is or what the meaning of the story is…we should ask them a lot of questions. I find it more effective and it becomes more interesting we and they learn from each other when we ask children they will have different ideas.

(Pause…)

Three to four minutes for each class it's calming the children down. It's not necessary that we tell stories every time… if we can think of a story that would be very specific to bring out the point that you want to teach, then use a story but we don't have to be stuck by the same techniques…they are to be used when appropriate or helpful…every time.

Researcher: What about the use of music for water teaching human values?

T4: Music is another…apart from silent sitting, it's probably the most effective. I don't just use singing, I use a lot of music…if I'm talking about water we have sounds of water…it's very soothing…again like silent sitting as soon as we put on music, not like rock, we need to use lots of discrimination…I use a lot of classical music, new age kind of music, different ethnic music that's calming…in fact, the children ask for it…if I don't turn on music, they'll say, "can we put on some music?" Immediately the class becomes quiet and more centred. If you learn something with music and rhythm, it's more fun and we can remember it better.

Yes, I explained sometimes we don't use music there's a lot of difference they ask for it I specifically find a lot of difference when they use art work, from very disruptive classes, they become very calm, peaceful, very creative, very focused. Both secondary and primary… the younger ones needs it more … especially the

older ones, if they've had this kind of training for a long time, they're more focused already…The older ones are not so keen on singing…

Researcher: Do you face any problems when using HVWSHE?

T4: Yes, when I do training most of what I teach is from my own experience. The discipline or problems they have…I would highlight some problems that I've had and what I've found effective and what I haven't found effective. And if you have a big group its difficult, teaching is not very easy…The way the society is, the challenges many teachers feel that they are not properly equipped for whatever ideas or techniques they are open to it.

Researcher: ***What about the use of water in culture and traditions?***

T4: Wonderful… if you look at almost all the cultures…so many traditions that deal with water… you will know and how important water is, like the Thai…the main festivals are all around water…like the Thai new year, it's called the Water Festival, and traditionally, it's the idea of the hottest season and having the relief of water…the coolness of water.

And now with the problems with water shortages, with global warming, etc. it is very good opportunity when we're talking about the festivals to also bring in this element of the value…okay, we do play with water but we shouldn't to an excess because we have to save water, we can't just waste it even in ceremonies…it all goes hand in hand. Also we do prayer with water we have to face

And it's so interesting with so many cultures even religious ceremonies such as baptism one of the first ceremony One of the first thing is to do with water.

They enjoy it… again it depends how you teach…if you teach in a dry way giving facts and figures it's not very interesting but if they can see pictures or if they can really feel how it is and get them to find themselves, to do some projects… what are their cultures and traditions in their own different countries.

Researcher: Does time and classroom size influence the teaching of human values?

T4: Yes and no … of course it's easier if you have freedom and time then you can expound on things and also if you don't have really huge classes and again if the teacher is being an example, the teacher is a living example, somehow the values will come over… it's not necessary to have a lot of time…of course it's a great challenge to have a very large class of students, whatever you're teaching.

Most schools are not boarding schools… you could use one period …it's moral or ethics you could use that period where you could really bring in human values and water… even if it is not boarding school the children have to go to the bathroom, washing their hands, their dishes it is not necessary to keep the tap running the whole time. It is not necessary to be a boarding school.

If you bring…it's not…it should not stop with water…values should be in everything and if you have one period of a week where we talk about values, then probably it's not very effective. But if it's part of a whole program that we try yesterday bring values in everything, yes, we emphasise on water and we have this as a project …in our school, it shouldn't just stop there…if the teacher is living values, then whatever the teacher is teaching will in some way be value-orientated.

This is a project in our school we should have values whatever the teacher.

Well after the training, normally they are inspired they feel they've learnt something very important, they make some commitment… some places they are doing evaluation to see how they are putting into practice and how much it's going into the teaching…it's hard to say but I am sure some has…It is happening in Thailand the government is interested in the methods we are using… we have a water institute, we have a water classroom…probably it's visited by about 2000 people a month. Teachers, professors, sometimes students… we find it's inspired a lot of people we also have a lot of support, even from the government…ideas…energies…alternative energies…water.

Researcher: Do you think silent sitting is similar to meditation?

T4: It's not necessary to have religion…So that's what we talk about…in Buddhism, there is the practice of meditation, what we're talking about here is a practice for calming down, for focusing, for better concentration, for developing the memory… I don't think it has anything to do with religion… we present it in many countries we

have never received any objection. It's a way of life… with teaching the children how to learn better, how to be calmer, how not to be a slave to their own emotions it has been experienced that children who really practiced silent sitting have achieved a lot more academically.

We had a boy who was not a very keen student academically, but he was very keen on practising silent sitting, things like these… actually he is a Muslim… he had this dream to be a pilot it's not easy… one of the things you need is language… he always had this dream and when he was in grade 12 he went for this exam… he is not great academically yet he passed all the exams… he was actually interviewed about… it he was able to get into this difficult school…he accredited the ability to get in there to his ability to concentrate with silent sitting. It was a tool for him to be focused… to calm down. You can use poetry, sayings, quotations… if I use prayer I use a more universal kind of prayer.

Researcher: How do you use themes for HVWSHE?

T4: You have a theme with water education for the month… for example, "every drop counts, you can make a difference".

I gave them all, everybody had a glass of water…and I told them to drink.

We thought about how we normally drink water… just for ourselves is a tiny leave a little bit of water at the bottom, we thought about the whole class, if everybody had this bit of water, that actually would be a large amount of water…then we thought about the whole school… the country…

It could be made as a mathematical problem have them work out how much water is being wasted. In that way each one of us can make a difference each one of us throw a little bit of water, we're wasting on a global basis…But if in that way each one us take responsibility, each one can make a difference.

Researcher: How often do you think we need to use HVWSHE?

T4: As I said earlier you have one lesson a week, you have to make it very interesting, you can't have it like a textbook lesson…it doesn't even touch the child. You can use whatever slot is there… and have that at the same time in assemblies … the most schools they have gathering, the flag ceremony… we can get kids to do an

art competition about water, what is the difference between countries that have water and don't have water…Essay competition, to do drama on… in Sri Lanka I remember they did a drama… it's about a forest how lovely it was to hear the sound of birds and all the lush in it, and then you could hear the sound of cutting down of trees, and the difference…children can act this out and feel what happens when water dries up and they can't get water and you see people queuing up the whole day for one pot of water…all these things will help drive the point home for the children. We always ask them about values, what the life learning we have from this kind of activity, some of the themes will be like. Water for life the one that we use a lot and uh… preparing the body with the world how much water is in the world and water is in our body that will be combining water with geography.

The value part… that's why is it we have we are not living life in a selfish way we are using water. Unless we teach children we teach specifically about water… working in groups has the advantages. Rather than lectures… its only dong the group work this idea triggers off in someone else…

Researcher: What kind of response do you have from students when you use silent sitting?

T4: "Well, the techniques…Well…I have been using these techniques for many, many years…they wipe the board…they prepare to teach…in a way silent sitting is like preparing them to receive information to be concentrated…I have the experience…the feedback from children…we have evaluation…especially from older children…Wonderful experiences…it depends you know if you are doing silent sitting the person will become more concentrated we can do with water education."

… if we tell the students let them experience with art for instance its good for… sometimes after silent sitting on activity I do is I have a bowl of water and pass the bowl of water around anyone who wants to make any comment. We suddenly realise how essential water is they realise that water is more precious. I think there is a great difference I think it is something that is spiritual something that I think it is not to do anything to do with religion.

I will say 99% probably only common is that they feel they don't have time. Changes in attitudes and behaviour of students in this school related to water

Researcher: **Do you notice changes in students' attitudes and behaviours?**

T4: Yes, I think they're much more aware now…even in the canteen, when they're drinking, they're more careful…some may still play around with water, it takes a while but on the whole, they certainly are more conscious…they're very aware of the problems…what we have to do about it.

I did a project with one class where they planned out a conservation plan for the school, and one of the things they came up with themselves is …like leakages…in pipes…we combine mathematics and domestic science…with the older children, we got them to do statistics on how much water is needed, for instance to grow a pound of grain versus producing a pound of meat…producing meat requires about 10 times more water. We have to think about so many changes, even changes in diet…these kinds of things, if the children do it themselves, if they find out for themselves, it has so much more meaning than if the teacher just gave them the statistics…one of the things we try to do here is get the children to do research, get them to think for themselves and…it's a very different learning process. The problem with education today is that it is just a process of giving information…there's not much learning…what we want is to teach children how to learn, how to find out…

Researcher: When you use HVWSHE do you see any change in the students? ...such as behavioural or attitude changes?

T4: Yes I have. In the canteen they take they are more careful so children will play around with water… they are more conscious if we talk about it they are very aware I got them to plan out the conservation plan of the school they came out was with leakages. How much water… another thing we have done while talking about water for instance is for food we got. How much water is needed to grow one pound of grain and one pound of meat … it is something to think about even changes in our diet … if children find out themselves. Also one other thing we try to do here is getting the children to do research then it's a very different learning process. How to learn how to research

Researcher: Do you face any problems when training teachers with HVWSHE?

T4: On the whole no… some feel that they are restricted with their curriculum when teachers start to understand you have a goal it is not necessary to do it the same way you can have different ways for children to learn, lots of teachers realise that they have more freedom than they think.

The thing that schools are concerned with is that children know this and by the end of this grade the lesson but it doesn't necessarily mean we have to do it in a particular way…sometimes we have freedom in the way we can give this knowledge.

Researcher: How do you evaluate the changes in attitudes and behaviour of students with regards to water?

T4: Well, you watch their habits, a lot is observation; we do a lot of surveys to see how much water is being used, e.g., children play around with water …

How much water is used how much is reducing… we also have a lot projects… we get the students involved…we do something called rain water harvesting… we don't buy a lot of water any water…all the water we treat ourselves…we're lucky there is a lot of property… we have a lake, we have alternate kinds of energy, we talk about the environment… they are aware of the global warming.

UNHABITAT… yes their main problems is with water and they were the ones who realised that the only way is by bringing values in because otherwise it's just giving information and only statistics. I think only that if we really think about the problems we have with the world with the society, politically, economically, we are probably the most serious problem, and it's the one that's not been dealt with enough is the one on our environment. All the others are just secondary compared to the environment… if we destroy the environment…we don't have a world left and in the environment of course there is air all elements is equally important but water…without water there is no life … if we don't have enough water… and so it's something children can see and can relate to … our bodies are 70–75% of water… the world is 75% water and yet, how much of that water can we drink? now the statistics have shown less than 1%. And unless we do something about the living we are doing … its getting less and less if we don't teach about it it's actually we are not

doing justice for our education and for children because we are not teaching them how to live in the future… and unless we put values in it, it becomes another academic subject.

All values are human values …

Thank you very much.