Evolving educational strategies – Environmental education turns sustainable?

- A case study of Miljöverkstaden in Helsingborg

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Preface and author's thanks

This thesis has been a long time in the making, but it wasn't until recently that it became clear to me what an excellent combination of past, present and future this has turned out to be. Those who know me know about my passion for people, culture and social behavior. Most of my educational and professional choices since the early teens have been made with the objective of learning more about different people, cultures, societies and behavior. Starting out in environmental strategy after years of pursuing these passions by attending various courses and programs at Lund University and other academe, I was afraid that I was putting this behind me to endeavor in the far more factual field of natural science. But lo and behold, with the excellent interdisciplinary approach of this department, there has been no difficulty in combining my interest in the social sciences with those of the natural sciences. Contrary to what I first thought, this thesis has proven to be a fruitful way of marrying the two, and producing something that hopefully can have some impact for the future.

The subject of education has not been something that I have found particularly interesting in the past, even though I have been hard at work trying to influence my educational environment in different ways by serving as a representative in the students' council from the age of 13 and onward. Thoughts about influencing and changing attitudes and behavior have been much further up on my agenda, but there has been little chance of putting thoughts and ideas into practice. My environmental interest was also awakened quite early (yes, I am one of those people who has constantly commented and tried to say what others can do better when it comes to taking care of our environment), but it was not until roughly two years ago while living in East Africa that I started to ponder further on the concept of *sustainability*. Starting my masters degree here at the department of environmental strategy followed suit, and when I commenced working for a mentoring program aimed at integration and multitude by mentoring young children the pieces of the puzzle that has now emanated into this thesis came together. "I believe the children are our future, teach them well and let them lead the way…"[1]

While I have been writing this thesis on my own, not the easiest thing for a social creature such as myself, there are numerous persons who deserve credit and thanks for their influence and input. First, a great big thank you to all the people at Miljöverkstaden for making me feel so incredibly welcome. Klas, Margaretha, Kerstin, Annika and all the rest of you, you have gone above and beyond in trying to help me convey the message of your program. Thanks also to Ludvig Holmdahl at Lund University library at Campus Helsingborg, for help with literary questions, as well as cheerful comments and pep talk. Numerous thanks to my supervisor Michael Johansson, who has spent so much of his time in helping with forming this thesis and acted as my sounding board, and to Christian Henriksson for sometimes making me see things in a new light. Love and thank you-s go out to my family for all their continuous and ever lasting support, and to my fiancé Richard for steadying me all those times when things seemed to come tumbling down. Last, but by no means least, I also extend my gratitude to fellow colleagues Helen Timoson and Hilde Vendt - sources of strength and inspiration and whom without, this thesis would *still* be a long time in the making.

[1] Michael Masser and Linda Creed, writers of this classic line to be found in a Whitney Houston song from 1986

Abstract

Evolving educational strategies

This thesis concerns how current educational practices of teaching about the environment, where focus is practically solely set on ecological perspectives, can evolve into encompassing a triple-bottomed perspective of sustainability where ecological, social and economic perspectives have equal scope. The thesis does not try to find *the* solution to the problem, but rather positive examples and ways of trying to implement the concept of sustainability into education. Sustainable development in education has little to do with actual content, and more to do with methods and approaches. Schools in Sweden today have often adapted to education for sustainable development in a way that focuses on educational content – the environmental education of the past has changed to education for sustainability. But looking closely, it is rather hard to find any change other than the name of the subject. Approaches and methodology of sustainability that would help the perspective to permeate *all* of education are disregarded and, even though emphasized in the curriculum, have little breakthrough in reality.

The thesis tries to explain some of the past and current thoughts on sustainable development, environmental education and what has become known as education for sustainable development. By making a case study of a local program in Helsingborg – Miljöverkstaden, insight has been given into how to try and solve some of the questions surrounding education for sustainable development –both content- and method-wise. Miljöverkstaden is a program for environmental education aimed at teaching students in Helsingborg sustainability. Not only what sustainability is, but also with a sustainable approach to teaching. The program is centered around seven educational modules, or yearly projects, which are the main focus and serve as practical examples in the thesis when discussing and suggesting ways of implementing education for sustainable development.

Keywords: Education, Sustainability, Educational strategies, Environmental strategy, Sustainable development, Environmental education

Sammanfattning

Utbildningsstrategier under utveckling.

Denna examensrapport handlar om hur dagens undervisningsformer för miljökunskap, då fokus nästan enbart ligger på ekologiska aspekter, kan utvecklas till att inkludera ett trippelbottnat perspektiv där ekologiska, sociala och ekonomiska perspektiv får lika stort utrymme. Denna rapport försöker inte hitta *lösningen* på problemet, utan snarare visa på positiva exempel och ge en bild av olika sätt att försöka implementera idéer om hållbarhet i utbildningen. Hållbar utveckling i utbildningen har lite att göra med verkligt innehåll, och mer att göra med metoder och tillvägagångssätt. Svenska skolor av idag har ofta anpassat sig till utbildning för hållbar utveckling på sätt som innefattar utbildningens innehåll – dåtidens miljöundervisning har blivit utbytt mot hållbarhetsutbildning. Men vid närmre granskning är det svårt att hitta andra förändringar än ämnesnamnet. Tillvägagångssätt och metodologi för hållbarhet som skulle kunna hjälpa till att få perspektivet att genomsyra *all* utbildning ignoreras och får, trots tonvikten i läroplanen, litet utrymme i praktiken.

Examensrapporten försöker förklara en del forna och aktuella tankar kring hållbar utveckling, miljöundervisning och det som blivit känt som lärande för hållbar utveckling. Genom en fallstudie av en lokal verksamhet i Helsingborg – Miljöverkstaden, ges insikt i hur en del av frågorna kring lärande för hållbar utveckling kan lösas – både innehålls- och metodmässigt. Miljöverkstaden är en verksamhet för miljöundervisning med syfte att utbilda Helsingborgs elever om hållbarhet. Inte bara vad hållbarhet är, utan också med ett hållbart tillvägagångssätt i utbildningen. Verksamheten är centrerad kring sju utbildningsmoduler, eller årliga projekt, som är huvudfokus och används som praktiska exempel i uppsatsen när sätt att implementera lärande för hållbar utveckling diskuteras och föreslås.

Nyckelord: Utbildning, Hållbarhet, Utbildningsstrategi, Miljöstrategi, Hållbar utveckling, Miljöundervisning.

Table of Contents:

1 INTRODUCTION

This chapter introduces the reader to the background of the subject at hand, as well as presenting the objective, hypothesis, questions, limitations of and translations in this thesis.

1.1 Background

Humans are curious by nature, and are able to learn throughout their lives. Learning is a process that starts at birth and continues as long as we stay eager to incorporate new knowledge into our memory banks. Organized learning, and such knowledge each and every one of us should carry with us, is taught mainly through our national education system. In Sweden there is a mandatory ten years of school (including one year of preschool), and a great majority of Swedish students put another three years of upper secondary school[2] to that before they finish. Many Swedish students then continue on to higher education at college or university. Regardless of chosen path, it is during the first mandatory ten years that we are expected to acquire much of the knowledge that will prepare us for living a full and contributing life in our societies. Because of this, the importance of the educational structure and content in Swedish schools is monumental to how students cope with different situations in the world surrounding them.

Sustainable development, and sustainability in general, are concepts that become more and more tangible in our everyday lives. These concepts have an ever-increasing number of definitions, but attitudes and altered behavior are what should be the real center of the discourse. If education in Sweden, on the principle of having such a central and influential role in everyone's upbringing, could be permeated by these concepts, attitudes and behavior would be able to change, and we would be on a somewhat slow but steady road to this development worth striving for.

Teaching about the environment and how we should act towards nature is nothing new in the Swedish educational system. For almost 50 years, environmental science has been a part of the national curriculum and given scope in primary and secondary education. Swedes in general are considered well educated about the environment and natural resources. We recycle, we are out and about in nature thanks to our cherished "allemansrätt"[3], and we often seem to react to acute environmental crises surrounding us. Whilst our surroundings and the entire world around us is changing, and continues to change more and more rapidly, the question still remains whether educational systems modify to encompass these changes?

It is interesting to review already existing examples of education for sustainability, underlying conditions supporting a change that can ensure sustainability as an objective in all education, and what practical principles exist for working out a method for education for sustainability. Most of all it is interesting to look at how education for sustainability can become multifaceted, not just an extension of the existing environmental science education taking place in Swedish schools. This is why this final thesis will be written in close collaboration with Miljöverkstaden (MV), a part of the Technical Administration[4] (TA) in Helsingborg – a program which in its own words is dedicated to teach sustainable development to students attending Helsingborg's primary and secondary schools.

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[2] Swedish = *Gymnasium*
[3] The "allemansrätt" is simply put a national law giving all the legal right of access to private land.
[4] Swedish: *Tekniska Förvaltningen*

1.2 Purpose

The purpose of this thesis is to review the program of MV in the municipality of Helsingborg, - its methods of work, pedagogy, goals, visions etc. The thesis also aims at describing MV's program in connection to the guiding principles regarding education for sustainable development laid out by government and authorities in a number of legal acts and governing documents. In addition to this, the purpose of the thesis is also to, by Swedish and international exemplifications, and personal reflections, give suggested measures to how MV can further their program and mark their education sustainable.

1.3 Problem and questions

How can Miljöverkstaden in Helsingborg develop their program to serve as an example of education for sustainable development?

1. How does the program at MV work at present?
2. What do predominant international and Swedish legal acts, governing documents and authorities say about education for sustainability and sustainable development?
3. Are there any good national and international examples for how MV can work with education for sustainability and sustainable development?
4. How can MV adapt its program to encompass a triple-bottomed[5] perspective on sustainable education?

1.4 Limitations

This thesis concerns MV in Helsingborg, and does not encompass other parts of the TA in the municipality of Helsingborg or its partners, unless stated otherwise. The thesis reviews, unless otherwise stated, the main elements of the program – its seven learning projects[6], not the other parts of the program or its educational elements. These limitations have been made with consideration to the time and scope of the thesis, but mostly because of the aim to develop the education at MV, where the modules provide most room for such development.

The thesis also reviews the conditions for learning for sustainability, and the progress made in this field, mainly from the point of view of reports made by the Swedish national authorities. International reports and other international material have also been used, because they often constitute the foundation of Swedish approaches, but as complements, not as the primary source for analysis. Reasons for this limitation is simply because the scope and variety of literature on the subject is so extensive, and because of the fact that governing documents and supervising authorities are the ones that could be expected to have the greatest impact on the Swedish educational system.

[5] For a definition, see figure 2 in chapter 3.3
[6] Referred to hereby as *modules*

Another limitation is that the thesis is not concerned with learning per se, how humans take in and process knowledge or how behaviors and attitudes can change, but rather the methods of teaching from a sustainable approach. This limitation has also been made with consideration to time and scope of the essay, because although an interesting subject, it is not imperative to understanding key concepts of SD.

1.5 Translations

Many of the quoted references in this thesis are Swedish texts, written in Swedish. The author therefore wants to clearly point out that unless otherwise stated, the translations of quotes etc are her own. The author takes full responsibility for these translations and has done her best to avoid any misinterpretations.

2 METHOD

In this chapter, the basics of the SWOT-analysis, and a description of the other methods used to attain the objectives of the thesis will be presented.

2.1 SWOT-analysis

SWOT stands for **S**trengths, **W**eaknesses, **O**pportunities and **T**hreats, and is a strategic planning tool used for evaluation. Albert Humphrey, formerly with the Stanford University, invented the technique in the 1960's.[7]

Definitions of SWOTs

	Helpful to achieving the objective	**Harmful** to achieving the objective
Internal (attributes of the organization)	**Strengths**	**Weaknesses**
External (attributes of the environment)	**Opportunities**	**Threats**

Figure 1- Model of a SWOT-analysis

A SWOT should serve to set objectives and define what it is a program/business/organization wants to achieve. As shown above, features of a SWOT should be attributed to either internal or external factors of the organization, and are either helpful or harmful in trying to achieve a set objective. The SWOT should also serve to analyze existing strategies (whose features can be either strengths or weaknesses), develop and design new strategies (which might change the objective of the analysis) and prepare how the objective should be implemented.[8] With a clear objective and/or aim in mind; the SWOT- analysis is a good tool for finding ways of pursuing these.

2.2 Chosen case study

The choice of Miljöverkstaden as a case study came quite naturally. It is local, it is aimed at children, and it teaches about the environment. It was also chosen on the basics of an already established contact between the department of environmental strategy and Miljöverkstaden – Klas Nyberg, a contact with the program, has previously given a lecture for the class.

[7] Wikipedia, 2007-04-12
[8] Ibid, 2007-04-12

2.3 Collection of Data

Data collected to complete this thesis is both primary and secondary in its nature. All primary data has been collected with the aim of the thesis in mind, e.g. interviews, observations and informal talks. Secondary data has come from literature, e.g. books, articles, reports, and other sources such as the Internet.

2.3.1 Interviews

For the purpose of completing the picture of MV's program and its suggested impact, interviews have been made with selected representatives from MV – Klas Nyberg, Margareta Bengtsson and Kerstin Paradis. Paula Håkansson from the Skol- och Fritidsförvaltningen[9] (SLA) in Helsingborg's municipality has also been interviewed, to shed some light on how decision-makers in Helsingborg feel about the importance of education for sustainability. A method similar to that of qualitative interviews has been chosen for all of the interviewed subjects, because of the fact that they tend to give a fuller picture of the problems and questions at hand. Qualitative interviews give more scope for individual room, and it is easier to catch nuances and let the subjects answer in their own words[10]. Interviews were not conducted in the way of structured questions, but rather as topics that were discussed and interrelated. This was done in order to impose the minimum amount of control over subjects' answers. Topic discussions were however often followed by questions, and in those cases care was taken so as to ensure these were not leading in any way. Notes were taken during the interview, and the material was transcribed into the thesis or in separate documents as soon as possible after completion. Completing topics and questions have been answered by phone or by e-mail.

2.3.2 Observations

As a part of the aim to understand the program at MV, active participation in the practical features of the program has occurred on several occasions. This has involved classroom visits and teaching, refresher courser for teachers learning about education for sustainability, and visits to different exhibitions arranged by MV at Dunker's House of Culture and Campus Helsingborg. There have also been observations of students visiting MV on their premises at Sundspärlan as features of the various educational modules. These observations have provided insight into the practicalities of the program and served as adding knowledge to what has already been acquired through interviews and literature.

2.3.3 Informal talks

During the time span of working with this thesis, a lot of time has been spent at MV. There have been visits to both their main office building to get a grip on the scope and content of their program, but also out in classrooms, at exhibitions and outings to try and learn the practicalities of their modules and teachings. At these times, countless informal talks have taken place with key informants who work at MV, or people who benefit from their education (e. g. teachers, students and other school staff), all to complete the picture of MV. Whilst observing the different features of MV's program, there has also been given the opportunity to interact

[9] "School and Leisure Administration" – (SLA)
[10] Trost, 1997

with the students and teachers, and even do some teaching. This has served a great purpose in making MV's program come to life and added lots of important information.

2.3.4 Literary sources

Most literature in this thesis serves the purpose of outlining the existing thoughts and actions concerning education for sustainability, and limitations are quoted in section 1.4. A majority of the texts, papers, articles and reports used in this thesis have been available through the Internet – a sustainable step in itself. Carefulness has been observed in selecting these records from renowned and well-known Internet sources, not to compromise the trustworthiness of the findings. Lund University databases such as ELIN and LOVISA have also provided ample material. Other literary sources have included printed and non-printed material produced by MV, such as information folders, overheads, leaflets, routines, reports, and other data. These have served to further complete the picture of MV and added much food for thought about the progression of the modules and the rest of the program.

2.3.5 Evaluation of sources

There is always the importance of evaluating and questioning your sources, even though they have been chosen with care. This is especially true when interviewing people and asking them to express their thoughts and views. Making it clear that subjects are answering as representatives; of MV, of classes, of administrations and so on, is crucial to making sure that answers can be trustworthy and accurate. Personal background, passions, interest, profession and a number of other factors can also influence answers, and might make it hard to distinguish between what are personal and what are professional views. In certain cases, subjects might not want to convey the whole truth, and therefore it is important to try and have a multitude of sources. All of the points mentioned above have been taking into the gravest of consideration when interviewing for this thesis.

Literary sources have been chosen on the basis that they have been produced by governments and authorities who have an obligation to convey the truth to the public, or on the basis of having been published by renowned journals and/or magazines. Still, an effort has been made to try and find more than one source of information for the facts presented by any given article, program or investigation. When it comes to MV, their literature has been used with the pretence that it can, and perhaps should be questioned, because one of the aims of this thesis is to try and work out how SD can be incorporated into their program.

3 THEORY

In this chapter there will be a presentation of sustainable development, of key concepts regarding education for sustainable development and governing documents. This chapter also includes a more in-depth look into education for sustainable development in general and in Sweden – its aims and goals along with a presentation of past, present and future features of such education.

3.1 Sustainable Development

The concept of sustainable development (SD) could be one of the hardest to grip, to define and to solve in our time. Even though practically everyone alive today has heard about the concept, and most of us use it or come in contact with it to some extent, there is little doubt that not as many of us can give a commonly accepted definition of what SD is. The concept of SD is not very different from some concepts of religion – since it is made to encompass as many people and phenomenon as possible, it is becoming increasingly difficult to pin down that core of absolute truth. Scholars Johan Öhman and Leif Östman compare it to the concept of democracy, in saying that "it is the constant conversation that keeps the (SD) alive (…) the concept of (SD) works like a compass in the development of society: it gives a direction but says nothing about the path and nothing about a definite goal."[11] If the scope is wide, and includes all the efforts being made concerning the concept of SD, it is easy to get lost among the vast numbers of programs, plans, strategies and treaties that have formed during the last decades. Nonetheless, the concept is one of the most important of our time, and some kind of understanding is necessary if SD is to be implemented and become part of our attitude and our behavior.

According to one source[12], the concept of SD was coined around 1980 by the International Union for Conservation of Nature, IUCN[13]. Despite the IUCN, it was not until the Brundtland Commission published its report "Our Common Future" in 1987 that the concept of SD became widely known. It is also in the report that the most commonly accepted definition of SD is found:

> *"(SD)…meets the needs of the present without compromising the ability of future generations to meet their own needs."*[14]

Another well known definition of SD was conjured in 1991 by the IUCN, the United Nations Environmental Program (UNEP) and the World Wildlife Fund (WWF). In their common report "Caring for the Earth" they offer the following definition to the concept:

> *"[SD] … refers to improving the quality of human life while at the same time living within the carrying capacity of supporting ecosystems."*[15]

According to one source, quoted in the "Skolverket"[16] report "Hållbar utveckling i skolan"[17], there were over 40 definitions to SD in 1992, and the number was expected to grow[18]. If a

[11] MSU 2004 p.15
[12] SNAE 2002 p.18
[13] IUCN is a worldwide international body with numerous preservation-functions, among others the yearly distribution of the so called "Red List" of endangered and threatened species.
[14] Brundtland, 1987, p.24
[15] Beazley, 1993, p.13

concept is this inclusive, a core of absolute truth can be hard to find, and the rising number of definitions suggest that there are still problems with understanding the concept itself.

Despite this, SD *is* more than just a definition of something hard to understand; it is a step out from the traditional environmental debate, and the complex of environmental problems that often dominate our ideas concerning how to ensure our planet's survival when humans sully and destroy as much as we do. The concept encompasses not only the ecological dimension of developmental issues, but also a social and an economic dimension. The social dimension deals with questions such as democracy, justice, fairness, equality and other human and cultural perspectives, whilst the economic dimension deals with questions concerning economizing, support, providing, resources, trade etc. In the discourse of SD, all three dimensions are given equal scope, and are interdependent in order to ensure that development is truly sustainable. This is usually called the "triple-bottom line".

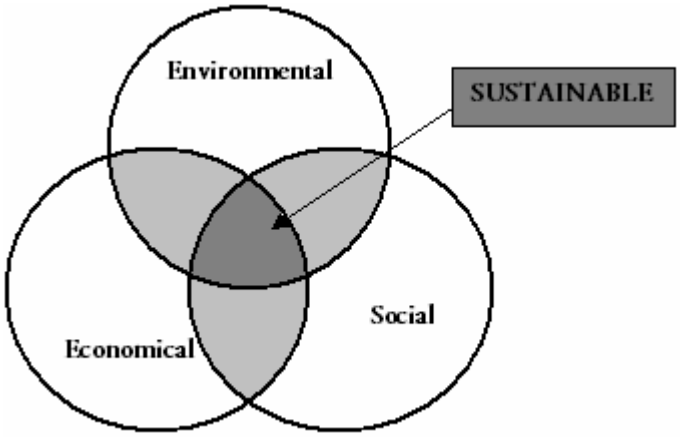

Figure 2 – The triple bottom line

Our Common Future was a preparative report for the big United Nations conference in Río de Janeiro 1992, the "Río conference", where many important decisions regarding our common environment and surrounding world were taken. One of the documents that emanated from this conference is the so called Agenda 21, a working manifesto that will prepare us for the challenges of the 21st century[19] within the ecologic, social and economic dimensions. Governments all around the world are given the ultimate responsibility of creating national strategies, plans and programs with suggested measures, which together with international cooperation and the prominent position of local groups can create a common platform for working with developmental issues[20]. Agenda 21 can thus be seen as a big international step towards striving for SD. In Sweden, implementing Agenda 21 has led to every municipality in the country having formed a local Agenda 21-plan to manage local developmental issues[21].

After the conference in Río, there was a literal explosion of workgroups, organizations, measures and strategies for how we, as a global community, should handle the question of development and sustainability. Sweden strived to be in the forefront of environmental measures, and aimed to be one of the leading member countries when it came to preparing for

[16] The Swedish National Agency for Education – (SNAE)
[17] "Sustainable development in the school"
[18] Torkelsson, D in SNAE, 2002 p.29
[19] UNESA, 2007-03-12
[20] Ibid, 2007-03-12
[21] Regeringskansliet, 2007-03-12

the next international summit in Johannesburg 2002[22]. At this summit it was decided that all of the United Nations actions, programs and work should be subordinate to the principle of SD, with a triple-bottomed line concerning ecology, economy and social issues[23]

For a relatively long time, Sweden has been working in parallel with national environmental- and developmental complexes of problems on the one hand, and international obligations and programs on the other. Besides the aforementioned local Agenda 21, the Swedish government has decided on national environmental quality objectives, and formed a Swedish strategy for SD. This strategy in short states that SD should be the guiding principle and goal of all politics and political decisions, with a focal point on international cooperation and constantly increasing efforts and allocated resources[24]. Because this report states that the strategy should permeate all political decisions, as a natural consequence the Swedish national education system and all schools are affected by SD, and this way of thinking is included in legal acts and other documents that govern and control education.

3.2 Agenda 21, Baltic 21E and education for SD

One of the most prominent documents when it comes to working with SD is the well-known Agenda 21 program, a product of the Río conference in 1992, mentioned above. The entire 36th chapter of the Agenda 21 text is dedicated to the importance of education as a tool to promote sustainable development. Among other things it states

> "*Education is critical for promoting (SD) and improving the capacity of the people to address environment and development issues. […] Both formal and non-formal education (is) indispensable to changing people's attitudes so that they have the capacity to assess and address their (SD) concerns. […] environment and development education […] should be integrated in all disciplines, and should employ formal and non-formal methods and effective means of communication.*"[25]

As already mentioned, every Swedish municipality should have made a local Agenda 21 plan to incorporate this (and all other Agenda 21 chapters) in their everyday approach. In the Baltic countries, the ministers of education gathered in 2002 and agreed on the Baltic 21E – a program directed towards promoting education (hence the 21*E*) for sustainability in schools. More concrete than the international Agenda 21, the Baltic 21E states that the overall goal for education is "All individuals should have competence to support a sustainable development that meets the needs of the present without compromising on the ability of future generations to meet their own needs."[26] and "The key to creating a more sustainable and peaceful world is knowledge."[27] This will be accomplished by clearly including education for SD in the national curriculum, and thereby promote education for SD as a basis for all parts of school life and a part of regular teaching methods and learning. It further requires all teachers to be competent in teaching SD, and that there are sufficient methods and a good learning environment inspiring to aspire SD. [28]

[22] Regeringskansliet, 2007-03-12
[23] Regeringen, 2004 p.1
[24] Ibid, 2004 p. 7f
[25] UNESA, 2007-03-19
[26] Baltic 21E, p. 7
[27] SOU, 2004 p.46
[28] Baltic 21E

The Baltic 21E has five action areas encompassing all of the educational system, dealing with having each member country adopt policies and frameworks for implementing education for SD, putting a lot of emphasis on competence development and continuous education for educators in the system, stimulate a learning environment that will encompass education for SD through different resources, and initiation and promotion of research regarding SD and teaching methods for education for SD.[29]

3.3 Key concepts of education for SD

The following key concepts gives a starting point and an insight into what education for SD is meant to be, according to the UN, and also adapted by the Swedish government and government agencies. As can be seen, most goals for education for SD have to do with the process of learning, rather than the content of education.

International committees and organizations have recently published many documents concerning education for SD, one of which is the UNESCO report published in 2004 with regards to the UN making 2005-2014 the decade of education for SD. The report states six distinguishing features of education for SD, which should be applicable around the world:

- Interdisciplinary and holistic – not a separate subject in the curriculum
- Value based – values should be presented with the possibility of being reviewed, debated, tested and applied
- Critical thinking and problem solving – creating confidence when dealing with challenges and dilemmas of SD
- Pluralism in method – a variety of approaches in teaching SD
- Participatory decision-making – students are involved in what and how they are being taught
- Local relevance – education encompasses both local and global perspectives in the preferred language of the students [30]

3.4 Governing Documents

Review of the following documents aims at finding points of reference deriving from the definitions of SD, as presented in sections 3.2 through 3.4.

3.4.1 National School Act

The School Act[31] (SA) governs all schooling and education in Sweden. In 15 chapters and amendments, the public educational system is reviewed. Swedish public education consists of preschool (one year), compulsory school (nine years), upper secondary school (three years), special school (separate schools for mentally challenged and deaf students) and Sami school. The SA was created in 1985, but as every other legal act it is constantly transformed and added

[29] Baltic 21
[30] Adapted from SOU, 2004 p.42f
[31] Swedish = *skollagen*

to. 'Statens Offentliga Utredning'[32] (SOU) shows in its investigation "Att lära för hållbar utveckling"[33] that nowhere in the SA is it explicitly said that SD is an aim or a goal for education as such, but different paragraphs and pieces still show that this perspective is taken seriously as a part of education and the educational system as such[34].

Since SD or sustainability in education is not explicitly mentioned in the act, one has to dig deeper in order to find which sustainable perspectives are being put forward in different paragraphs. There is good support for sustainability in the SA, especially concerning the social dimension. 1 chapter, 2nd paragraph reads:

> *"Activities in school shall be designed in agreement with fundamental democratic values. Each and every one working in schools shall promote respect of every man's self worth and respect for our common environment."*

Education aims at promoting the students "development into responsible human beings and members of our communities"[35], and a permeating point is that students should be able to influence their education and its contents[36].

An important thing to notice in the SA is the second chapter, the municipal organization for schools, where certain responsibilities and authorities are investigated. Among other things this chapter states "it is the duty of the principal especially to work on promoting the development of education"[37], which implies the special importance of informing these key persons about the importance of education for SD. Furthermore it states "every municipality and county shall ensure that competence development is organized for personnel involved in education"[38], meaning that it is equally important for key persons outside the educational arena to be informed about education for sustainability and find it important to disseminate and implement.

The SA is the only purely legal form of document that regulates education for SD, and it acts as a support for making the educational system work, neither more nor less. In Sweden there are other documents that supplement this and regulate education and the curriculum[39], and they hold more information regarding education for SD.

3.4.2 LPO 94

LPO 94 stands for "Curriculum for the compulsory school system, the pre-schooling class and after-school recreation centers"[40], and is the fundamental national governing document regulating the local curriculum as it is formed in municipalities. This document describes the goals and guiding principles for a number of core-, and their adjacent, areas in schools, all with

[32] 'Public Investigations of the Government'
[33] 'Learning for sustainable development'
[34] SOU, 2004 p.122
[35] SA, 1st chapter 2§
[36] 2§ in SA chapter 4-8, 12, 13; 11th chapter 4§
[37] SA, 2nd chapter 2§
[38] Ibid, 2nd chapter 7§
[39] Swedish - *läroplan*
[40] "Läroplan för det obligatoriska skolväsendet, förskoleklassen och fritidshemmet", from LPO 94

the aim of creating unique students who through the principle of responsible freedom feel ready to participate in society[41].

There are more apparent traces of trying to implement sustainability in education in the LPO than in the SA - and a sustainability that by definition is comprised by ecological, as well as social and economical perspectives. Understanding, openness and empathy are values that reoccur throughout the text and are to be instilled in students through education, along with democracy, personal responsibility and taking a stand. Those values, together with ideas of abilities to critically value and overview, see causes and effects, contextualization and long-term perspective makes the LPO 94 a big step forward in possibly enabling education for SD.

An interesting note to the LPO 94 is the fact that even though it forms a good foundation for implementing sustainability in education, it is mostly through the environmental/ecological and only rarely social or economical perspectives that SD is ever mentioned in an educational context:

> "*Through an environmental perspective (the students) are given the opportunity to both claim responsibility for the environment they themselves can affect, and get a personal relationship to comprehensive and global environmental issues. Education shall illustrate how societal functions and our way of life and work can be adapted to create a (SD)*"[42]

As mentioned before, the SA determines that it is the principal's duty to further the development of education. This has been implemented in the LPO 94, and the principal's duty to create a possible starting point for education for SD is presented as follows:

> "*…education in different subjects is coordinated to enable students' perception of larger areas of knowledge as a whole, - interdisciplinary knowledge-areas are integrated into education through different subjects. Such knowledge-areas are for example environment…*"[43]

The LPO thinks of interdisciplinary knowledge as being of great importance in order to understand the span of SD, because of the many sustainable values presented that demands something other than subject-divided studies.

[41] SNAE, 2006 p.3
[42] LPO 94, p.6
[43] Ibid, p.17

3.5 Education and learning for sustainability

This section describes the concept of education for SD, mainly from a Swedish standpoint, but also with general examples of what education for SD is thought to be.

3.5.1 Some general thoughts about education for sustainability

The key concepts described in section 3.3 gives the basic foundation for what education for SD is supposed to be about. But how does that come about? What to do in order to make sure that the key concepts of education for SD are implemented in schools, in Sweden and all over the world? Ann Dale and Lenore Newman of Royal Roads University in Ottawa talk about a sustainable development literacy that has an interdisciplinary approach, and where the main focus is that of understanding the complex relations of man and nature:

> *"(SD) literacy builds upon a progression of environmental and ecological literacies. The principal departure from these fields is the conception of the interrelationship between human and natural systems. The basic premise of sustainable development is that human and natural systems are dynamically interdependent and cannot be considered in isolation in order to resolve critical issues. Human societies and ecological systems are so interconnected that they are co-adaptive, reacting to each other and to previous interactions and reactions in a network of feedbacks."*[44]

They also mention thoughts of implementing education for SD, and describe process-based learning and giving up traditional ways of 'fact bundles' and 'cookie-cutter approaches' that are a part of the traditional education system where teachers are offering their knowledge to students. Education for SD needs a dynamic approach that encompasses shifting sets of problems, values and interests – often conflicting ones, and aim at unifying these. Understanding the existing structures of the educational system is also a must in order to make sure that a sustainable approach does not stay on paper but that changes can be made, and *are* made. [45]

There are many others who agree that structures and approaches are of vital importance to how education for SD is to be implemented in a meaningful way. One of them is Claudia María Vargas, who talks about developing a "cultural sensitivity" when implementing education for SD. She draws upon the work of Davis et al. who say: "for development to be socially and environmentally sustainable, it must take into account and draw upon the values, traditions, and cultures of the people in the countries and societies that it serves"[46]. By affirming cultural heritage, many students will feel more at home in schools, while others will become more open to differences by being exposed to them. If schools adopt an approach that celebrates multitude, encourages several sources and opinions, teach interdisciplinary subjects and have a holistic framework; education for SD has the greatest possibility of being successful.[47]

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[44] Dale & Newman, 2005
[45] Ibid, 2005
[46] Davis & Ebbe, 1993
[47] Vargas, 2000

3.5.2 Swedish foundations

> "*(SD) is not a subject. Education for (SD) is a perspective supposed to permeate all education, an outlook that helps the teacher in choosing material and method. It combines social, economic and ecological aspects of our society. And a lot of it deals with democracy*."[48]

Such a quote narrows it down, and at the same time presents the most accurate image of what education for SD is thought to be (or should aim to be) in Sweden today. Nationally, in Sweden, the aim of education for SD should be to instill the ability and will to work for a sustainable development, both local and global, in every student. Whilst learning today is divided into separate subjects, education for SD must exist in all subjects, interconnecting them and making them interdependent. The concepts must be wide and inclusive, adapted to local conditions and have a focus of processed based thinking.[49]

According to scholars Johan Öhman and Leif Östman, education for SD will not mean new content in schools, but that the already existing content will fall under a new perspective, with a broadened approach to the complex of problems concerning SD. Learning for sustainability concerns our entire living conditions and our global environment, and central to all education for SD should be democracy. Öhman and Östman also imply that SD contains a specific ethical approach, where different points of view are illustrated and given room in the debate. Education for SD needs to be pluralistic and give room to the multitudes of our communities, and teach everyone to value and argue their choices. All this should be done from a local perspective, and adapted to circumstances specific for each school.[50]

3.5.3 Past and present methods and education

Education about the environment has existed in Swedish schools, in one way or the other, since the 1960's, when the natural environment was a starting focal point, and teachings were based on pure *facts*. The subject in it self was the center of learning, and the teacher mediated knowledge to his or her students. This type of education focused on environmental problems as being an unwanted consequence of the world's development, and by educating himself, man could control the results of his abuse on nature. Scientists and scholars had the right answers to how these problems could be solved; so environmental problems were mainly viewed as lack of knowledge.[51]

The factual-based method of teaching continued for about two decades, but in the 1980s it was challenged more and more by a so called *standardized*[52] method of teaching where the student and his or her needs were put in the center by creating a problem- and reality-based education. Environmental education (EE) of this era also encompassed some social, cultural, economic and political questions, but these were still subordinate to the ecological environmental issues. From this standardized method of teaching, the complex of problems concerning the environment is seen as a conflict between man and nature, where experts will guide humanity

[48] MSU, 2004 p. 8
[49] SOU, 2004
[50] MSU, 2004 p. 11ff
[51] SNAE, 2002 s.10ff
[52] Swedish - *normerande*

on the right path. It is important for the student by means of progressive and problem-based learning to see the causes and effects of knowledge, values and behavior.[53]

During the 1990's, EE developed further to include what we today call *learning for sustainability/education for SD*. From this point of view, it is no longer only ecological environmental issues that are at the center of education. There are three equally important dimensions forming the basis of SD – the ecological, the economical and the social dimensions. Problems existing in our societies that were called environmental before are today looked upon as a result of conflicts between different interests and groups. They are problems that permeate all of society, not just the area of environment. Scientists are no longer the obvious authorities because they quite often represent a specific standpoint, and experts often comment quite differently to the same things. Students learn about the democratic processes that flow through society, and they are taught conflict-based methods of learning in order to train their ability to critically value information and take a stand. Through conversations, discussions, reconstructions and a pluralistic and inclusive way of thinking, students become citizens who are aware of the situation, prone to apply their skills and knowledge and thereby contribute to a SD.[54]

Looking at the reality of the situation, what schools today choose to call education for SD is mostly synonymous with traditional education about the environment or environmental science. Both the SNAE and SOU take this environmental science approach in their documents and agree that our affects on planet earth have been described almost solely from an ecological point of view[55]. The SNAE report describes some of the legislative measures taken to develop EE, and in writing there is a clear aim of educating for SD, and implementing some of the key concepts such as democracy. An outcome of the legislative framework of the SA and the national LPO 94 is that schools today can be environmentally certified[56]. As a certified school, all aspects of the school as a physical environment, along with education is reviewed, improved and continuously evaluated.

The SNAE also presents an investigation of how EE or education for SD is actually implemented in schools today. Through a survey, they have found that 72% percent of teachers in mandatory school teach about the environment, but only 31% have adapted a sustainable approach to their education[57]. This means that the majority of teachers are still abiding by one of the past methods, where ecological perspectives on environmental issues are predominant. This, and an even more troubling reality is confirmed in the survey; when teachers were asked whether they include social and economic as well as ecological perspectives in their EE, only 65% of the teachers who said that they teach in accordance with education for SD answered yes to two or three of the perspectives[58]. This means that more than one third of teachers who say that they have a sustainable approach to their teachings actually do not!

The SOU report confirms the SNAE outlook on the reality of education for SD in Swedish schools today. This report takes the key concepts of education for SD as a point of departure in its evaluation. Amongst other things it states that what is mostly lacking at present is students' ability to influence their education (contents and methods), reality based learning – where connection with the adjacent society is crucial, and multidisciplinary collaborations that extend

[53] SNAE, 2002
[54] Ibid
[55] SNAE 2002, SOU 2004
[56] Swedish = *"Miljöskola"*
[57] SNAE 2002 p.116,121
[58] Ibid p.124

past today's occurrences in preschool and early school years. The SOU also poses the question of whether young students have the will to work towards a SD. Even though they have a good knowledge of democracy and societal values, they lack in the ability to apply these values. Developing a comprehensive and a critical approach is imperative for students, especially because of the toughened social situation described in many schools today.[59]

Needless to say, there are still a number of good examples of education for SD (some are even presented in the SNAE report, despite its general grim outlook on the situation), and because these reports are a couple of years old now, hopefully the future looks brighter and brighter.

[59] SOU 2002 p. 89ff

4 RESULTS

This chapter gives a broad outline of examples of how learning for sustainability is applied in Sweden and internationally today. After this, the chosen case study will be presented, which will paint a more complete picture of MV – findings with regards to several aspects of the program.

4.1 Examples of education for sustainable development

There are numerous examples, international and national, of education for SD. This section will only briefly present the main focus areas and objectives of a few selected ones; to describe some of what is going on around the world and to offer inspiration for MV and other programs dealing with these questions. Some examples are focused on the key concepts concerning education for SD (as presented in section 3.3), and others on direct actions and features to be included in education. For the more interested reader, links and notes on where to find further information will be offered for each example.

4.1.1 Swedish examples

Examples 4.1.1.1 through 4.1.1.4 are all described further in the SNAE report from 2004. Examples 4.1.1.5 and 4.1.1.6 are described further in the MSU report from 2004. For more information on these sources, see the reference list.

4.1.1.1 Tussmötesvägen, Preschool

This preschool in southern Stockholm started working with the environment as a part of the campaign "The Natural Step"[60], and it now permeates all parts of education and daily life – from ecological food purchases to recycling and biological treatment plants. A lot of focus is put on ecological perspectives, but social and economic perspectives also play a big part, and they are all intertwined and codependent.[61]

The most important thing is to make the children aware and make connections between what happens in nature, what benefits can be reaped, and how to give back in order to create a sustainable cycle. This is done through recycling, through school animals such as hens (whose eggs are used in cooking), and also by having adopted sponsor children in other parts of the world. Apart from this, Tussmötesvägen always has an ongoing theme lasting a semester or more that serves to connect and structure all education during that time. All the teachers in a team work together with the theme and get the children involved.[62] This is a sustainable way in getting children to make connections and getting the idea of SD to permeate more than just separate subjects.

4.1.1.2 Skattungeskolan

In Orsa, the school of Skattunge is one of several schools included in a municipal environmental network. This school works with letting children decide more about the content of education. This is most prominent in the outings held every Monday for children in preschool through year 3, where observations and findings serve as a foundation for discussion

[60] Swedish = *"Det naturliga steget"* – a foundation established in 1989 with the aim of organizing associations in working with environmental questions (taken from www.ne.se 2007-05-02).
[61] SNAE 2004 p. 49ff
[62] Ibid

and learning when children return to their classrooms. Children are encouraged to draw and write down their thoughts and questions as a part of processing information. Sometimes it's the other way around, where students are given tasks in several different subjects and sent out to explore and find the answers themselves.[63]

This school also collaborates with other schools in Sweden for various research projects. They also work with social aspects of SD in adopting an anti-bullying plan and having different "friendship-exercises". For staff, there is also an environmental plan with goals and aims for the school's environmental profile. This plan is revised and followed up every semester, to ensure that all members of staff, particularly new staff, are well informed about the content.[64]

4.1.1.3 Fjälkestadsskolan

This school outside of Kristianstad has found that working with the environment has great benefits for students, both practically and psycho-socially. The school works with a student environmental council, and those involved there have been a part of writing to municipal administrations to try and affect their decisions about for example recycling (with the result that the school is now included in the extended recycling route, where practically everything is recycled). Doing this type of efforts of writing to affect and influence decisions has strengthened students and made them proud in and of their work.[65]

Working with positive affirmation is another important part of education at Fjälkestads' school. By experiences, showing good examples of natural cycles, and by making students reflect by not only answering but also asking questions in return, teachers feel that their students get a better sense of trust in democracy and other values connected to SD. The school also works with theme weeks twice a year, where there is a superior theme such as forests or mechanics that is adapted separately to each class by focusing on a couple of key areas. All subjects are intertwined during these theme weeks, and theory is constantly mixed with practical elements.[66]

4.1.1.4 Dalaskolan Södra

The principal of this school initiated working towards becoming an environmental certified school. This has resulted in a number of different actions. Among these is a reoccurring environmental theme, where different classes are assigned tasks in connection to issues such as water, coastlines and democracy.[67]

In home economics, the teacher has introduced a progressive program aimed at sparking students' interest in environment and SD. By reflecting on food, energy and water as resources in relation to consumption, students deal with various issues throughout the school year. These issues are then discussed further through essays and class discussions.[68]

[63] Ibid p.53ff
[64] Ibid
[65] Ibid p.58ff
[66] Ibid
[67] Ibid p.63ff
[68] Ibid.

4.1.1.5 Östra skolan

The aim of this school in Nyköping has been to "develop education for SD as a perspective that permeates all the school's subjects"[69]. Through a number of different goals and aims students at the school will learn to listen and critically value alternatives, argue and communicate their views, but most importantly feel as if they are encouraged to express their views in every way. Students should acquire the skills to act competently in society, in a way that is sustainable and emanates from personal conviction.[70]

Teachers have started collaborating across subject boundaries, and have coordinated their curricula to develop contents, methods and learning in a way that benefits students the most. All teachers involved in this have found that national curricula supported their thoughts on implementing SD in education. Some of the methods chosen have been to always include at least three different sources of information in every field of work, and using open-ended questions for testing, where argumentation and standpoints were given a greater scope and basis for grading.[71]

4.1.1.6 Vasaskolan

This school in Hedemora has worked with integrating schoolwork with the adjacent society. "Society in itself is the main teaching material"[72], and there are four themes concerning natural cycles: Recycling, food, water and energy. The idea is for several subjects to be involved in these themes that consist of field visits, meetings with local businesses and theoretical features.[73]

An important part of working with these themes at Vasaskolan has been to surrender almost all of the responsibility to the students. It is the students who plan the meetings and field visits, and they also structure questions and do follow ups. The aim of the themes is to make students become aware of processes and possibilities in a sustainable society, and that they feel as if they are participating in a societal change for the better.[74]

[69] MSU 2004 p.26
[70] Ibid p.26ff
[71] Ibid
[72] Ibid p.43
[73] Ibid p.43ff
[74] Ibid.

4.1.2 International examples

4.1.2.1 UNESCO

This UN department published its latest version of what they call "*A Prototype Environmental Education Curriculum for the Middle School"* (APEEC) in 1994. This version incorporates the concept of SD into the curriculum, not just ecological aspects. The three year curriculum emphasizes that in order for students to respond to situations in their community, they must first of all feel an ownership of the question – they must feel that they know and care about it, and they must also feel empowered to make some change.[75]

The program has a lot of measurable goals, divided into four levels: Ecological foundations, Conceptual awareness, Investigation and evaluation, and Environmental action skill. Each level requires a progression of competence and skill, where emphasis is put upon application of knowledge, but more importantly on understanding and communicating, and thereafter demonstrating these skills and competences[76]. While the report states that the ecological dimension of sustainability has the "greatest educational utility" of SD, it also says that the other dimensions of SD are all intertwined and therefore act as one body of knowledge[77].

In short, the progression of the three-year curriculum is as follows:

Year one – "***Ecological foundations and Humans as an Ecological Factor***", divided into the following sections:

- What is Ecology? What do ecologists do? (5%)
- Individuals, Populations, and Levels of Organization in Ecology (7.5%)
- The «Ecosystem Concept» Developed (20%)
- Energy and Ecosystems (20%)
- Ecological Succession: Ecosystems Change over Time (7.5%)
- Populations and Their Dynamics (20%)
- Humans As An Ecological Factor (20%)[78]

Year two – "***Environmental Science and Environmental Health***", divided into the following sections:

- Humans: Their History of Resource Consumption (8%)
- Soils and Allied Problems (5%)
- Water and Allied Problems (10%)
- Food Production and Hunger (10%)
- Forest Resources (5%)
- Plant and Animal Resources (10%)
- Air Pollution (8%)
- Water Pollution (10%)

[75] UNESCO 1994, p.v
[76] Ibid p.2f
[77] Ibid p.7f
[78] Ibid p. 32-41

- Noise Pollution (5%)
- Solid Waste Disposal (10%)
- Hazardous Waste (7%)
- Human Population Growth and Control (12%)[79]

Year three – "***Issue Investigation and Citizenship Action Training***", divided into the following sections:

- Environmental Problem Solving (15%)
- Identifying Issues and Preparing Research Questions (10%)
- Using Secondary Sources for Obtaining Issue Information (15%)
- Using Primary Sources for Obtaining Issue Information (15%)
- Interpreting Data from Environmental Issue Investigations (10%)
- The Independent Investigation of a Student-Selected Environmental Issue (20%)
- Issue Resolution: Skills and Application (I) (15%)[80]

The program further discusses the importance of infusing an environmental perspective into the curriculum, and gives numerous tips on what can be expected outcomes of implementation. Further information can be found on www.unesco.org.

4.1.2.2 Sustainable Schools Program, Australia

This sustainable program, funded by the Gould League and the Centre for Education and Research in Environmental Strategies Community Environment Park, is implemented in Victoria, Australia. The program is a framework to be applied individually for the schools – a ten-step program to ensure that students have a developing learning environment. The program also supplies guidance and specialist consultants in one of the four optional themes schools choose to adopt – these being Water, Waste, Energy and Biodiversity. One of the main objectives is to build links to the local community and the businesses there.[81]

Evaluating the program, the Sustainable Schools program is effective because it centers on participation and empowerment, it is holistic, and it can be applied individually – with individual paces and goals set by each school. By applying the ten step program, some of its features being applying a self chosen approach for the entire school and prepare action- and curriculum plans in accordance with this, results have been remarkable in several of the schools involved. Students are more engaged and involved in their education, morale is high among not only students but school staff as well, and there has been built extensive links to the local community.[82] More information, and a more detailed statistic of outcomes can be found in the article by Gough, see the reference list.

[79] Ibid, p.43-54
[80] Ibid, p.54-57
[81] Gough, 2005
[82] Ibid

4.1.2.3 Northampton Legacy Program. USA

Along the Virginia shores of continental US, one of many programs on education for SD has been implemented. The counties of Accomack and Northampton, once home to many fishermen and farmers producing seafood (mainly crab) and agricultural products, are now the two poorest in the state with high unemployment and high drop out rates from high school. Young people of today cannot see a future in the county, and it is not sustainable for the region to have all of its able people leave to make a career elsewhere. Having taken issue of environmental problems, and later some of the key concepts of education for SD, to heart, staff at Northampton County High School has started their legacy program.[83]

The aim of the program is to get students to "think outside the traditional box"[84], and by applying a multidimensional approach combine cultural, environmental and traditional learning. The program itself means building a traditional crab-fishing boat, and all of the features of the building process are included, and students themselves have to be in charge of their project. Several of the teachers from various different subjects are also involved in the process, as mentors and support. Everything from approaching companies for sponsorship or funds, choosing materials, execution, investigating field trips and actually trying out the vessels is included in the project. By doing it like this, students see the connection of past, present, and even future; they see how what is local is connected to the global, and results show that students who complete the program are far less likely to drop out of school.[85] More information can be found in the article by Flint et al., see the reference list.

4.1.2.4 Green Schools, USA, India

This American program was instigated by the Alliance to Save Energy (ASE), but is funded by grants from utilities, offices, businesses or foundations across the country. 200 schools in six states, with possible interest from three more states, are involved in the program. Today, there is even a program being developed in India based on this model. The aim of the program is to empower schools through energy efficiency. Apart from saving the schools a lot of money (an average reduction of 10-15% of energy is estimated), students get hands-on training and train their leadership skills, which improves learning and the education.[86]

By grants and sponsorships school can buy sustainable energy equipment such as solar panels, by collaboration in between subjects and classes experiments of measuring and calculating energy use can be performed, and by entering in competitions students can extend their knowledge outside the school walls and involve their whole family in saving energy.[87] More information can be found on www.ase.org/section/program/greenschl.

[83] Flint et al, 2000
[84] Ibid, p.191
[85] Ibid.
[86] ASE, 2007-04-25
[87] Ibid, 2007-04-25

4.1.2.5 Global Learning, the New Jersey Sustainable Schools Network

Global Learning, Inc. is a non-profit organization aiming at SD through making schools, educators and students understand the world's interdependence. Trough the Sustainable Schools Network, a variety of different programs and campaigns have been launched to promote this. One of the first recommendations is for schools to enter into the Green Schools program (see above), but it also deals with other aspects of education such as "Doing our share" – a campaign aimed at reducing the greenhouse gas (GHG) emissions of New Jersey schools in accordance with the state goal (20% less GHG emissions in 2020 compared to 2006 levels).[88]

Other examples of sustainable campaigns and programs initiated by Global Learning are "Libraries Build Sustainable Communities" – a program aimed at making students reflect and learn about sustainability and what they want from their future community in different respects. They also have an activity focusing on "Multicultural Education", where students are asked to identify, reflect and comment on their different hereditary backgrounds and what they know and can teach others.[89] For more information on Global Learning, Inc, visit www.globallearningnj.org.

4.2 Miljöverkstaden

Drawing 1 – Miljöverkstaden's modules

Just to clarify the following sections: sections 4.2.1 – 4.2.9 are, unless otherwise stated, based on interviews with Klas Nyberg, Margareta Bengtsson and Kerstin Paradis at MV, together with observations made while attending parts of MV's program, and numerous informal talks with participants of the modules. Section 4.2.10 is based on an interview with Paula Håkansson from the SLA.

At present, MV is a program for developing environmental education in Helsingborg, and part of the TA of the City of Helsingborg, employing 13 people corresponding to eight full-time positions. MV has its offices Gubbhyttan, and a large part of MV's premises such as Dropp In, Energiverkstaden, Sinnenas Gård etc.[90] located at Sundspärlan/the Public amusement park near central Helsingborg. MV is not a school, it is a program open to all the schools in the

[88] Global Learning, 2007-04-25
[89] Ibid, 2007-04-25
[90] Dropp In is the MV's, and the city's activity center for kids, focusing on water. Energiverkstaden is MV's workshop for energy and the economizing of our energy-consumption. Sinnenas Gård is a former exhibition transferred to the MV, with the purpose of invoking the different senses through various kinds of installations.

municipality of Helsingborg, and it offers education for students, teachers and also cater to societies and associations on some occasions.

Map 1 – Miljöverkstaden's location

4.2.1 Mission statement

"*Miljöverkstaden educates students in Helsingborg for Sustainable Development*"[91]

4.2.2 History

MV came into being in 1987, when environmental issues, problems and a local epidemic killing off the seals were on the public agenda. Politicians in the municipal council motioned to allocate funds to further the development of the EE in the municipality. When MV was first starting out, three teachers worked part time (a total of four hours per week) with the project, together with a number of contacts at the different schools in the municipality. At this time the program was linked to Läromedelscentralen[92], where there already was a math-workshop[93], and hence, MV got its name. The program concentrated on collecting different kinds of material and literature concerning environment and education, as well as coordinating meetings and lectures on various themes for the contacts, producing its own material for teaching, and arranging environmental days for students – still an important part of the MV program today.

[91] MV 07/01
[92] Local center for learning materials
[93] Swedish = *'Matematikverkstaden'*

As a result of reorganization in 1994, MV was split into two parts. By invitation from the city library, all literature was moved, forming the base of today's environmental library section at Växthuset City Library. Concerning the other half of the program, city gardener Ole Andersson at the office of recreation and parks with the TA had ideas of starting a nature-school in the public amusement park to open up the existing small zoo and invite people to meet with the animals. During the course of the year it was decided that MV should move to the public amusement park, and focus solely on educating. In 1997 it was finally decided that MV would be a part of the TA, because they made financial contributions to the program and because it would facilitate collaboration with the different offices that were already a part of the same administration. At the same time it was decided that MV would be the distributing channel of information, such as events, special actions and invitations, from the different offices of the TA.

4.2.3 Scope and implementation

MV has seven teaching modules (see section 4.2.5) plus education in natural sciences and mechanics in its program. The aim of the program is to educate students about their surroundings – the societal through the natural. Another aim is that students, in collaboration with the TA, get to work practically and are given the opportunity to display and publish their thoughts in different ways.[94]

MV's operational base is at Sundspärlan, but the staff also goes out and teaches at the children's schools and at other locations in the municipality, through field-visits, outings and practical features concerning different environmental issues. Different premises such as Energiverkstaden and Dropp In are integrated into the program and used for practical examples in the education. Apart from the student-centered teaching part of the program, MV also arranges theme days and refresher courses for teachers.[95]

Every year, MV invites all schools in the municipality to participate in its program – either through the modules (of features thereof), or through other parts of their program. Teachers are given folders and information early on in the school year, presenting the modules (see appendix 2) and other parts of the program and send in their registrations. For exact figures of participants (2006), see section 4.2.4.

The staff at MV has divided the modules and their different features among themselves, but there is one 'head' of each module. The same member of staff can be the head of more than one module. MV has made it their mission to follow up their teachings with the students throughout the school year. This is why the modules are divided into several different segments, and there can be weeks or months in between them. MV hopes that this can help in making their teachings permeate more than their modules, and also spill onto other parts of the student's education taking place in school. All modules, with the exception of module seven[96], start early on in the fall semester of each year. Features are spread out over the rest of the school year as evenly as possible, to keep up interest and recollection. Usually, the first feature of a module is a lecture or a visit to the class, where a teacher from MV discusses with the students some of the basics that concern the module that they will participate in over the following school year.

[94] MV 07/01
[95] Ibid
[96] This module, described further in section 4.2.5, is a more intensive project lasting for about a month.

The structure of education and schools has made it sometimes hard to try and make MV a desired and obvious part of the local curriculum. It gets harder and harder to implement modules older the students get, because then they have several different teachers and collaborations between these teachers are not frequent (an interesting note is that this statement concurs with what both the SNAE and SOU have found in their investigations concerning implementation of education for SD in Swedish schools in general today[97]). According to Klas, a facilitating factor of trying to implement MV and its teachings is the relatively new idea of working in teaching teams at schools[98]. By doing so, several teachers plan the education together, thereby facilitating collaborations and giving each other input on previously appreciated features of education, where MV can be one such feature.

Modules are taught separately, and there is little or no collaboration in between the modules. Implementing MV's teachings in other ways include trying to make close contact with key persons at different schools. This has resulted in certain schools returning to take part of the program more frequently than others. Among the schools that return most frequently are Västra Ramlösa School, Husensjö School, Wieselgren School and Söder School.

4.2.4 Administration, evaluation and follow-up

The TA with the City of Helsingborg governs the activities at MV, but basically, everything is centered on the motion accepted by the municipal council aiming at further the development of the city's EE. Some of the financial contributions come from the municipal council, but the TA bears most of the costs associated with the program. On top of this the program earns money from teaching (roughly supporting one full time employee), and some of the different educational facilities have external sponsors that employs roughly one full time employee.

MV evaluates and revises its modules annually, usually in May or June when all modules have finished. In the same way as they were constructed in the first place, the modules are added to or changed in small steps rather than through radical changes. According to Klas, the employees have noticed that it is hard to envision how something will work before it gets a chance to be tried out[99].

MV reports to the TA on two occasions annually – after the fall semester, and after the spring semester (a complete summary of the year). This follow-up includes some statistics of percentage and number of students attending the different modules, as well as current ideas, projects and future aims of the project. A list of attended conferences, meetings and given lectures is also included in the follow-up. In addition to this, there is a routine in the municipal intra-net for evaluating MV's teachings (see appendix 1), which must be considered in line with the other municipal routines for evaluation[100]. This routine was constructed a couple of years ago, and was used for a certain period of time. At present, however, it is not used to evaluate the program or its components, because earlier evaluations did not produce much interesting results.

[97] SNAE 2002; SOU 2004
[98] Nyberg, 2007-04-16
[99] 2007-01-19
[100] MV 07/02

There are very few set goals for the program at MV. The only goal that the TA has set up for the program is that 75% of students in Helsingborg participate in any given feature of the MV program during the school year. Looking at the figures for the fall of 2006, the only sufficient statistic in MV's documentation but only relating to the modules, this goal is achieved by three of the seven modules. Spread out, a total of 60% of the students applicable for participating attended a module.

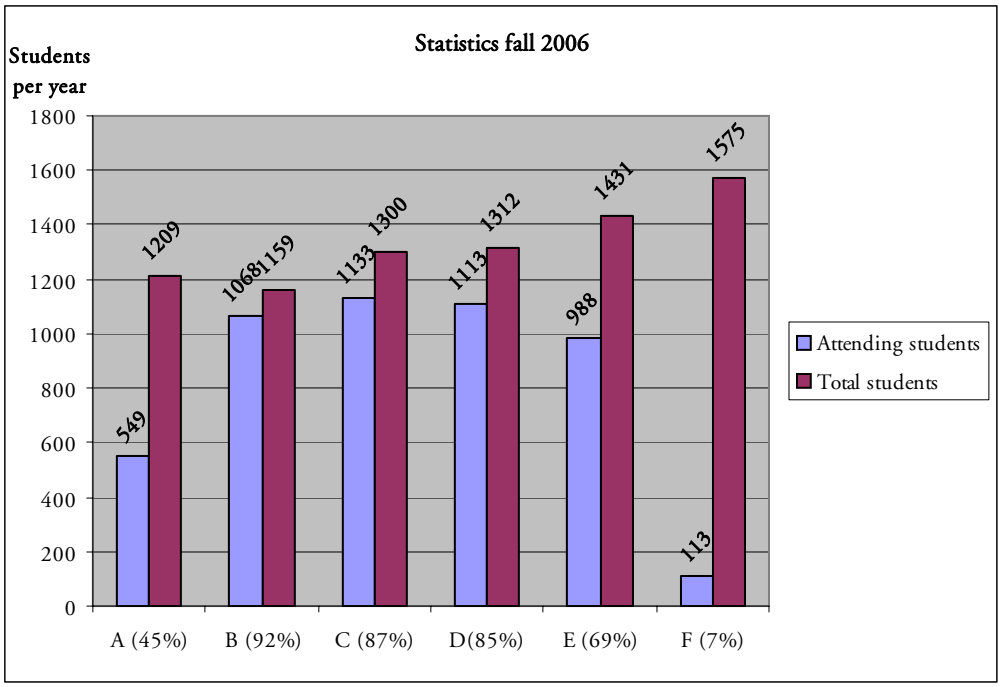

Figure 3 – MV module attendance, fall 2006

- Wishing to cultivate – **A**
- Returning garbage – **B**
- The Children's forest – **C**
- Vital water – **D**
- Smart travels – **E**
- Bike right – **F**

Sufficient statistics for the module "Organic Waste" have not been provided and cannot be verified. Approximately 27 classes have been interested in the project[101], and a total of 1622 students are attending year eight in Helsingborg[102]. Because it is not clear which students and which classes statistics concern it cannot be said what percentage of students are involved in the module.

[101] MV 07/03
[102] MV 07/04

4.2.5 Modules

The modules that are a big part of the MV program today were initiated after the move to Sundspärlan. Modules are divided into yearly projects, each adapted to suit a different school year. MV modules start with school year two and continue with a new module for each year, finishing in year 8. Modules focus on different aspects of society and nature, and are taught separate from each other. The aim is not to bypass regular education, but rather to complement it by offering different and sometimes enhanced perspectives to issues and questions already mentioned in the curriculum. Each project consists of several different features and sections are spread out throughout the school year to further the aim of complementing regular education and to promote a lasting interest in MV's modules. Certain features are followed up with assignments, but the majority of features are separate occurrences. Basic content of all the modules is free (with occasional exceptions of entry fees to participating museums etc.), while options come with certain costs, varying from SEK 250 to SEK1000 or more, depending on the feature offered.

The existing modules are as follows:

1. "***Wishing to cultivate***" [103] – a horticultural project for students in their second year of school, including features like visits to Majas Garden[104] at Sofiero Castle, class lectures and drawing assignments, and options of visiting farms, Sinnenas Gård and Fredriksdal.
2. "***Returning garbage***" [105] – a waste project for third year students, with visits to the local waste management site, class lectures and an invitation to join in the exposition of reused garbage held at Campus Helsingborg. Options include schoolyard cleaning and visits to Dropp In.
3. "***The Children's forest***" [106] – a forest project for fourth-graders where class lectures inspire about trees, drawing assignments are exhibited at Dunker's House of Culture, and where every participating child gets to plant at tree at the end of the year. Options include features held in collaboration with Fredriksdal, such as a nature-trail.
4. "***Vital water***" [107] – a water project aimed at students in their fifth year of school. Basic content includes teaching aid and tutorials, a Watervoyage, visit to Dropp In and a possibility to participate in the UN's yearly World Water Day. There are also options like beach-cleaning, class lectures at MV, outings on Sabella[108] and fire fighting education.
5. "***Smart travels***" [109] – a communications project for sixth year students including a Hunt for Culture, "Skåneresan"[110], solar cell inventions and visits to "Energiverkstaden". MV also offers further education on energy as an option .

[103] Swedish = *Lust att odla*
[104] "Majas Garden" is the part of Sofiero slott designed for horticulture, with a large number of plants and herbs cultivated for educational purposes.
[105] Swedish = *Sopor i Retur*
[106] Swedish = *Barnens Skog*
[107] Swedish = *Livsviktigt Vatten*
[108] Sabella is a teaching vessel/boat owned and operated by the city, used by students from all ages, preschool to university.
[109] Swedish = *Res klokt*
[110] Roughly "Trip of Scania"

6. "***Bike right***" [111] – a communications project aimed at students in their seventh year of school. All content is a part of the basic package; there are no optional choices in this module. Content includes features on how to secure your bike, information about bike-accidents, bike-orientation and design tasks.
7. "***Organic waste***" [112] – a project for student in year eight that lasts for about a month, including lectures and classroom visits, field visits to the local waste management site and assignment on designing on the theme of organic waste.

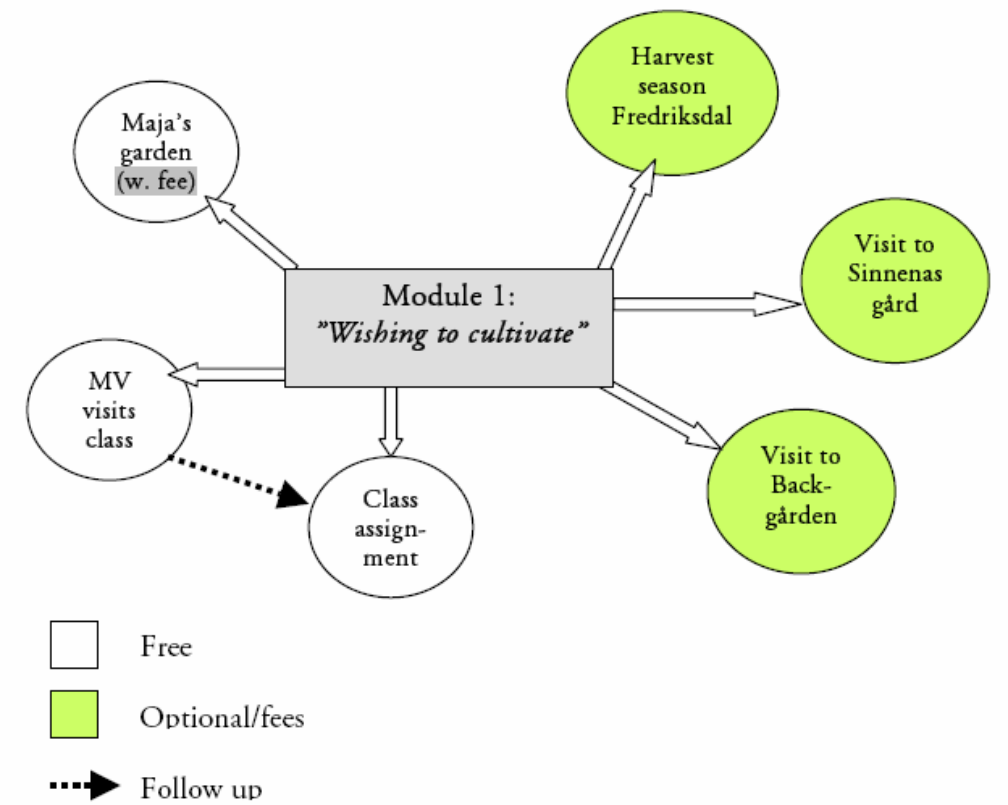

Figure 4 – Description of a module

The first module to be created was "The Children's Forest", celebrating its tenth anniversary in 2006. After this came "Returning Garbage" and "Vital Water", and the other modules have developed over time. In 2001, these three and the communications project "Smart travels" were up and running, and the horticulture project "Wishing to cultivate" had just started with some of its features, although it was not implemented as a full scale module until 2002/03[113]. In the following year, "Smart travels" was divided into the current set up, with "Smart travels" as a project for year six focusing on public transportation, and the new "Bike right" project for school year seven focusing on the bike as a means of good transportation[114]. Project number seven, for school year eight, "Organic waste" was initiated in 2004/05[115].

As mentioned before, the projects are evaluated every year, and therefore added to and deducted from. This means that certain content that exists in the project today is new, whilst other parts are reoccurring, and some features have been excluded or dropped because they did

[111] Swedish = *Cykla rätt*
[112] Swedish = *Organiskt avfall*
[113] MV02/03a; MV01/02a
[114] MV03/04a
[115] MV04/05a

not fulfill their function. Some prior features that were included in the modules before, but not anymore are:

- Drawing competition "A clean city" (Returning garbage)
- "The Electric voyage" (Smart travels) – now a part of Hunt for culture
- Crossword-puzzles (Returning garbage)
- Collaboration with students in Elsinore for tree-planting (The Children's forest)
- Education on traffic safety (year three, as extended education in Returning garbage)
- Trekking along the Råå-stream (The Children's forest)
- Design your own helmet (Bike right)[116]

Appendix 2 gives a more comprehensive presentation of each of the modules as they occur this year (2006/07), describing visions, goals and content. MV is overall responsible for each module, but collaborates with different participants in the municipality in order to give the education as extensive a perspective as possible.

4.2.6 Pedagogy

MV works according to a strategy they call "Hand-Heart-Brain"[117], and teachers should not use just books and literature as sources of knowledge. Pedagogy at MV is very concrete, and needs to be concrete, and hands-on so that students develop sensitivity and a certain approach of respecting our environment when they are being taught. It is equally important for teachers to have this sensitivity and approach when teaching. Teachers at MV work hard to have the basic concepts of what they want to mediate all worked out, so that MV's teachings have a chance of shining through in education.

Pedagogy at MV is also constructivist, in that there is a belief that knowledge is constructed and new aspects and perspectives are added on continuously. The best effects of a constructivist approach come when students are challenged about what is already supposedly known. Another important aspect of pedagogy at MV is that learning should be fun. Knowledge should be a need, and a thirst that can never be quenched. MV also works from the pedagogical approach that children learn more in groups.

4.2.7 MV's take on education for SD

In their own words, MV teaches students in Helsingborg for sustainability. And as discussed previously, the concept of sustainability can be somewhat hard to grasp and has many different definitions. So what does the concept of sustainability mean to MV? And what impact does it have on their education?

At MV, the perspective has slowly changed over the years of being a nature school with the aim of developing environmental education to teaching for sustainability. Previous focus on nature has been replaced by putting the human at the center of what is being taught. Rather than previous teachings of environmental education that protected nature, sustainability means that

[116] MV01/02a; MV02/03a; MV03/04a; MV04/05a
[117] Nyberg 2007-04-16

we as humans have the right to use and take benefit from nature as long as we do not destroy it. Sustainability is about finding approaches to living that actually work.

Whereas environmental education tended to be factual (see section 3.5.3) and kept things separate and unrelated, education for SD has meant that the approach is now on problems, and things are questioned and valued on the basis of how we as humans want to live, and how we can get there.

4.2.8 Theory in practice ?

The pedagogy is described in the previous section, but this does not say exactly what parts of this is applied when the modules are put into practice. As a whole, a module aims at raising awareness, increasing the knowledge and promoting correct behavior about a certain environmental aspect. Every feature in a module is focused on a particular segment of that aspect. Features mix theory and practice as much as possible, and the teachers are very flexible when it comes to structuring their lectures and features. Most of what is taught emanates from the children. Many lectures and features in the modules start out with a brainstorm, where ideas and perspectives are discussed, and where teachers get a chance to see what the children already know. Brainstorms and initial discussions also serve to invoke curiosity by asking questions like "what do you think we can find by doing this today?"[118].

Education at MV is very interactive, with the teacher and the students constantly discussing and reasoning about the different subjects at hand. Many features in the modules are labeled as being lectures, but the children are given a lot of room to give their input, explain their thoughts and reason around certain given subjects. Class teachers are also included and add perspectives and approaches, often relating to what the class is doing in other subjects at present, where common ground can be found. Practical portions of education at MV is also very interactive, where teachers not only give instructions, but let students find their own way of solving things, and later reason about findings and results rather than pointing out what is right and wrong. Teachers at MV also share a lot of their own values and thoughts in discussions, not in the way of convincing the students of what is right or wrong, but rather to show that when it comes to values there very rarely is anything that can be considered right and wrong.

Field visits are another important aspect of education at MV. By really adding a practical twist in many of the modules, students get to see for example what actually happens when water is being processed at the sewage plant or how our garbage is collected and treated. They might not actually get to stand in the shoes of a garbage collector or a sewage engineer, but they get to follow up on what actually happens with something once it passes out of sight. Children are also encouraged to explore the city and its surroundings by themselves, and be their own teachers. By riding public transport systems in and outside the city and by orientating the city with their bikes, students take the initiative and become proficient in certain aspects of how to affect our environment in a less hazardous way all by themselves.

An important balancing act is to make students realize the magnitude of the problems surrounding many environmental aspects, yet make them feel as if they can actually do something about it rather than just focusing on the negative. MV is tackling this by a variety of

[118] Nyberg 2007-04-16

different tasks of inventions, exposés and other ways of letting the students display their thoughts on future possibilities.

Taking into consideration the content of the modules, they are focused almost solely on ecological aspects of the environment. Even though the education is centered on the human and her place in society, there are little content that discusses social or economical aspects of the environmental issues at hand. Teachers at MV have a background in the natural sciences, which can explain why it is easier for them to put emphasis on the ecological aspects.

4.2.9 The future

Because MV is such a flexible program, that permits a lot of (fast) changes in structures, there are constantly things and ideas being constructed. The main objective is to keep aiming for a good education, and that MV can continue to be the aid for schools in the society that it wants to be. MV should be a place where students and other people can learn about the society and how it works. It could also be a place where administrations and different organizations in society could communicate their messages to the citizens.

Some of the ideas that MV hopes to realize are to incorporate the important aspect of the human body into their program, and making their location at Sundspärlan more similar to a science park. The bodily perspective could come either as a module, or as features in the different modules, where aspects are put into relation with what happens in the body. It could mean everything from understanding what happens to the lungs when breathing polluted air to what toxins can be absorbed in our bodies. For the science park, MV has been inspired by a Danish project sponsored by Danfoss, where students would get to learn and perform different kinds of experiments on site, and where certain areas of the park was dedicated to certain environmental aspects and/or themes.

A future feature already in the making is the project of "Tallskogsleden"[119]; a 5km trail in the south of Helsingborg where MV has collaborated with Högasten school in Helsingborg in prospecting the trail and a number of different meeting places along it. Every meeting place has a theme, and the students of the school have created several of these. There is for example one meeting place dedicated to wolves, and another where students have built trolls.

4.2.10 The School- and Leisure- Administration's approach to MV

SLA is one of Helsingborg's larger administrations, and in itself it does not focus on producing clear directives of implementing SD into education. The SLA has taken a different approach, by inexplicitly applying education for SD under the auspice of general values. The SLA often feels that SD equals environment and its ecological aspects, and their general values are more connected with the social aspects of SD (and perhaps more importantly, with method and approach rather than content), such as participation, inclusiveness and building competence. By not saying that these general values are a result of working with SD, they have better results in implementing them than if saying that this is the case. The reason for this is the aforementioned connection with ecological aspects of SD, that is hard to break.

[119] Roughly "Pineforest-trail"

Looking at MV, and what they do, the SLA regards their program as a very important complement to education in Helsingborg. MV offers their program to the educational facilities in the municipality, and they have a wide network of contacts at a number of schools. Despite this, few of the teachers and school staff in the municipality in contact with the SLA mention MV on a regular basis, which could imply that MV is less well known than it should be, or not as well appreciated as it wants to be. The SLA has not found any interaction or cooperation between schools in the municipality and MV outside of the program, which is somewhat disturbing. A real sign of SD, to the SLA, would be if MV could transcend into an interdisciplinary ally to turn to in all subjects and at all times, as a mandatory part of education in Helsingborg and not just as an offer.

The reason for MV not being a part of the SLA is because the SLA always has to focus on supporting their core of schools and other educational facilities first, before tending to programs and optional education. If MV moved from the TA to the SLA there would be some chance of funding having to be reduced. This could only be avoided by turning MV into a mandatory educational element, something that has been considered. By making MV's program, or certain features of it, mandatory and reoccurring, an incentive for teachers and staff planning the school year to include MV on a regular basis would be created. This would make it easier for MV to interact with the rest of the school curriculum, be a part of certain themes etc. It would put their program in a wide perspective, something that the SLA finds is lacking at present, when MV is regarded as an option for strengthening only the ecological features and natural sciences in the curriculum.

All in all, the SLA is very positive to MV and especially to the people who are working there, because they teach and educate children in a very interesting and sustainable way. Because the SLA regards building skills and competences more important than knowing facts, they see the hands-on training connected with MV as a real advantage.

5 DISCUSSION

This section starts off by presenting the SWOT-analysis performed. It later tries to point out what needs to be done at MV in the future, and also discusses some similarities between MV and Swedish and international examples, and inspiration for MV to maybe apply in the future.

5.1 SWOT

This section tries to recapture the case study, and also complement the findings with more aspects previously not well discussed but important to the program at MV. The SWOT aims at describing MV's program with the objective of educating for sustainability. It is presented somewhat backwards, first looking at the weaknesses and threats, and thereafter focusing on strengths and opportunities. The figure below presents only headings, correlating to sections further along in the text.

	Weaknesses	Strengths	
	• MV is not a school • MV is part of the TA • Module-based projects • Modules come pre-packaged • Low external influence • Teachers are from the same field • Certain features come with a cost • Goals are not measurable • Insufficient evaluations • Insufficient documentation	• Staff aim is sustainability • Flexible program structure • Module-based projects • MV is not a school • MV modules do not teach a subject • Students start coming at a young age • MV modules act as a complement • MV modules are an optional choice • Many external collaborators • MV returns throughout the school year	
	Threats	Opportunities	
	• Lowered funds or income • Decrease in interest	• Triple bottomed perspective • Yearly themes • Interconnected modules • Increased interest • Involved teachers and students • Measurable goals • Coherent evaluations and statistics • New target groups • MV could become part of the SLA	

Figure 5 – SWOT findings

5.1.1 Findings

As can be seen in the previous diagram, some aspects of the SWOT occur not only once, but twice. This means that there is more than one side to the same aspect. Therefore, aspects are described and correlated to both positives and negatives at the same time, instead of them reoccurring over and over again. Certain aspects are also interrelated, even though they do not have the same name, and those aspects have been placed under suitable headings in the following text to make their relationships understandable. An important point to make is that this SWOT aims at analyzing the program as a whole, its philosophies and modes of operation, but no other teaching components than the modules, unless otherwise stated.

5.1.1.1 MV is not a school - *Weakness, strength*

That MV is not a school is a unique feature. The author has not come across any other examples of education for SD in Sweden where someone other than the school itself is in charge of the education[120]. In the case of MV, this has shown itself to have its positive and its negative sides.

A weakness of not being a school, or a part of a school, is that the teachings of SD that MV wants to mediate cannot be guaranteed to permeate the entire education. MV can easily be regarded as something separate, and therefore be kept separate, so that the teachings of SD that work well in the segments themselves and while students are a part of the program, will not continue and spill into other subjects or life at school.

The strength of MV not being a school is that it can act as a complement to the education already taking place at schools, and also remain open to all schools in the municipality. As a separate entity, MV also has the advantage of being able to form their program – the modules and their classes, freely without concern to other parts of the curriculum and schedules.

5.1.1.2 MV as a part of the TA or the SLA– *Weakness, opportunity*

Apart from the fact that TA makes the largest financial contributions to MV's program, it is hard to understand why it is a part of that particular administration. A program that teaches children as a part of their ordinary education should be part of the SLA. Being part of the TA has its apparent advantages as MV collaborates with several of its offices in the various modules, but this collaboration could surely continue in the future even though MV is not a part of the same administration. Several of the offices with the TA have other collaborations with schools outside of the MV program, and arrange visits to the NSR and Öresundsverken[121]. Being a part of the SLA would not only bring MV closer to the schools and their administration, but would also serve as an opportunity in promoting the program outside of the municipality of Helsingborg. If MV is a part of the SLA, the SLA has a stronger imperative and obligation to promote and market it outside of the municipality and with the schools that have not shown a high interest in MV's program. Of course, to implement this, MV has to become a permanent and mandatory part of education, as stated by the SLA in section 4.2.10.

[120] Many schools have external lecturers or companies teaching as a feature of education for SD, but this is not the same as being responsible for the education, which is the fact at MV.
[121] Helsingborg's local sewage-treatment plant

5.1.1.3 Modules– *Weaknesses, strengths*

The modules that constitute a lot of the program at MV have both good and not so good sides.

One weakness is that the concept of education for SD is contradicted by the way MV sets up its modules. Principles of education for SD state that children should participate in making decisions regarding what they are being taught and why. The way modules are presented today, students are left with little opportunity to influence the content of their education at MV. Possibly, they have a say in which features to participate in, and can also to some extent influence the lectures when they take place. Another weakness of education at MV being module based is that is aggravates the possibilities of collaboration in between school years. Every module is designed to fit into a certain school year, and as yet, there are no collaborations in between the modules.

In contrast, it is also a strength for MV that education is module based. It makes marketing easier because contents are set and can therefore be described in better detail, and it also means that participants that come to MV have already accepted the contents when applying for the program. Modules also complement existing education, in a way that many feature take children out of school and add more perspectives to what is being taught.

5.1.1.4 Teachers and staff – *Weakness, Strength*

The teachers and staff at MV appear in more than one part of the SWOT-analysis. The weaknesses being that the teachers all come from a background of natural science. This means that they might not have been as competent in teaching about the social and economic aspects of sustainability, and that the environmental aspect of SD has been promoted more than the other aspects – whereas the triple bottomed approach to SD states that all three aspects are equal and should be considered equally. On the other hand, a big strength is that teachers and staff at MV all aim at sustainability and want to become proficient in promoting a triple bottomed perspective of SD. This aim is evident in the many methods of teaching described in section 4.2.8, where most methods apply the key concepts of education for SD as described in section 3.3.

5.1.1.5 Costs and funding – *Weakness, threat*

At present, MV does most of their program free of charge, which should be credited. However, that some parts of their modules involve a fee automatically exclude schools that have a particularly strained economy. This is not compatible with the values of equality that permeates education for SD.

A threat that involves funding is that MV, like all other municipal programs, depends on municipal funding. If decision-makers fail to see the impact of MV in students, or if they find some other program to invest their money in, MV can be faced with less income. This can then affect the entire program in ways of staff having to be let go, features being withdrawn and fees for participants etc.

5.1.1.6 Goals – *Weakness, opportunity*

The goals of MV's program, and especially those connected to the modules, are an important feature, and a feature that should be evaluated and followed. A big majority of goals are not measurable, and this is a big weakness. Not having measurable goals aggravates the opportunities of evaluating outcomes, and being able to evaluate outcomes should be an important feature in any program. The opportunity of the goals is of course that with a little help and initiative, their goals can become measurable and serve to validate the program and its existence. For a further discussion, and suggestions of possible goals for MV, see section 6.2.

5.1.1.7 Insufficiencies - *Weaknesses*

Recapping the previous section on goals, insufficient evaluations and insufficient documentation are weaknesses that undermine the program at MV. If the program has nothing to show for itself in the way of evaluations or documented ways of doing things, it can be hard to motivate further funding in the future. This is especially true because the municipality already has an outlined routine for evaluating the program at MV, and if not carried out properly it could be a sign of defiance on MV's part. Such connotations do not increase popularity with any party.

5.1.1.8 Interest – *Threat, opportunity*

As with most programs or businesses, the key to survival is maintaining interest from prospected participants. If MV becomes less popular, it could serve as a signal to cut funding, and thereby threaten MV's existence. On the other hand, if MV becomes even more popular than it is today it could signal to politicians and officials that funds need to be increased, thereby facilitating more additions to the program and the modules.

5.1.1.9 Flexible program structure – *Strength*

A big strength with MV is that the organization permits certain flexibility. As described earlier, MV staff evaluates modules every year, and if a feature has not worked according to plan it is easily replaced by something else. Having this flexibility makes the program adaptable and able to encompass new things and features on a regular basis, a key to keeping interest peaked and teachers who participate in modules coming back because they can see that any input they have is taken seriously.

5.1.1.10 Other strengths

Among the most important strengths of MV's program, and particularly the modules, is the fact that it does not teach a specific subject[122]. One of the key concepts of education for SD is that it should be interdisciplinary and holistic, and because the only guideline MV has is that is should develop environmental education in Helsingborg it has also tried to adopt this

[122] Apart from the offered classes in natural science and mechanics, but they are not a part of this thesis

perspective. Module content has been developed to complement a number of subjects in school.

Another important strength that has few equivalents in Sweden is the fact that MV starts teaching their students at a very young age. While most other national examples of education for SD often starts in the teens, as late as upper secondary school, MV has made a good point of starting to teach the students from their second year in school. They abide by the philosophy that by starting to teach about SD at this young age, they have a real shot of making an impact and change unpromising behavior and attitudes before they become too set in the students' minds[123].

A third important strength is having many external collaborators. By having this, MV spreads costs and has even established sponsorships that fund parts of the program. External collaborators also facilitate practical educational features, so that MV can actually show what is being taught – by visiting waste management sites, sewage treatment plants, farms, horticultural gardens etc.

A final important strength is the fact that MV modules and teachings return throughout the school year. Apart from the project "Organic Waste" that only occurs for a month of intensive studies, the other modules' features return at various points in the school year. This strategy helps with keeping the values of MV alive in schools in between module features, and also opens up for the possibility of educational values of SD permeating further into schools.

5.1.1.11 More opportunities

There are a few more opportunities in the SWOT that can hold the key to MV's future. First of all, there is a real opportunity to realize a triple bottomed perspective in the program as a whole. With the staff's aims and a will to promote SD, MV has really only to modify their modules to encompass more of social and economic perspectives to be a shining example of education for SD. Section 6.2.3 provides suggestions for how modules can encompass a triple-bottomed perspective.

There is also the possibility of yearly themes that permeate the modules and facilitates an interdisciplinary and holistic approach to teaching, in accordance with the principles of education for SD. It also increases the possibility of interconnected modules, and collaborations in between classes, years, and schools. A suggestion for how this can be implemented can be found in section 6.1.1.

Another opportunity for MV is to involve teachers and students more in the forming of the modules and its contents. This can either be done by coherent evaluations and statistics that provide a basis for including or excluding features in the modules. Letting students choose what content they want to participate in, and also letting them choose the method of teaching can also do it.

A final opportunity for MV is to open up to new target groups. Although MV has a point in starting to teach students at an early age in order to facilitate a change in attitudes and behavior, these students are far from the only ones in our society that need education about our environment and about sustainability. Arranging workshops/conferences/lectures for

[123] Nyberg, 2007-04-16

associations and interest groups for incomers[124] can be of interest. Incomers could be of foreign background, but also Swedes who are not familiar with the local environment and how certain things are dealt with in Helsingborg in particular.

5.2 What needs to be done?

MV in many ways confirm the SNAE and SOU findings with regards to letting what has been known as EE become education for SD. Much of the content is focused on ecological aspects, and needs to be complemented with additions of a more social or economical nature. Still, MV has come a long way in developing their educational program from an EE to education for SD, in the ways that they have adapted many of the key concepts of education for SD – interaction, inclusiveness, participatory decision making etc.

However, there are some things that need to work better – for the program as a whole, and for the modules. The following are the main focus areas that MV needs to work on to become a better administrated program, and for their modules to become better examples of education for SD:

- ***Goals, aims and evaluations*** – It has to be decided on what goals there are for the program and for the modules, what the aims are, and there also needs to be some form of working routine for evaluation.
- ***Statistics*** – If the MV aims at presenting reports to the TA on several occasions during the year, and if the TA wants to know whether the set goal of 75 % attendance is reached, statistics need to be coherent and consistent.
- ***Triple-bottomed perspective*** – MV has to make sure that not only their approach to teaching is permeated by the key concepts linked with education for SD, but that the content of their education also present social and economic perspectives, and not only the ecological, which is what occurs today.
- ***Outside input*** – Even though many teachers in participating classes leave suggestions and some feedback on the content of the modules, they – and most importantly the students, should become a more evident part in structuring the content and the methods of teaching.

Chapter 6 gives suggestions to how MV can start working with some of these ideas.

[124] Swedish = *nyanlända*

5.3 Food for thought – finding inspiration

Looking at the national and international examples described in section 4.1, there are several sources of inspiration for MV on how they can further their program and their modules. There is no need to reinvent something already presented and implemented, but rather the opposite – a working program or concept can spread and further education and outcomes in more than one place.

One prominent feature that is reoccurring in the examples, and serves as a good base of collaborating in between subjects, classes and schools, are different themes in education. In itself, MV's modules are themes, but the examples give a wider perspective of themes that are all encompassing and cover all of education. Not only are there themes for individual classes, but these themes are subordinate to a predominant theme (see for example 4.1.1.3). Themes can also concern school organization and profiling (see 4.1.1.2 and 4.1.2.2), and integration with society and local businesses (see 4.1.1.6).

Another important issue discussed in several of the examples is handing over responsibility to the students. This is also something that MV does to a certain extent by letting students findings, knowledge and interest set the tone for lectures and such (see section 4.2.8), but MV also have well prepared outlines for lectures and have acquired a lot of the material and contacts needed for the students to succeed in achieving the set goals of the education. By handing over some (or most) of these responsibilities, participating students would become even more involved in the modules, choosing their methods of learning (an important key factor of education for SD) and finding their own way to knowledge. In this way, it would be less important what facts students learn, but more important that the students "own" their knowledge, and have processed and valued it.

Yet another interesting way of letting students become involved in education and as members of society would be by applying the example from Fjälkestadsskolan, where students wrote letters to local municipal authorities demanding sustainable changes (see section 4.1.1.3).

Understanding natural cycles at a young age can be helped by something as easy as the school farm animals as described in section 4.1.1.1, where even preschool children started to understand the cycle of nature by watching how their recycled organic waste was food for the hens and their eggs in return became the children's snack.

By looking at Östra skolan, MV can get a lot of help in how to include some key concepts of education for SD in their education. Östra skolan also give examples on how to collaborate in between subjects, something that could serve well for MV when trying to implement their program outside of just teaching the modules or being visited by classes.

When trying to apply a triple bottomed perspective on sustainability, MV could be greatly helped by the UNESCO program presented in section 4.1.2.1. The contents of their three-year curriculum present several examples of how to maintain an environmental perspective on education, but including social and economic perspectives as well as the traditional ecological ones.

Some of the thoughts presented in this section have served as inspiration for the suggestions that follow in chapter six.

6 SUGGESTIONS

This section presents the suggested measures that MV can take to instill a triple-bottomed line on their education, starting with the modules, goals and aims followed by evaluations.

6.1 Education – modules

As already discussed, a lot of the focus of the modules today is aimed at ecological issues. In order to make the modules fit into the said education for SD provided by MV, they need to include more of the social and economical aspects of sustainability. Important to remember while discussing this is that MV after all means "Miljöverkstaden" – the environmental workshop, so it should stay true to its original ideas and not venture out and try to be something it is not. MV should not hold all the answers to education for SD, but can be a good example to turn to for ideas and inspiration on how to continue these ideas in all subjects and throughout the school. The following presentations of ideas are as concrete as possible, since several representatives of MV requested this. They found it valuable to get input on specific things or features that can be added to the modules, rather than just general guidelines.

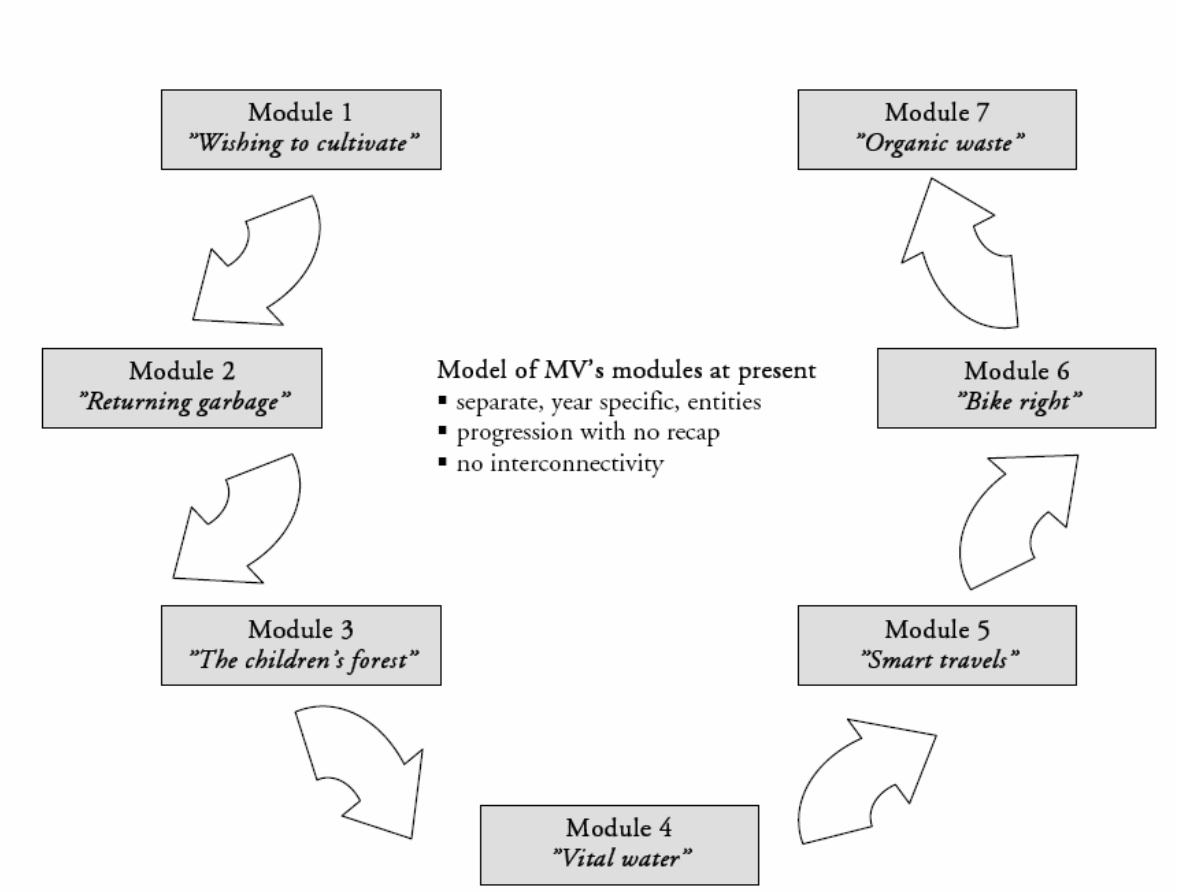

Figure 6 – MV modules at present

6.1.1 Themes

One idea already introduced by employees at MV, and also discussed in section 5.3, that is strongly recommended that they continue with and realize, is thematizing the modules. For example, 2007 is the year of Carolus Linnaeus (Linné) in Sweden, and MV has already talked about including features connected to him and the celebration of his life works into the modules this upcoming school year (2007/08). This would mean that some of the features – whether outings or class based lectures, have been modeled especially with Carolus Linnaeus in mind. It could be nature walks, projects and outings in collaboration with partners such as Sofiero Slott or Fredriksdal, or focusing class lectures on the work of Carolus Linnaeus. All in all, this would mean that each year all the modules focus on a particular event/phenomena etc., either something like an anniversary event or certain ever-current themes.

Thematizing the year would serve to bring the modules closer together, and facilitate collaboration in between classes. With the Linné-year of 2007 in mind, there could for example be projects where second graders (Wishing to cultivate) and fourth graders (the Children's forest) collaborate on ecological features such as plant life and cultivation. The aim of thematizing should of course be to facilitate and enable collaboration between all projects, but in reality it might be hard to find common ground for all of the seven modules in any particular year. In any case, aiming for collaboration in between classes will be a good starting point for trying to thematize the modules.

Bringing the modules closer together and thematizing would also help bring MV:s program from being a separate entity away from school, to being something that can be incorporated into the ordinary classroom and the rest of the education at school, thereby permeating more than just the hours set aside for environmental education. Realizing this would be education for sustainability at its best – where teachers and students work together across subjects and across classes. Of course, MV:s program by itself is not the key to realizing education for SD, but letting it serve as a good example of what can be done would possibly mean that it trickles down and leaves its mark on other parts of the children's education as well.

Ideas for future themes:

Helsingborg and Alexandria – The local and the global (Alexandria is one of Helsingborg's "Friendship communities"[125])

Helsingborg now and then – Putting the here and now into historical perspective enables a better perspective on thinking about the future

Where is it made? – Looking at the origins of the things we have, from produce to goods to fuel etc., learning more about trade and social conditions, and thinking about local production.

Öresund – Looking at our close surroundings to understand correlations and see how everything is linked even though it is hard to see sometimes, making students think about how their everyday decisions actually matter and can make a difference.

Transportation – Seeing how we move, how products move, and what choices we can make to better the environment.

[125] Swedish = *vänort*

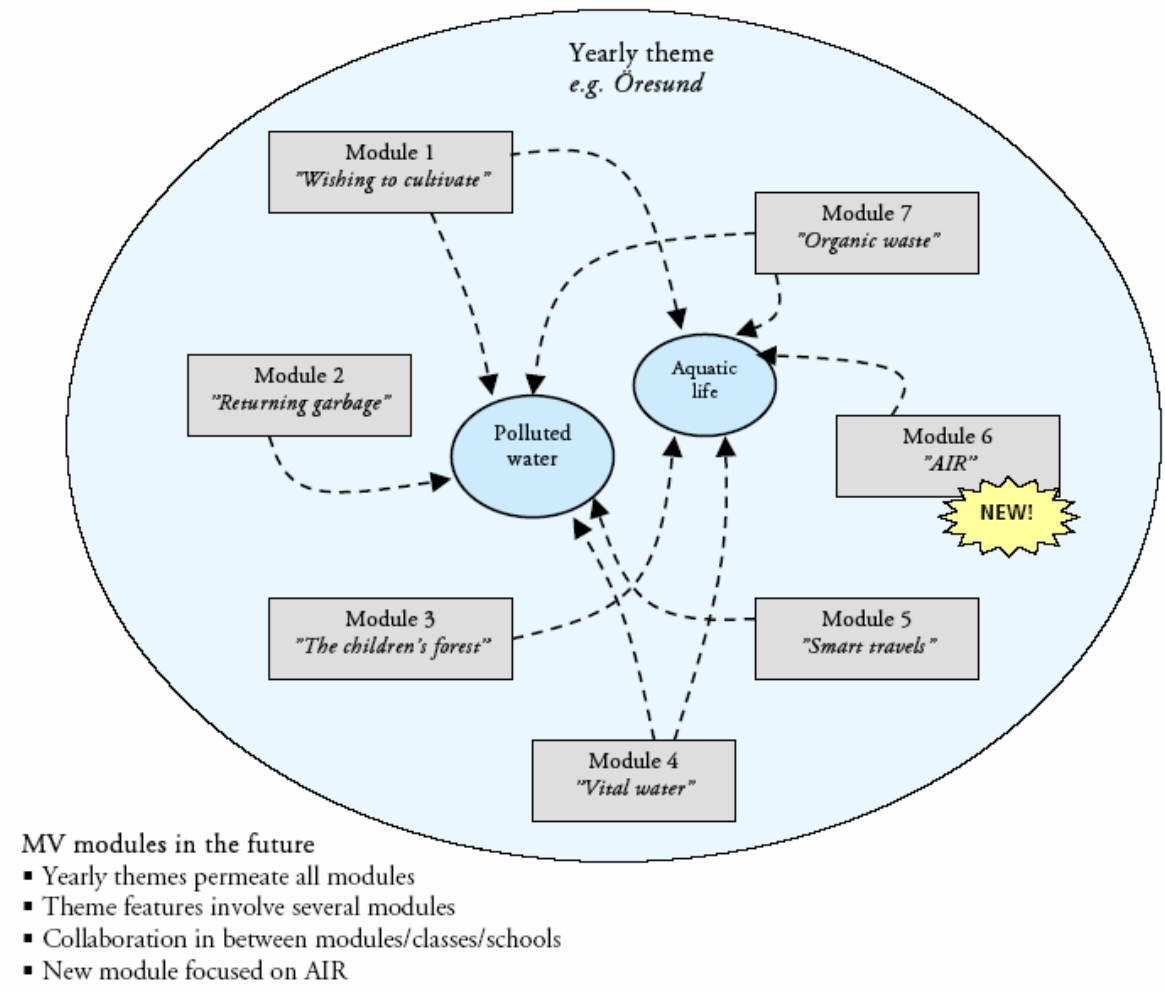

Figure 7 – MV modules in the future

6.1.2 Rearranging – new module

As already shown, and as MV have already pointed out, module 6 – "Bike right" is not working out at the moment. It would be sad to see the module disappear, but some of the features could easily be incorporated into the previous module "Smart travels".

What is being proposed is to start a new module that focuses on a part of our environment previously almost untouched by MV – ***air***. Devoting a module to the subject of air would complement the existing modules and also give better focus to an extremely important environmental feature. Without air there would be no environment to talk of, at least not for the current inhabitants of planet Earth. Also, air is of special importance to Helsingborg, because the city has had severe problems of staying within the permitted levels of discharge allowed for several toxic substances and GHG.

This module could also put more focus on the green house effect and global warming, two crucial features of sustainability that have been somewhat left out of MV:s program. Perhaps an idea on how to tackle some of the issues concerning GHG and air pollution can be found in the example of Global Learning, Inc. presented in section 4.1.2.5.

6.1.3 Sustainable additions to existing modules

This section presents a number of suggested additions for each of the seven modules, which would serve to make them sustainable with a triple bottomed perspective, not just ecological features. The fact that students are of different ages when participating in the different modules has been taken into consideration. It is unquestionably the fact that an eight year old cannot possibly be asked to learn on the same level as an eight grader, and the modules have always been very well adapted to suit the targeted group. Therefore these suggested additions are ideas, and contents should be adapted to suit the rest of their coherent module. In many cases, the additions fit into already existing features of the module, and would just serve as an extra input or source of facts.

Many of the suggested additions also touch upon subjects and matters that will certainly be discussed in other parts of the student's education. This is not a problem, because it can rather serve as a way of making MV:s program be an even more important complement to the existing education. If MV can offer a broader perspective and complement what the regular teacher has already discussed, or will discuss in the future, it is another step towards education for SD. Ultimately, the contents of the modules will interact with the education provided by the regular teacher, thereby enabling collaboration across subjects and with different teachers. The regular teachers the students see everyday should be seen as an important resource that can give valuable input on the students, and also continue MV:s program and message when the MV representative is not there. The more involved and interested a teacher is in the program, the better.

One point that has to be made is this: When talking about environmental issues and problems, a lot of focus is being put on the negative. The children who are a part of MV:s program can hardly be blamed for the situation in the world today, and should not be made to feel as if it is their fault. Instead, additions should focus on bringing forward what good things can be done to prevent things from getting worse. Positive reinforcement will surely help to motivate and strengthen where facts about present day can paint a gloomy and sometimes hopeless picture. Implanting a seed of possibility in the students, a thought of being able to change what the future holds is of greatest importance. The following additions might come off as adding to the vision of a world without a viable future, but on the contrary contents wish to shed light on what can be done to prevent such a future. It is important to ponder on the inequalities and the negatives of the world, but it is of even greater importance to think about all the good things being done and what you as an individual can start doing to make it better.

6.1.3.1 Wishing to cultivate

Drawing 2 – Wishing to cultivate

- ***Foreign fruits and vegetables.*** - Including some fruits and vegetables that are not cultivated in Sweden, and touching on why they can't be cultivated here. This fits into the visits to Maja's Garden or the classroom visit and would serve to widen perspectives from the local to the global, and also teach students about how differences in climate, soils, elevation and other conditions affects what we can cultivate.
- ***Pesticides.*** - How they affect the environment, and the better alternatives. Could easily fit into the classroom visit, and teaches students a little about how we cultivate today, how things were cultivated in the past. Eco-labeling of foods. An aspect such as this could get students to critically review their choices and maybe influence others in their surroundings (e.g. parents) on what to buy and not to buy.
- ***Food crops in different countries*** – In Sweden we used to eat a lot of potatoes, and before that we ate buckwheat, but now we eat mostly pasta. In other countries people eat rice, bulgur, couscous and other things. Children could comment themselves on what food crops they eat at home, maybe they have other ethnic backgrounds and could share with the rest of the class. This would open up for discussion and also widen the children's perspectives from the local to the global.
- ***Why is there not food enough for everyone?*** – This feature could touch on the different variables needed for successful cultivation – good soil, sunshine, rain and water etc. and bring up examples, historical and present day, where crops have turned bad and caused famine. It could also touch on the consumption of food in Sweden versus other countries, indicating our habits and how we can help feed more people. A feature such as this can bring up the aspect of values and ideals, an important feature of education for SD.
- ***Being vegetarian.*** – What is it like to eat no meat? Are there any vegetarians in the class? Do we need meat everyday? What options are there? How many animals are slaughtered each year to provide Swedes with meat? A lot of questions can be raised when this issue is discussed, and this feature could also touch on the ethical aspects of mass-producing livestock for meat.
- ***Livestock across the globe.*** – While visiting Backgården, it can also be discussed what other livestock and farm animals there are in the world, to raise awareness of what other animals are important in other places. Once again, it is about making the student relate the local to the global and increase their understanding for and of other people.
- ***Shopping locally.*** – What are the advantages of buying things that are produced close to home? Are there any places you can go in Helsingborg to buy locally produced crops

or meats? Are there any brands or signs that you can look for in the store that indicates local production? This can be followed up with students accompanying parents to the store and buying at least something that has been produced locally and bringing it to class to discuss. Such a feature will get children to critically reflect on what they buy and maybe also raise some other questions like how is it possible that apples from South America that have traveled half way across the globe can be cheaper than apples grown 10 km's from here? Such social issues can be touched upon, and reintroduced in the following year's module (Returning garbage).

- ***Experimenting with the senses.*** – While visiting "Sinnenas Gård", one part of the excursion could be about tasting and feeling while deprived of one or more of the senses. How does it feel to eat something you cannot see first? Does it taste differently? What is it like to eat without smell? To touch but not see? To watch and not hear? Being deprived of something will help students understand and become more empathic to those who don't have it all, whether it regards senses or other things.

6.1.3.2 Returning garbage

Drawing 3 – Returning garbage

- ***Thematizing the exposition on garbage.*** Thematizing the modules as a whole has already been mentioned, and would make for an interesting feature when it comes to the exposition on recycled garbage. It would bring coherency to the exposition while still allowing students to elaborate freely. Instructions would be limited to a word or a sentence describing the theme, but no other limitations would apply, other than the number of contributions per class allowed (usually two). A coherency would also make children learn to appreciate other solutions than their own when they come to visit the exposition, and reason around what are the best ways to go in creating solutions for particular problems. This feature includes both democracy, as students get to choose their methods but also choose which contributions will represent them in the exposition (if they choose to make more than two), and opens up students' minds to other ways of reaching the same goal.
- ***Garbage around the world.*** – How is garbage taken care of in other countries, and why? How did we use to take care of garbage? Are there any methods Sweden can learn from? What are we good at locally, and what can we do better? This feature could fit into the regular classroom visit and shed light on more than what is done just locally, or it could be discussed while visiting the waste management site. From local to global once again, and also from then to now and into the future.
- ***Living off the garbage.*** – People live on waste management sites around the world, collecting garbage. This means that a lot of what we throw away is still useable. What can be saved if we use what we have until it is really worn out? A feature such as this will raise social issues of poverty and what can be done, but also moral issues relating to why we throw away things that are perfectly useable. Students will learn to think about

their consumption and why we constantly want more, and how they can change their behavior a bit, to better the environment.

- ***Sustainable alternatives to finite materials.*** – Instead of just talking about the finite resources such as oil and coal and ore, a part of the classroom visit could talk about what infinite materials there are that can be used as substitutes. Plastics made of corn or hemp instead of oil for example, that degrades and returns to nature. This would put a focus on the positive things that can be done when it comes to waste, instead of the everlasting problem of how to decrease the amounts.
- ***How do we use less paper?*** – What will happen if we continue to increase our usage of paper? Make students think about how much paper they use in a week or a month. Maybe collect it all in a special bin, or make notes on how many pages scribbled or written on in pads, and collect the numbers. Talk about how to save on paper. This will make students use their own creativity and collaborate with others, discuss and value options and critically review some of their own behavior.
- ***Where is the water?*** – As a part of the feature on returning water, time can be spent pondering on why there is more water in certain parts of the world than others, and what comes of it. It can also be related to what will happen if the climate is changing – what will happen to the water? Such a feature will give a global perspective and give a starting point to what will return in module four – vital water.

6.1.3.3 The Children's forest

Drawing 4 – The Children's forest

- ***Rainforests.*** – Introducing the important functions of the rainforests – the plants and trees being 'the lungs of the world' and a source of lots of medicine and important substances, the animal life and the question of extinction. What happens if the rainforests are devastated and chopped down? This could fit well into the regular classroom visit, and provides a wider perspective and a global view of something that occurs all around us.
- ***Forests of the future.*** – How do you think the forest will look in the future? This could be a theme for the exhibition of the "Dream forest", or could complement and get the children to think about what they would like to save and preserve of the forests today.
- ***Treeplanting for action.*** – Connect every year's tree planting with an action. It could be coherent with the theme of the year (as discussed earlier), or it could be other issues. Make the children dedicate their tree to something – children in other countries, animals in the forest, relatives, friends, and preservation of...Öresund? Collect the dedications and make a leaflet to distribute. This will let the children remember 'their' tree, and also see how others have thought.

6.1.3.4 Vital water

Drawing 5 – Vital water

- ***Cleaning water.*** – In Sweden and in other countries. How is it done? Is it done? What happens if we don't clean the water? What shouldn't be cleaned out of water? Easy tips on how to keep your water clean. While on the Watervoyage, information could be given on these issues, making children question and think about what happens in different scenarios. Critically reviewing and creating connections between actions, behavior and outcomes will be an important lesson, as well as getting global input on the issue.
- ***The World's Water.*** – Connecting with module two, a further discussion on what will happen with the water in the world if global warming and the green house effect continue could be a feature. Maybe a collaboration of some kind between year three and year five? Discussions on what can be done to prevent this and how much more or less water different parts of the world will have. This discussion and possible collaboration will help students to think about their behavior and what they can do to prevent this future from happening. It will also give the older students a chance to feel as if they themselves are teaching and passing on knowledge to others. Maybe an idea for the buddy-program[126], if there is such a thing at the school.
- ***Message in a bottle.*** – Students get to send messages early on in the year, to see if they receive answers before the year ends. Answered messages will, apart from the possibilities of pen pals and other things, provide information on currents and how water moves. Accounts of other messages in bottles that have traveled far and wide should be given to inspire children, and teach them about all the water that transcends the globe. Such a feature can inspire the students, and give them something to think about and follow up on. Who knows, maybe replies come within the month, maybe they have to wait for years, but that is the fun of it all. To limit littering, messages can be limited to one or two per class, and use recyclable bottles of course!

[126] Swedish = *Fadderskap*

6.1.3.5 Smart travels

Drawing 6 – Smart travels

- ***Securing your bike and yourself.*** – Reoccurring features from module six (see appendix 2) that are worth saving, and will give students practical knowledge of how to make their bikes safe and why to wear helmets.
- ***Savings.*** – Calculating examples of how much you can save, in money, in fuel etc. by using your bike instead of the bus, by taking the bus instead of the car, by taking the train, etc. This will give students a real insight into what they themselves easily can do to lessen the green house effect and better the environment. It will also give them an opportunity to possibly influence others in their surroundings (e.g. friends, family) on what they can do to make things better.
- ***Other means of transport.*** – What are the benefits or drawbacks of other means of transports in our societies? Trucks, airplanes, boats etc. What are the alternatives? Raise the question of how much of our daily consumption, food and goods and so on, that has been transported to us from far away – a recount of module one, and what impact that has on the environment. This feature will serve to make students look at their habits and their choices, and how to maybe change them, not only by means of choosing transport, but by thinking of what they buy to lessen transports from afar.
- ***The right of discharging and emission***[127] – A feature that could be included into the visit at the energy workshop, where the subject of the global trade of rights of discharging and emissions is discussed. What are they? To whom do they apply? Why do we have them? What is good and bad about them? This will make the students reflect and think about trade and economy, and important aspect of SD, and some of the advantages and disadvantages of existing systems.

6.1.3.6 Bike right

Melts into module five – Smart travels, and is replaced by a module concerning air, see section 6.1.2

[127] Swedish = *Utsläppsrätter*

6.1.3.7 Organic waste

Drawing 7 – Organic waste

- ***What we use at home.*** – Give examples of products such as detergents, soaps and shampoos used in our homes that emit nutrients and what this means. What are nutrients, and what do they do? What happens when there is too much of a nutrient? Are there any good alternatives to these products? Eco labeling – recount of module one, but with a widened perspective. Give students time to reflect on what they have in their homes that contribute to overfertilization, and what they can do to lessen this effect. Such a feature can hopefully induce changes in consumer behavior.
- ***The good dump*** – Focus on the good aspects of the waste management site – what good can come from landfills[128], how well isolated is everything today? A feature of this addition could mean getting students to think about how they would like to solve the problem of waste. What do they think can be done? Make an exposé or do drawings and invent new waste management techniques. This will help students collaborate and make choices, value and argue for their opinions, and at the same time value others'.
- ***Consumer behavior.*** – In the western world, it is estimated that we throw away 50% of what we buy before it is used[129]. What consequence does this have? How can we stop such behavior? Make students do a list of things they throw away, like food, packages, or other items, that they think could have been of some use to someone else. Do an estimate of how much food the class throws away in one week. Students can do group assignments to write essays about how they think such a problem can be solved. A feature such as this will also help make students live democracy, because they have to agree within the group on what to do, and it will also help them argue and value opinions.
- ***Good(s) to throw away.*** – What is harmless to throw away in nature? Can there even be some things that are good to throw away in nature? Let students think about this and reason about the questions. Have a classroom discussion where everyone can have a say and argue for their opinions. Reach a consensus. This is a good way to activate the entire class. It can be done in the form of a role-playing game where students are given different opinions, or it can be an open discussion where people are just themselves. All to realize democracy and the importance of valuing and respecting other people and their beliefs.

[128] Swedish = *Deponi*
[129] Fuad-Luke, 2006

6.2 Goals and aims

As described in section 4.2.4, MV lacks a lot when it comes to setting clear goals for their program. Things are put down in what little documents and routines there are, but they have a hard time transferring to reality and becoming an actual part of MV's daily business. A lot of this has to do with understanding the difference between *goals* and *aims*, and setting the appropriate kind of goals for their modules and their program. External sources have on some occasions been used to validate the following, but most ideas and suggestions emanate from time spent at MV and getting acquainted with their methodology.

6.2.1 Goals vs. aims

Most times, there is a very fine line between goals and its aims. The Compact Oxford English Dicitionary (COED) actually uses one in describing the other: "Goal(:) [...] an aim or desired result"[130], and aim is described as "[...] try to achieve something[...] a purpose or intention"[131]. This means that a goal is something (at least somewhat) concrete, set to be achieved (most often in a certain timeframe), while aims are more of long-term hopes for outcomes. E.g. the goal of an educational practice could be to learn how to calculate and multiply certain figures by the end of a school year, while the aim of the same educational practice could be that students are able to use their abilities while going shopping for groceries.

Saying this about goals and aims does not necessarily mean that one is better than the other to use as a tool in describing a program or a business, it is just important to be able to use them for the right purpose. This is especially important for MV to think about, regardless of which part of their program it concerns. There is an advantage to having both goals and aims, because it paints a clearer picture of what should be the outcome of the modules, but it is important to understand where one concept works and the other does not. Not knowing the difference between goals and aims, and using one where the other is to be preferred, will render insufficient basis for the evaluations that are to be done each year. Thoughts on evaluations are presented further in section 6.3.

6.2.2 Setting goals

Goals, the sometimes time-limited desired end results of something, can be used for several purposes in any organization or program. For MV, it can serve a purpose of specifying where MV is (or should be) heading, and outlining how to get there. It can also serve as the basis for evaluations already mentioned, and outlined further on in the text.

An important thing to think about when setting goals is that they in many cases should be *measurable*. Most often there needs to be some way of controlling whether the goals have been achieved in set time, or if things are heading in the right direction. If goals are not measurable, they cannot be controlled in the same way, and since MV is a program that is being supervised by other authorities like the TA, it can probably serve a good purpose if they have measurable goals. Measurable goals also give a better basis for making statistics, because they can involve percentages and/or figures.

[130] COED 2007-04-13
[131] COED 2007-04-13

There are a few measurable goals already presented in the modules:

- all students learn to sort their garbage in school and at home (Returning garbage)
- students get to experience animal life in salt- and freshwater (Vital water)
- students use public transport to a greater extent in the future (Smart travels)

The rest of what is presented as goals are not easily measured (see appendix 2).

Looking at the aspect of sustainability, measurable goals might not be the only way of providing good and ample material for evaluation. Certain goals of MV's program and their education for SD can perhaps not be measured, and should perhaps not be measured either. Goals of education for SD can be to have learned *something* about a certain feature or concept, but how to measure this? And how can changes in attitudes and behavior, changes that most often can just be observed and might not even be apparent to the participants themselves, be measured?

Examples of non-measurable goals in the modules are:

- the opportunity to show one's thoughts in an exposition (Organic waste)
- thinking creatively about transportation – preferably by means of self (Bike right)
- students are encouraged to experience nature , thereby creating sensitivity for nature and an understanding of how we impact nature (Returning garbage)
- all students understand how to reduce their waste and know the basics of composting (Returning garbage)
- students discover variation and beauty in nature (Wishing to cultivate)

There needs to be a mix of measurable and non-measurable goals for MV's program and their modules. Measurable goals to be evaluated and presented externally to interested parties, and non-measurable goals that can serve to add layers to the measurable goals and give valuable insight into what stays with the participants after they complete a module or other feature of MV's program. Goals could also be presented to teachers before they sign up for a module, so that they can see what their students are expected to learn from attending – something that might increase the interest in the program.

6.2.3 Setting aims

If goals are to be measurable and as concrete as possible, aims can be a little more abstract and need no time limit or have an end point. The aim of any aim is to describe desired outcomes, wishes and aspirations of the instigator. They can be as long term as they want, and need not be measurable in any way. This is not to say that there should not be some form of control, monitoring or follow up, but because of the nature of many aims this can hardly be done in the same manner as with goals.

For MV, many of the aims of their program and their modules are already set, but they are presented as goals. Every module has several examples of this, and the same concepts and ideas reoccur again and again. Becoming aware, learning, being able to, gain understanding, get insight, comprehend, see, show and being showed are words that are being repeated in the goal

section of each module. These are words that might not be possible to measure or use in describing goals, and in this context they are convincingly aims disguised as goals. E.g.;

- students become aware of plant life from seed to fruit (Wishing to cultivate)
- students become conscious consumers (Wishing to cultivate)
- students learn about different materials and how these fit into the cycle of nature (Returning garbage)
- students learn to understand the importance of trees in the city and its proximity (the Children's forest)
- students learn to understand the ecological importance of trees (the Children's forest)
- students gain an understanding of the importance of water and how it is managed in society (Vital water)
- students get an insight into the environmental problems of water and what we as humans can do to improve the situation (Vital water)
- students see how public transportation leads to environmental profits and gain (Smart travels)
- students get an insight into environmentally friendly and secure energy use (Smart travels)
- students see the possibilities of transportation by bike in new light (Bike right)
- students get an insight into the importance of wearing a helmet (Bike right)
- showing the importance of collecting (Organic waste)
- showing how to practically handle organic waste (Organic waste)

In pointing out the in discrepancies between goals and aims, it must be said that there is no disagreement about what MV has written in their module folders, just with what it is being described as being. There is, on the contrary, a lot of agreement with the content and the suggestion is that MV keeps most of these *aims* for the future. Some supplements have to be made though, in order to support a triple bottomed perspective to the aims of their education. There is also the suggestion that the aims be kept in the presentation material, because aspirations and desires serve a good purpose in promoting the modules.

6.2.4 Suggestions

6.2.4.1 Goals

The following are some suggestions of general, measurable goals (with and without timeframes) that should be applicable for the program at MV as a whole, or within its modules. The goals should be seen as pointers in stating the way MV is heading, or wants to be heading.

- ***Every feature in a module presents social and economical, as well as ecological perspectives.*** – To ensure a triple-bottomed, truly sustainable education. *Timeframe of completion: one year*
- ***Every aspect or feature taught presents information from at least three different sources.*** – This will serve to give a multifaceted insight and perhaps invoke some critical thinking in the students. *Timeframe of completion: less than one year*

- ***All education taught at MV, or as a part of a module, is free.*** – This is to ensure that everyone can participate equally in MV's program and take part of all that MV has to offer. *Timeframe of completion: five years. Intermediate goal: 75% is free in 3 years.*
- ***Students choose the contents and methods of learning of their education at MV.*** - This is a critical feature of education for SD, democracy, and should of course be an obvious feature of MV's program. *Timeframe of completion: <3 years. Intermediate goal: students decide 50% of content within 1 year.*
- ***Every class participating in a module collaborates with at least one other class at some point during the year.*** – This is a goal aimed at looking into whether the proposed yearly themes bring modules closer together and increase collaboration across modules, classes and schools. *Timeframe of completion: <5 years. Intermediate goal: 50% in 2 years, 75% in four years.*
- ***X percent of students attend at least one feature of a module each year.*** - This is a goal intended purely for pinpointing the interest of MV's program. It could be combined with goals of "x percent of students attend all basic features of a module each year" and "x percent of students attend at least one optional feature of a module each year". With other goals achieved, these goals could later be changed to "x percent of students attend all features of a module each year".

The aim of these goals is to ensure that MV works towards sustainability and education for SD, and with that let certain ideas such as democracy, equality and diversity permeate all that they do. While this can be a good start, MV can certainly find other goals that are applicable and will serve to further their program.

Goals for the modules can be even more specific and in many cases complement the comprehensive goals for the entire program. Deadlines are of less importance here, because the goals are mostly meant to serve as a guide for evaluations that take place at the end of the year. In many cases they are very similar to what is stated in the material at present, they have just been twisted from being desires and aspirations into being a little more concrete.

As with the goals of MV's program as a whole, the following suggestions aim at providing a good starting point, and inspiration to find other measurable and non-measurable goals for the modules. Therefore, the main focus is goals for the basic content of the modules. The liberty of presenting possible goals for some of the suggested additions to the modules, as presented in section 6.1.3, has also been taken. No suggestions for module six will be given, because of the suggestion that it is replaced by a new module, as described in section 6.1.2. Goals described in previous sections as being measurable or non-measurable should still be included in the future, and are not dismissed even though they are not presented here. It has to be pointed out that when there are indications that something is to be defined – such as actions or basic measures etc. these variables are for MV to decide on.

Wishing to cultivate

- Participants can accurately describe the steps of how plants turn from seed to fruit.
- Participants can accurately describe the basics of cultivation (these basics being defined).
- Participants have influenced the purchase of local products on at least one occasion.

- Participants can name x foreign and x domestic kinds of fruit/vegetables/livestock/staple foods.
- Participants have expressed their thoughts on why everyone does not have sufficient amounts of food available to them.
- Participants have expressed their thoughts about being vegetarian and described alternate sources of food to meat.
- Participants have described their impressions of being deprived of one or more of their senses.

Returning garbage

- Participants can name the most common materials used today (these materials being defined), and their natural origins.
- Participants can accurately describe the main features of one or more of the natural cycles of water, waste etc. (these main features and natural cycles being defined).
- Participants have reduced their amounts of waste, and can describe their methods of doing so.
- Participants can accurately describe the basics of composting.
- Participants can describe measures of becoming a better and more conscious consumer.
- Participants have participated in producing and deciding on contributions to the garbage exhibit.
- Participants can describe Swedish and foreign methods of processing waste.
- Participants have expressed their thoughts on why people live in landfills, and what can be done to better the situation.
- Participants can name x alternatives to finite materials, and also discuss their different applications.
- Participants have made suggestions on how to decrease our use of paper.

The Children's forest

- Participants can accurately describe features that make trees an important part of the city and its proximities (these features being defined).
- Participants can accurately describe features of trees' ecological importance (these features being defined).
- Participants have planted a tree, and can accurately describe how to treat it properly.
- Participants can describe what trees can be used for.
- Participants have drawn pictures and participated in the "Dream forest" exhibit.

- Participants have expressed their thoughts about the rainforest and its possibilities as well as its threats.
- Participants have chosen an action or a dedication for their planted trees.

Vital water

- Participants can accurately describe the basic measures taken in managing water in the society (these basic measures being defined).
- Participants have expressed their thoughts concerning problems of water, and suggested measures to take in order to better the situation.
- Participants can accurately describe what to do in case of fire (these actions being defined).
- Participants have participated in the "Watervoyage".
- Participants have visited Dropp In.
- Participants have entered in the exhibit for the World Water Day.
- Participants can accurately describe some of the techniques used in foreign countries for cleaning water (these techniques being defined).
- Participants have expressed their thoughts on what is going on with the water supply in the world today, and how it can change in the future.
- Participants have sent a message in a bottle.

Smart travels

- Participants can accurately describe the main features of the public transportation system (these features being defined).
- Participants have expressed their thoughts on public transportation and environmental gain.
- Participants can describe energy uses that are safe and have low environmental impact[132] (low impacts and uses being defined).
- Participants have participated in the Hunt for Culture.
- Participants have participated in Skåneresan, and changed mode of transport at least once.
- Participants have taken part in the process of inventing by means of solar cells and electric engines, and have expressed their thoughts on this process.

[132] MV uses the word environmentally friendly =*Miljövänlig* in its folders, which is a word that should be refrain from because it has no clear definition. What is environmentally friendly to someone might not be environmentally friendly to the next person, so using another term would be better.

- Participants can name ways of saving energy and the environment, and safety precautions concerning electricity.
- Participants have expressed their opinions concerning at least three modes of transport, both advantages and disadvantages.
- Participants can describe the historical background of rights to emission and discharge, and have expressed their thoughts of how the system works and could work in the future.

Organic waste

- Participants collect organic waste for recycling at home and at school on a X[133] basis.
- Participants have expressed their opinions about the importance of collecting organic waste.
- Participants can accurately describe the main features of how organic waste is managed (these features being defined).
- Participants have displayed their thoughts and ideas about organic waste in an exhibit.
- Participants can give examples of household products that are in some way harmful to the environment.
- Participants can accurately describe common nutrients and their impacts in nature (nutrients and impacts being defined).
- Participants have expressed their thoughts on the possibilities of landfills.
- Participants have discussed and presented their thoughts about good consumer behavior and how to reduce our waste.
- Participants have taken a part of reaching a consensus concerning what can be thrown away in nature.

It might seem questionable that many of the goals are about expressing thoughts and views, but this would be an adequate and preferable way of making sure ideas of sustainability and education for SD permeate even the goals of the modules. Since critical thinking, values and many other features of education for SD are somewhat abstract and have more to do with the learning process than what is being taught and learned, there is no accurate way of measuring whether a student has incorporated this into his education. But by expressing thoughts and ideas some form of thought process and reasoning has taken place and can, along with methods of teaching etc, indicate some of the ideas of education for SD.

6.2.4.2 Aims

As stated before, there is little disagreement about most of what MV has described already, the labeling just needs to be corrected. What is described as goals in the presentation of the modules at present need to be changed into aims. Correct that, and MV has been well on their way for a long time when it comes to defining the aims of their program and their modules.

[133] Daily, weekly, monthly etc

6.3 Evaluations

An initial request from MV was to conduct a form of evaluation of their program, but the time limits and scope of the thesis made that impossible, and so an agreement was reached that a portion of the suggestions would be dedicated to evaluations. It has to be pointed out that these suggestions are not based on any methodology concerning evaluations, but are merely thoughts and reflections on how MV could improve in this matter, and how to try and include aspects of sustainability, having seen the current methods (or lack thereof) at work.

6.3.1 What to evaluate

Any program or company that works with explicit goals and aims also needs to follow up on these. An evaluation of MV could, with benefit, be directed towards the set goals for the program. This means that the goals themselves have to be measurable, and how this can be achieved is described in section 6.2.2. With measurable goals, it is easy to form questions and other evaluating materials needed to follow up on progress. Goals for MV's program already exist today in the modules, and to some extent for the program as a whole, and with the changes, additions and complements suggested in section 6.2.4.1, it could serve as a sufficient basis for evaluation.

The suggestion is for MV to carry out two separate evaluations. One would be directed towards the participants of the modules, where they can have their say about content, learning, good and bad features etc. This would be compiled and kept mainly for internal purposes, so that MV can better their program and their modules, but could also be presented externally to different interested parties in order to show tangible results and opinions of actual participants. The other evaluation would be directed towards the goals and aims of the entire program – attendance, turnover etc. This would be compiled and presented to the TA to show the outcome of the program.

6.3.2 When to evaluate

At present, MV does some form of evaluation or compilation two times a year, as a way of reporting their results to the TA (see section 4.2.4). The suggestion is to keep a descriptive compilation of activities held at or by MV (not an evaluation as such, but an important and interesting feature that adds a dimension of life) for the "half year" report at the end of the calendar year and also includes a prognosis of how things are looking. Thereby, the recommendation is to save any evaluations for the end of year report (in summer). This means that all figures of attending number of classes, students, percentages etc. is compiled after all of the activities have been completed. This would help in forming satisfactory questions and methods of evaluating MV's program (see sections 6.3.7 and 6.3.5). Evaluating *after* a module is finished will give the most accurate picture of how the year has progressed, and would offer a clearer picture of how the program at MV works, than what is presented today.

6.3.3 Who to evaluate

In keeping with the aims of education for SD, it would of course be the children themselves who are evaluated on the modules and have a say in what they have experienced during the

year. With a compulsory school student body of approximately 13000-14000 in Helsingborg each year, and an estimated 60-70 percent of these[134] attending a module (or parts of one) at MV, it would mean 7000-8000 students to evaluate per year. This is not a realistic option.

What is proposed instead, is to let the teachers who have had their students attend an MV module evaluate the program. The teachers see their students every day, and will be able to see their progress during the course of the school year. It will perhaps also be easier for teachers to answer questions related to the set goals and aims of the modules. Instead of thousands of evaluations to compile, it will perhaps be in the hundreds, a large but yet more manageable task. Another possibility, that will keep somewhat with the thoughts on letting children be a part of all the features of education, so persistent throughout education for SD, is to let students at least be a part of the evaluation process. In most Swedish schools today, there are student representatives with the task of carrying the voice of all the students in a class in student's councils, teacher conferences and such. This often starts as early as the first or second grade. Including these student representatives in evaluations with the teachers would at least provide some insight into how students feel.

Letting the teachers evaluate the modules has another big advantage. While students partake in each module only once, teachers will see them return a number of times over their teaching careers. This means that they can also put the modules into a larger perspective and compare features from one year to the other. What features work or don't work? How have teachers been able to fit the teachings of MV into the other parts of education? Are there certain features that are missed, or could be brought back? Letting teachers evaluate will add another dimension to the scope of the evaluation that could be missed if it was directed solely towards the students.

This however important, is only part of the evaluation that needs to take place at MV each year. The statistical evaluation (attendance, program goals etc.) cannot be completed by the teachers, but needs to be compiled by either a member of the staff at MV, or an external consultant. Here it is important to remember to let staff have their say about the program as a whole, the modules and its features. They are the ones who have been teaching the contents all year, and they have had some of the first hand experience of how it has been received by the students.

6.3.4 Why to evaluate

Evaluations should be made with a clear focus in mind. This helps not only in forming questions and methods for the evaluation per se, but can also help in reviewing and reconsidering the contents of what is being evaluated. When it comes to MV, it is strongly recommended to agree upon the focus of the evaluation before any questions or methods are discussed. Are evaluations made to enable a continuance of the program (e.g. is MV dependent on the TA approving of the findings in order for them to continue with their financial contributions)? Are evaluations made to research the children's knowledge of environmental/sustainability issues? Whatever the focus might be, it will provide a hint towards an answer to the question of why MV is what it is – probably the most important question to answer for any program or company.

[134] See the statistics in figure 4. The set goal for MV is an attendance of 75 percent of students each year.

6.3.5 How to evaluate

There are probably as many methods of evaluating, as there are evaluations. This section does not concern choosing a method of qualitative or quantitative research, but rather the variables to be included in the evaluations. At present, the MV reports show a mix of different variables in describing attendance of modules, giving them a very messy impression, and the modules' participants are carrying out no evaluations of the modules' contents.

These are the suggestions for the evaluation concerning MV's entire program that are to be reported to the TA:

- Decide on what variables to be included when looking at attendance for the modules. Number of attending classes? Number of students? Number of schools? Percentages?
- Decide on how the modules and other parts of the program are being evaluated. As a whole? Each feature separately (as shown in appendix 2, some features of a module are optional, and MV's compilations show that certain features are more popular than others)?
- If possible, relate to previous years. Increases? Decreases? (This would be done most effectively if the modules are evaluated as a whole, and requires more effort if it relates to each feature separately.)
- Be consistent! Stick with the chosen methods throughout the evaluation and throughout time to ensure that comparisons can be made over time. Of course additions and deductions can be made (it is as equally important to evaluate the evaluation as anything else) in the future, but keep the framework.

For the evaluation concerning the modules, all of the suggestions above apply. It is important to point out the importance of including "open questions"[135] throughout the evaluation – questions that give food for thought and an opportunity to value and think more freely than standard questions that simply require an answer of YES or NO. This is not to say that there should be no questions of a more quantitative nature in such an evaluation, questions of this kind are always good for quicker comparisons and statistics, but there should always be given an opportunity to comment and describe experiences more personally.

When it comes to the method of how to carry out these evaluations in practice, there are no special preferences. The evaluation of MV's program, attendance and such will rely upon someone gathering a lot of written and numeral data, and would not require any special method. If the staff is asked to comment on the program, it could be done in either written form (questionnaire or essay) or through interviews, all depending on how much time the gatherer of information has to spend. The evaluation proposed to be performed by the teachers would probably be more easily manageable and easier to follow up if it was collected in some written form, like a questionnaire.

A sustainable suggestion for such a questionnaire instead of printing hundreds of copies and sending them back and forward could be to have it accessible on MV's webpage. Many Swedish companies and government authorities have used them for years, such as the SNAE, IKEA and many more. This way, it would also be much easier for MV to compile answers and find results for statistics. If such an approach gives good results, it would be possible to make

[135] A feature of education for SD described as very important for example throughout the MSU U04:072

yet another kind of evaluation, aimed directly at the students, so that they could be included more in the future. It would not be realistic to expect answers from all attending students, but even if just a rather small percentage answered, it would render good data for statistics and more importantly give an insight (and a real sustainable twist) to what the real subjects of MV's program think of it.

6.3.6 Statistics

Recapping what has already been written in the previous sections; clearly defined focus, methods and variables will provide ample material for making understandable statistics. The following are suggestions concerning the kind of statistics that could be presented and give interesting parties a better insight into MV's program:

- Number or percentage of classes in a year attending each module, compared with the whole, previous years and program goals.
- Number or percentage of students in a year attending each module, compared with the whole, previous years and program goals.
- Percentage comparison of schools attending the modules. (E.g. X percent of classes from school A, versus X percent of classes from school B) Changes over time.
- Attendance of key features, and/or features arranged in collaboration with others in the modules (e.g. Maja's Garden - Sofiero, Watervoyage – Sewage treatment plant or Tree-planting), and changes over time.
- Man hours, compared to previous years.
- Costs (per module, per feature, per student?), compared to previous years.

The evaluation performed by participants of the modules can also render information suitable for statistics, especially from questions of a more quantitative nature. See the following section for suggested questions.

6.3.7 Suggested questions

As already said, the ultimate solution would be for the attending students to take part in an evaluation, and if a web-based questionnaire can be implemented it is a possibility for the future. In this section, some structures and questions that could be included in a questionnaire for teachers will be presented.

Many of the questions that could be included in an evaluation would simply confirm and follow up the stated goals, as presented in section 6.2.4. Some of the measurable goals that concern the program as a whole might not be suitable for teachers to evaluate, while others are, and that will be up to MV to decide. The focal point of evaluations should be to reflect and value the content and outcome of the attended module (or other part of MV's program). Teachers need to be well informed of MV's goals for the program and for the modules, so that they know which factors MV is looking to evaluate. For example, if a question concerns whether students can describe how a plant turns from seed to fruit, it is imperative for teachers

to know what MV considers to be the steps in that process. Such criteria should be handed out along with the evaluation, if teachers have not already gotten this information when signing up for the program (see section 6.2).

Each module should have a specific evaluation, with certain parts that can be compared to the other modules, and some parts that are "module-specific" – all to present a clear a picture as possible of MV. Comparable parts can be attendance and parts of the content that coincides for more than one module. Presented here is a suggested scheme for a teacher-evaluation. For a sample evaluation form, based on possible future content of a module, see appendix 3.

6.3.7.1 Scheme

Part 1: General information

- Name
- School
- Class
- No of students
- No of times module has been attended before
- Time spent

Part 2: Quantitative questions about the module, features attended, and MV's program as such

- Class visits
- Features attended
- Field visits
- Measurable goals for program as such

Part 3: Qualitative questions related to program, module and feature content

- Measurable goals for program as such (if applicable)
- Measurable goals for modules
- Feature content evaluation
- Suggestions
- Student input

7 CONCLUSIONS

After presenting findings of education for SD in Sweden, internationally and as a case study of Miljöverkstaden, after discussing these findings and also presenting suggestions, it is time to conclude this thesis. There will be no summary presented here, rather a short discussion relating to the purpose, problem and questions of this thesis, as stated in sections 1.2 and 1.3.

Looking at question one, how MV's program works today, this question is answered in full in section 4.2. MV is a program where all students in the municipality of Helsingborg are welcome to attend education for SD, where there among other things are seven working modules with a number of different features each, all concentrating on different issues concerning the environment. By dividing the modules and the features amongst themselves, and by constantly trying to learn more and develop the concept of education for SD further, staff at MV is using a number of different methods of conveying their message and teachings to their students. The program in itself works fine, with additions and subtractions almost on a yearly basis, but evaluations and follow-up along with implementation of education for SD outside the set program is lacking. Very few goals have been set for the program, and very little follow up is expected by the financial contributors, adding to the lack of incentive to facilitate this. Being a separate educational feature in the municipality, MV also struggles with how to make sure that the ideas of SD permeates further into the educational environment – into subjects and classes that MV themselves do not teach.

Moving on to question two, about legalities, policies and other important documents concerning education for SD, the third chapter – theory, answers this. There is little to say, other than that sustainability is at the top of most agendas, national and international, and that education is seen as one of the most important factors in implementing this perspective in society. International and national acts and laws have served to direct curricula towards a more sustainable approach, and there has been a turn from a purely ecological to a truly sustainable perspective where ecological, social and economical perspectives are given equal scope, at least in writing. The goal of education for SD, stated in most documents, is to create well prepared citizens of society that have the will and the way of making SD a reality, through a number of different approaches.

Question three is answered by section 4.1, where a number of examples have been selected out of the vast expansion of information relating to SD. There are examples of everything from pre-designed curricula and ten-step programs aiming at installing the perspective of SD throughout the school and its students, to practical examples of boatbuilding projects and theme weeks applying features of the environment and key concepts of education for SD. All in all, there is little doubt that there are many things being done on the issue, despite the sometimes negative outlook presented by investigations and reports.

All of section 6.1 is devoted to answering question number four. Both methods of teaching in accordance with key concepts of education for SD, and practical suggestions of adding to the modules are presented. Emphasis is put on introducing more social and economic perspectives in the existing content of the modules, an area where MV is lacking today. Every module is revised and new content is presented – both content that can fall under existing features, and some entirely new features. There is also content and suggestions for all of the modules acting together, such as yearly themes being suggested. Finally, there is also a suggestion on incorporating a new module into the existing program.

Recapping all of these four questions, and adding the rest of chapter six, the posed aims and the problem of MV's development into an example of education for SD are fulfilled and solved. MV is a program that is much needed in Helsingborg, and should be appreciated and recognized by all participants and others. There is also little doubt that MV is appreciated and that students and teachers are satisfied with the education because they keep coming back for more. Already today MV can serve as a good example of education for SD – if nothing else because of the strong conviction of its staff and the flexibility and nature of its content. It offers an exhilarating experience where perspectives and people meet, and where a positive approach can serve to solve even the dreariest of questions in a constructive and rewarding way. And MV is already applying many of the key concepts connected with education for SD – democracy, influence, values and critical thinking. By applying some of the suggestions from both international and national examples, and those presented in chapter six, MV is very likely to achieve a completely sustainable approach to education, both with regards to method *and* content.

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8.9 Drawings

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9 ABBREVIATIONS

ASE	Alliance to Save Energy
APEEC	A Prototype Environmental Education Curriculum for the Middle School
COED	Concise Oxford English Dictionary
EE	Environmental Education
ELIN	Electronic Library Information Navigator
EMW	European Mobility Week
GHG	Greenhouse Gas(es)
IUCN	International Union for Conservation of Nature
LOVISA	Lund University Library Catalogue
MV	Miljöverkstaden
NSR	Local Waste Management - *Nordvästra Skånes Renhållnings AB*
SA	The School Act – *Skollagen*
SD	Sustainable Development
SLA	School- and Leisure Administration – *Skol- o Fritidsförvaltningen*
SNAE	Swedish National Agency for Education – *Skolverket*
SOU	Public Investigations by the Government - *Statens Offentliga Utredning*
TA	Technical Administration – *Tekniska Förvaltningen*
UNEP	United Nations Environment Program
UNESA	United Nations Department of Economic and Social Affairs
UNESCO	United Nations Educational, Scientific and Cultural Organization
WWF	World Wildlife Fund - *Världsnaturfonden*

10 APPENDIX

Appendix 1 – Routine for evaluation of education at MV

Rutin för utvärdering av undervisning vid Miljöverkstaden

Syfte
Att fortlöpande dokumentera och utvärdera undervisningen för det interna utvecklingsarbetet.

Omfattning och frekvens
Utvärdering sker i första hand i samband med undervisning i Gubbhyttan, på Dropp in samt inom kretsloppsprojekten.

Definitioner
Miv - miljöverkstaden
Kretsloppsprojekt - årskursbundna undervisningsprojekt som omfattar mer än undervisningstillfällen i Gubbhyttan

Beskrivning
Undervisning Gubbhyttan: Miv gör egna noteringar på lektionsblanketten omedelbart efter genomförd lektion. Efter varje lektionstillfälle, nr 2 i de fall klassen beställt 2 lektioner; delas enkät ut till lärare. Utvärderingen besvaras på skolan i efterhand och skickas med internposten till Miv. Enkät för utvärdering ligger bakom whiteboard i undervisningssalen.
Enkätsvaren sammanställs och sparas av Miv, i pärm märkt ”Utvärdering av lektion i Gubbhyttan”

Dropp in: Efter varje undervisningspass delas enkät ut till medföljande lärare. Enkäten finns i mappar på Dropp in. Den besvaras på skolan, läraren avgör om eleverna besvarar enkäten enskilt eller i grupp. Svaren skickas sedan till Miv som sammanställer och sparar materialet i pärm märkt ”Dropp in undervisning”
Kretsloppsprojekten

Sopor i retur: Efter besök av lärare från Miv får klassen besvara frågor om lektionens innehåll. En utvärdering lämnas till läraren och svar från klassen skickas eller faxas till Miv som sammanställer och sparar detta i pärm märkt ”Utvärdering av soplektioner”

Livsviktigt vatten: i samband med ”Vattenresan” görs en intervju på bussen innan klassen återvänder till skolan. Elevsvaren sparas av Miv som sedan sammanställer. Enkäten finns i kassen med materiel till Vattenresan.

Förskoleverksamhet
Vid terminens planeringsmöte, som hålls tillsammans med personal från varje förskola, görs en muntlig utvärdering av föregående termins verksamhet.
I barngrupperna sker utvärderingen oftast i form av kollage då barnen tillsammans med Miv´s pedagog samtalar om dagens innehåll och sedan ritar, målar, klipper och klistrar ett färdigt dokument.

Efter läsårets slut gör Miv en genomgång av samtliga utvärderingar från undervisningsteman, kretsloppsprojekt och Dropp in. Genomgången bildar grund till förändringar och utveckling av verksamheten.

Ansvar
Utbildningsansvarig för undervisning i Gubbhyttan
Utbildningsansvarig för Dropp in
Utbildningsansvarig för respektive Kretsloppsprojekt
Utbildningsansvarig för förskola i Kretshyttan

Stöd

Enkät till undervisning i Gubbhyttan, finns bakom whiteboard i Gubbhyttan, bifogas. Bil 1, 2 och 3.
Enkät till besök på Dropp in, finns i mapparna på Dropp in, bifogas. Bil 4.
Frågor till avfallslektioner bifogas. Bil 5.
Enkät till Vattenresan bifogas. Bil 6.
Enkät till Trafiklektioner bifogas. Bil 7.
Enkät om Barnens skog bifogas. Bil 8.

Referenser

Förvaring
Rutinen / Instruktionen förvaras i digitalt format under Tekniska förvaltningens Intranet. TEKNET / Verksamhetssystem/.
Miljöaspekter

Kvalitetsaspekter
Kontinuerlig dokumentation och utvärdering av Miv´s undervisning borgar för utveckling och fortsatt hög kvalitet.

Arbetsmiljöaspekter

Säkerhetsaspekter

Appendix 2 – MV's modules

Module 1 – Horticultural project "Wishing to cultivate"[136], for school year 2

MV runs the project in collaboration with Sofiero Castle and the office of recreation and parks with the TA.

"We plant a seed when students are small, and let it grow. Growing up is experiencing through all your senses. It also concerns taking good care of things that grow. The theme Wishing to cultivate is a good start to scientific studies from a societal perspective"[137]

Goals

- students become aware of plant life from seed to fruit
- students know how we cultivate for food
- students discover variation and beauty in nature
- students become conscious consumers[138]

Basic content:

- Visit to Maja's Garden[139] at Sofiero for experiencing with the senses and discuss plants (entry fee to Sofiero not included).
- MV visits the class to lecture and inspire about cultivation and plants.
- Class assignment of planting seeds and documenting (in drawings) the development from sprout to plant.

Optional choices:

- Field visit to Backgården[140] to experience and learn about animals on a farm (SEK 250/class)
- Visit to the MV and "Sinnenas gård" to experience and produce different products such as oils etc. (SEK 750/class)
- Harvest season at Fredriksdal[141] - an opportunity to participate in the horticultural harvest and think about the existence of fruits and vegetables, cultivation, fertilization etc.[142] (SEK 1000/class)

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[136] Swedish = *Lust att odla*
[137] MV 06/07a
[138] Ibid
[139] "Majas Trädgård" is the part of Sofiero slott designed for horticulture, with a large number of plants and herbs cultivated for educational purposes.
[140] Backgården is a small farm in the eastern parts of Helsingborg (Ättekulla), incorporating the most common species of Swedish livestock in their population.
[141] Fredriksdal is the city's open air museum with cultural and natural environments from different eras of local history.

Module 2 – Waste project "Returning garbage"[143], for school year 3

MV runs the project in collaboration with the Sanitation plant, Sewage treatment plant and the office of roads and paving with the TA.

"We reduce the usage of material and energy by recycling and reusing. When we reduce our waste we do our share of improving the condition of the world."[144]

Goals:

- Students are encouraged to experience nature, thereby creating sensitivity for nature and an understanding of how we impact nature.
- Students learn about different materials and how they fit in the cycle of nature.
- All students learn to sort their waste in school and in their homes.
- All students understand how to reduce their waste and know the basics of composting.
- All students are able to make conscious and informed purchases and gradually become better consumers.[145]

Basic content:

- Visit to NSR – Filborna waste management facility.
- MV visits the class for a 1½ hour lecture to discuss facts about different materials and how they are recycled and reused. Tutorials included.
- Invention expose with reused garbage for all participating classes, displayed at Campus Helsingborg.

Optional choices:

- School cleaning in collaboration with the city cleaning days in Helsingborg.
- Dropp In – experiences and practical features concerning the circulation of water (SEK 250/class).
- Further education from MV on the basis of different themes (SEK 750/class/visit).

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[142] This option is presented to everyone from preschool to year five, but is best suited for module 1
[143] Swedish = *Sopor i retur*
[144] MV 06/07b
[145] Ibid

Module 3 – Forest project "The Children's forest"[146] for school year 4

MV runs the project in collaboration with the office of parks and recreation and the office of roads and paving with the TA.

"Planting trees is believing in the future. The trees in our city cleans the air and provides a comfortable climate for us to live in. Trees are beautiful to watch and tell us about the changing of the seasons in our parks, gardens and forests. They are homes to birds and lots of insects, and thereby contribute to a richer biological diversity in our city."[147]

Goals:

- students learn to understand the value of trees in the city and its proximity.
- students learn to understand the ecological importance of trees.
- students learn how to plant and nurture trees, and that they have to take care of them.
- students learn what trees can be used for.[148]

Basic content:

- Classroom visit early in the semester to inspire about trees, discussions concerning trees and the importance of forests.
- Free bus pass for the class to enable visiting the activities connected with the project
- "My Dream Forest" – creative thinking on the theme of forests displayed at Dunker's House of Culture in December
- Planting days in May – every participating student plants a tree in Bruce's Forest, and learn more about the forest and its inhabitants on a nature-walk.

Optional choices:

- Study course at Fredsiksdal on a "Trees" theme, with visit to MV and education on the same theme (SEK 1500/class)
- Nature trail at Fredriksdal until October.

[146] Swedish = *Barnens skog*
[147] MV06/07c
[148] Ibid

Module 4 – Water project "Vital water"[149] for school year 5

MV runs the project in collaboration with the sewage treatment plant and the office of recreation and parks at the TA.

"Water is everywhere! Water is vital! We have initiated this project so that we won't forget to care for our water! Here, students are given the opportunity to read up on the cycle of water and how we affect water. It is about cleaning water, life in wetlands and the cleansing abilities of such, life in oceans and dams and the opportunity to do some good through the beach cleaning."[150]

Goals:

- students gain an understanding of the importance of water and how it is managed in society.
- students get an insight into the environmental problems of water and what we as humans can do to improve the situation.
- students get to experience animal life in salt- and freshwater.
- students get a perception of what happens in a fire and how it is dealt with.[151]

Basic content:

- Tutorials and teaching aids in the form of books and informational folders.
- "Watervoyage" to see how water travels through Helsingborg (SEK 500/class).
- Dropp In – two hours of experiences, experiments and education (SEK 250/class).
- Submission of contributions to the water exhibit in connection with the UN World Water Day.

Optional Choices:

- Education at MV on a water theme (SEK 750/class/visit)
- Beach cleaning, with payment from the office of recreation and parks (SEK 700 to the class per 500 meters of cleaned beach).
- Outing on Sabella[152] to experience the aquatic life in Öresund (usually cost free).
- Visit to Fredriksdal with education on a water theme (September only, SEK 1000/class).
- "Brandorama" – fire fighting education

[149] Swedish = *Livsviktigt vatten*
[150] MV 06/07d
[151] Ibid
[152] Sabella is a teaching vessel/boat owned and operated by the city, used by students from all ages, preschool to university.

Module 5 – Communications project "Smart travels"[153], for school year 6

MV and the office of roads and paving with the TA run the project in collaboration with Arriva[154] and Öresundskraft[155].

"Our travels have become so extensive that we have to find other solutions for transportation. We have initiated the project Smart Travels to spark an interest in different means of transportation and communication. We have to think about how to make smart choices to ensure that development becomes sustainable."[156]

Goals:

- students learn how public transportation works.
- students see how public transport leads to environmental profits and gain.
- students use public transports more in the future.
- students get an insight into environmentally friendly and secure use of energy.[157]

Basic content:

- "Hunt for Culture" – a part of the European Mobility Week (EMW), now the year of mobility, where children use public transportation to travel around Helsingborg looking for clues and solving tasks. One day bus pass, maps and time-tables are included.
- "Skåneresan"[158]- travel and changing mode of transport (spring), report and exhibit during EMW.
- The class constructs an invention from two solar cells and an electrical engine provided by MV, for competition in April.
- Education on energy at "Energiverkstaden" at Sundspärlan, focusing on savings and electrical safety.

Optional choices:

- Further education by MV on an energy theme, and understanding of the concept of energy.

[153] Swedish=*Res klokt*
[154] The local bus operators
[155] The local energy/power company
[156] MV 06/07e
[157] Ibid
[158] Roughly "Trip of Scania"

Module 6 – Communications project "Bike right"[159], for school year 7

MV runs the project in collaboration with the office of recreation and parks at the TA, and the Swedish Road Administration.

"We have initiated this project in order to get students to choose bikes as a means of transport in the city. The city environment and the students' health gains from using their bikes right and that they are motivated to go biking in the future."[160]

Goals:

- students learn to see the bike as a means of daily transport now and in the future.
- showing the possibility to get around by bike on car free thoroughfares in Helsingborg.
- students see the possibilities of transportation by bike in new lights.
- students get an insight into the importance of wearing a helmet.
- thinking creatively about transportation – preferably using your own strength.[161]

Basic content:

- Safe bike – children traffic-proof their bikes under guidance.
- Safe helmet – Falck Ambulances inform about biking accidents.
- Safe way – bike-orientation in Helsingborg with the option of competing in the EMW.
- New bike – children are given the task to think freely and design a bike on the theme "model 2015".

[159] Swedish = *Cykla rätt*
[160] MV 06/07f
[161] Ibid

Module 7 – Project "Organic waste"[162], for school year 8

MV and the Waste treatment facility of the TA run the project in collaboration with the NSR.

"In Helsingborg it has been decided to collect organic waste from households. The material shall be composted and used again in the form of different composting soils and to produce biogas. In this project we follow the cycle of waste."[163]

Goals:

- supporting the collection of organic waste.
- showing the importance of collecting.
- showing how to practically manage organic waste.
- being given the opportunity to show one's thought in an exhibit.[164]

Contents:

- The project is estimated to last for about a month, in parallel with "ordinary" education.
- Classroom visits from MV with information on the life cycle of plant nutrients. Tutorials and teaching materials are included.
- Field visit to NSR - Filborna waste management facility, with closing discussion.
- Design and scientific assignment on the theme of organic waste, with the possibility of filing and exhibition. Course in methods of exhibition.

[162] Swedish = *Organiskt avfall*
[163] MV 06/07g
[164] Ibid

Appendix 3

Sample evaluation form for Module 1 ”Wishing to cultivate”

PART 1

Name of evaluating teacher: School:

Class name/year: Total no of hours spent on the module

No of students: I have had classes attend this module times before

PART 2

Number of times class has visited MV this year: times

Number of times MV has visited in class this year: times

Number of field visits related to the module: field visits

Features attended:

Maja’s Garden	☐ Yes	☐ No
Classroom visit on cultivation, pesticides and foreign plants	☐ Yes	☐ No
Classroom visit on foreign food crops, successful cultivation and global consumption	☐ Yes	☐ No
Project on vegetarianism and planting seeds	☐ Yes	☐ No
Visit to “Backgården”	☐ Yes	☐ No
Project on buying locally produced goods	☐ Yes	☐ No
Visit to “Sinnenas Gård” at MV	☐ Yes	☐ No
Visit to Fredriksdal at harvest season	☐ Yes	☐ No

Program:

In your opinion, have three or more sources of information been presented to the students in the features? ☐ Always ☐ Sometimes ☐ No

*Comments:*_____

Do features in this model present both social and economic, as well as ecological perspectives in teaching? ☐ Always ☐ Sometimes ☐ No

*Comments:*_____

Are students involved in choosing the content of the module? ☐ Always ☐ Sometimes ☐ No

*Comments:*_____

Are students involved in choosing method of learning? ☐ Always ☐ Sometimes ☐ No

*Comments:*_____

Have you collaborated with other classes this year? ☐ Yes ☐ No

*Comments:*_____

PART 3 (To be answered on a separate paper)

Evaluation of student's impressions and capabilities

If you have refrained from participating in one or more features, what are the reasons for this?

How many percent of your students can accurately describe how plants turn from seed to fruit?
What do you think has been easiest/hardest for students to grasp concerning plant life?
Have students applied their knowledge of plants in other areas of school outside MV's module?

How many percent of your students can accurately describe the basics of cultivation?
What do you think has been easiest/hardest for students to grasp concerning cultivation?
Have students applied their knowledge of cultivation in other areas of school outside MV's module?

Have your students bought locally produced goods during the year? What did they buy?
Have they influenced others to buy locally produced goods? Whom?
What thoughts have students expressed concerning local produce?
Has local produce been a part of education outside of MV's module? In what way?

What foreign and domestic fruits/vegetables/livestock/staple foods can the students name?
Have any particular fruits/vegetables/livestock/staple foods been the topic of discussion? Why?

What thoughts have students expressed on the question of insufficiencies in food distribution?
Have students discussed this in other subjects?

What thoughts have students expressed concerning being vegetarian, and what have they described as alternatives to meat? Have students discussed this in other subjects?

What have students said about being deprived of one or more senses? Have students discussed this in other subjects?

Evaluation of teacher's impressions

What are your general thoughts on this year's module? If you have attended this module before, how would you rate it compared to previous years?

What do you think about the concept of the module? Is anything missing? Is anything affluent? Features from previous years that should return?

Do you think MV presents a triple-bottomed sustainable picture of environmental problems, with both social, economic and ecological perspectives?

Why do you choose to have your students attend this module?

What are your further suggestions for this module? For MV's program as a whole?

What do students say about MV? The module? About sustainability?

Would you recommend other teachers to attend this module with their students? Why? Why not?