

School garden education in Amsterdam
The teacher's perception about its quality

A thesis submitted in partial fulfilment of the requirements for the bachelor degree of the major Regional Development and Innovation awarded by Van Hall Larenstein, University of Applied Science.

Amsterdam, June 2011

Name:	Marleen Booij-Vonk
Student number:	870612003
Email address:	marleenbooij@gmail.com
Supervisor:	Marcel Put
Thesis provider:	Het Amsterdams Natuur en Milieu Educatie Centrum
Supervisor:	Charlotte Floor and Nienke Kwikkel

“The pupils are very enthusiastic. I love it when I see that”

“I received school garden education myself when I was a pupil.
Even then we were very enthusiastic”

“The lessons of school garden teacher Jan are a celebration every
week. This man deserves an award”

“I use TOMTOM to find my way to the school garden”

“I am really satisfied with school garden teacher Petra”

“The interior of the classroom is made with love for nature”

“We are not only welcomed by the pleasant environment but by the
people of the school garden as well”

“Pupils receive support and are able to ask any question”

“It takes a lot of educational time, but it is very interesting for the
pupils and provides them a new experience.”

“The year-around-programme provides a proper nature overview for
the pupils”

“Theoretical lessons provide a good preparation for the practical
lessons”

“There is good contact between the school and the school garden.
The school garden teacher visits our class at the beginning of the year”

“The pupils are involved and are able to use all their senses to
experience nature up close”

Source: Quotes of the satisfaction survey of teachers who are involved in school garden education in
Amsterdam

Table of contents

Abstract	5
1. Introduction	6
1.1 <i>Background information of ANMEC</i>	6
1.2 <i>Route map of the report</i>	7
2. Research design	8
2.1 <i>Problem definition</i>	8
2.2 <i>Research objective</i>	8
2.3 <i>Research question</i>	8
3. School garden education in Amsterdam	9
4. Review of literature	10
4.1 <i>Quality of nature education</i>	10
4.1.1 <i>Quality of the year-around-programme</i>	10
4.1.2 <i>Quality of the organisation</i>	12
4.1.3 <i>Quality of the school garden terrain</i>	13
4.2 <i>Perception of teachers related to quality</i>	14
4.2.1 <i>Educational environment</i>	14
4.2.2 <i>Educational philosophies</i>	15
4.2.3 <i>Individual characteristics</i>	17
5. Conceptual framework	18
6. Research methods	20
6.1 <i>Data collection</i>	20
6.2 <i>Data processing</i>	21
7. Results of the conducted survey	22
7.1 <i>Background of the teachers</i>	22
7.2 <i>Quality of the year-around-programme</i>	23
7.3 <i>Quality of the organisation</i>	26
7.4 <i>Quality of the school garden terrain</i>	27
8. Discussion	29
8.1 <i>Justification</i>	29
8.2 <i>Background of the teachers</i>	29
8.3 <i>Quality of the year-around-programme</i>	30
8.4 <i>Quality of the organisation</i>	31
8.5 <i>Quality of the school garden terrain</i>	32
8.6 <i>Conducting a satisfaction survey among teachers</i>	32

9. Conclusion	34
<i>9.1 Main question</i>	34
<i>9.2 Sub questions</i>	34
10. Recommendations	36
<i>10.1 Improve quality of the year-around-programme</i>	36
<i>10.2 Improve quality of the organisation</i>	36
<i>10.3 Improve quality of the school garden terrain</i>	37
11. References	38
12. Appendices	40
<i>12.1 Background information about nature education</i>	40
<i>12.2 Questionnaire of the conducted survey</i>	41
Map 1:	Location of the school gardens in Amsterdam
Table 1:	Overview of the relation of the respondents per educational philosophy
Table 2:	Overview respondents per school garden
Table 3a:	Overview detailing how often teachers prepare their pupils for the school garden lessons by means of nature education
Table 3b:	Overview detailing how often teachers help their pupils to process the information for the school garden lessons by means of nature education
Figure 1:	Conceptual framework
Figure 2:	Weight regulation divided into different educational philosophies
Figure 3:	The school garden teacher is aware of differences between pupils as perceived by different educational philosophies
Figure 4:	The route to the school garden is well indicated
Figure 5:	We feel at home at the school garden as perceived by different educational philosophies.
Figure 6:	I know where I can find first aid equipment

Pupils in Amsterdam are able to experience the circle of life in the so called year-around-programme, provided in one of the thirteen school gardens. Studies have shown that nature education contributes to the development of nature awareness by children. Only a few studies have investigated the level of satisfaction of involved teachers about the quality of nature education programmes. This study investigates how primary school teachers perceive the quality of school garden education in Amsterdam. Since the background of the teachers will influence how quality is perceived, this study has made a division in the following educational philosophies: Montessori education, Jena plan education, Waldorf education, Dalton education and schools without specific educational philosophies. A qualitative survey was conducted; an online survey was sent to three hundred and thirty teachers, of which one hundred and ten of the teachers responded. This study finds that the majority of the teachers are satisfied about the quality of school garden education in Amsterdam. Teachers appreciate the expertise and enthusiasm of school garden teachers, which is contagious to the pupils. It was expected that the teachers would have comments on the ratio between theoretical and practical lessons, and duration of the lessons, but this research proved the opposite. Incidental comments were on travel time, organisation within some school gardens and enthusiasm of some school garden teachers. Based on this research there are no remarkable differences between educational philosophies on how the quality of school garden education is perceived. The most important recommendations are: to design a standard format for the basic conditions; update the manual for teachers and the information letter for parents; conduct a test by rearranging the content and the duration of the school garden lessons; document accidents and communicate the location of first aid equipment. Results of this study will be used to increase the quality of school garden education in Amsterdam.

For over ninety years school gardens are operational in Amsterdam. Pupils are given the opportunity to experience the circle of life in the so called year-around-programme, provided in one of the thirteen school gardens. Amsterdams NME centrum (ANMEC) stands for nature and environmental education, and contributes to school garden education with a coordinating and supporting role.

Studies have proven that nature education contributes to the awareness about the environment by children. Only a few studies have investigated the level of satisfaction of involved teachers about the quality of nature education programmes. The research question of this report is: *How do primary school teachers of different educational philosophies, who are involved in the year-around-programme, value the quality of school garden education in Amsterdam?* The results of this research will provide an insight into how the quality of school garden education is perceived by the teachers. A set of recommendations will be formulated based on these results in order to increase the quality of the school garden education.

ANMEC is implementing an improvement process for school garden education, in commission of the Amsterdam's districts. Aims of the improvement process are:

- To guarantee an equivalent product.
- To stimulate quality and continuity of school garden education.
- To establish efficient organisation around school garden education.

Part of the improvement process is a satisfaction survey among teachers, in order to get an insight into the level of satisfaction of school garden education according to the teachers. Recommendations of the improvement process as well as the recommendations of this research will lead to increased quality of school garden education in Amsterdam. The improvement process is operational from 2010 until 2012.

1.1 Background information of ANMEC

NME is initiated by the Dutch government aiming to provide proper nature and environmental education in the Netherlands. Most provinces have one NME office. ANMEC is active in Amsterdam, aiming to:

- Increase awareness of residents of Amsterdam concerning nature, environment and creating a liveable city. Based on choices residents make.
- Provide proper educational products and programmes for schools and other social organisations.
- Supporting schools and other social organisations with the implementation of nature and environmental education.

ANMEC was founded in 1993 after a merge with Stichting Amsterdamse Schooltuinwerken (SAS) and the Amsterdamse Natuurhistorische Raad (ANR). Since 1920 SAS was supporting school garden education and was founded to fight food shortages. The importance of school gardens was recognized in the beginning of the fifties. ANR was founded in 1957 and was active in nature education, particularly for schools.

In 1991 districts of Amsterdam were established, and they received responsibility for the management and maintenance of greenery and parks. Also for education programmes: the

management of school gardens and nature education. The umbrella organisation SAS and ANR were repealed. The municipality of Amsterdam preferred one organisation for nature education, through clustering knowledge, experiences and contacts. This was the beginning of Amsterdams NME centrum. In present time, fourteen employees are working in the office of ANMEC. ANMEC is providing and supporting a range of projects regarding nature and environmental education, implemented by the teachers themselves or by employees of ANMEC.

1.2 Route map

Chapter two provides the problem definition, research objective and preliminary research questions for this research. Chapter three provides general information about school garden education in Amsterdam, in order to provide the reader information about the content of this research. Chapter four includes a desk study about nature education; the main issue is how teachers value quality. Accountability of the research objective and the final research question is described in chapter five, in the structure of a conceptual framework. Chapter six provides an overview of the implemented research method. Chapter seven describes the results of the satisfaction survey. Chapter eight contains a discussion about the results linked to the literature. Chapter nine will provide the conclusion, in which the research questions will be answered. Recommendations will be formulated based on the conclusions, written in chapter ten. In Chapter eleven an overview is given of the used references of this research. Following, annexes can be found at the end this report.

2. Research design

2.1 Problem definition

For over ninety years school gardens have been operational in Amsterdam. Pupils experience the circle of life in one of the thirteen school gardens. ANMEC lacks knowledge on how the quality of the year-around-programme is perceived by the teachers. This thesis focuses on the satisfaction of the teachers about the quality of the school garden education.

2.2 Research objective

To identify requirements on the level of the quality of school garden education by primary school teachers. As a result of the identification of requirements, the educational programme may be improved in order to maintain a significant level of quality. Based on the results, recommendations may contribute to the improvement of the school garden education.

2.3 Research question

Preliminary question:

What is the quality of school garden education in Amsterdam, according to the primary school teachers who are involved in the year-around-programme?

3. School garden education in Amsterdam

This chapter provides background information about school garden education in Amsterdam, in order to provide the reader the context in which this research is conducted.

Year-around-programme in Amsterdam

Every year the pupils of group six/seven participate in the year-around-programme. During this programme the pupils experience the circle of life from January till December. The year-around-programme consists of five theoretical lessons indoor and twenty practical lessons in the garden. Three introduction lessons, conducted in springtime (January till March), contain themes such as soil, seeds and fruits, germination and growth. During the practical lessons every pupil is responsible for their own plot of land where they cultivate vegetables, flowers and herbs. After the summer holidays pupils learn how to process their products. For example they make scent bags, potato pancakes, herb oil, calendula ointment, soup etc. During the last two theoretical lessons in autumn themes of the lessons are: hibernation of people, animals and plants and a conclusive quiz lesson.

Organisation of school garden education

School garden education is financially facilitated by the districts of Amsterdam. Within the organisation of school garden education three groups are involved: schools, school gardens and ANMEC.

ANMEC's role for school garden education is to coordinate between schools and school gardens. In the beginning of the seasonal year schools are asked their availability during the week for school garden lessons. Based on that information and the travel time, ANMEC will compose a schedule. The school garden teacher is responsible for the contact with the class teacher, to make clear agreements and division of responsibilities.

Map 1: Location of the school gardens in Amsterdam



Source: Amsterdamse NME Amsterdam

4. Review of literature

This chapter provides literature on how teachers perceive quality, specifically on school garden education. First, the quality of nature education will be discussed, second, the perception of teachers related to quality.

4.1 Quality of nature education

The word 'quality' is frequently used, but nevertheless hard to define. In the context of this study it is necessary to define the word 'quality' in order to avoid misunderstandings. When a certain level of quality is reached, satisfaction concerning school garden education will be achieved among the primary teachers. The measurement of quality is subjective and therefore poorly evidence-based. According to ANMEC, the quality of school garden education should be measured on five dimensions:

- The quality of the year-around-programme
- The quality of the organisation
- The quality of the school garden teachers
- The quality of the coordination
- The quality of the school garden terrain

These five dimensions are the basis for the improvement process. According to ANMEC four out of five dimensions are relevant for the judgment of the teachers: quality of the year-around-programme, quality of the organisation, quality of the school garden teachers and quality of the school garden terrain. In order to avoid the idea of assessment, quality of school garden teachers will be covered by the dimension quality of the year-around-programme.

The measurement of quality contains not only the establishment of indicators, but also the background of the teacher will influence on how quality is perceived. The literature review will elaborate on the three different dimensions as well as the different backgrounds of the teachers.

4.1.1 Quality of the year-around-programme

During a quick-scan among ten teachers, asking how they would define the quality of the school garden programme, most emphasis was on the year-around-programme. Results of the investigation are: proper introduction of new concepts; proper instruction; and pupils should enjoy themselves during the programme. In this subchapter the content of the year-around-programme is discussed. Besides these indicators is it relevant to conduct research about information for teachers and the structure of the programme, but in respect of time pressure these indicators will not be examined in this research.

Structure of the year-around-programme

Structure of the year-around-programme refers to the ratio of the school garden lessons (eight theoretical lessons and twenty practical lessons); the duration of the school garden programme (from January until December); the frequency of lessons (one theoretical lessons per month and every week a practical lesson); and the duration of each lesson (ninety minutes). Brumer (1964) referred to structure in terms of inducing students to recognize meaningful relationships among concepts; Ausubel (1963) says that structure is to the use of advance organisers that introduce concepts involving the content to be learned. It is

assumed that the more time invested in content, the higher the achievement of the pupils. Research conducted by Keys et al. (1997) shows that English pupils spend a high amount of time on mathematics in comparison with Russian pupils and yet their achievement is relatively low, thus, the time spent on teaching/learning does not correlate with achievement.

Content of the year-around-programme

As Ballantyne (2005) states: 'Environmental education aims to extend pupils' *knowledge* about the environment, challenge the *attitudes* and *behaviours* that form the basis of environmental citizenship and develop *skills* to enable them to take action for the environment.' Knowledge, attitude, behaviour and skills are categorised by Dillon *et al* (2005) in an international review of the impact of outdoor learning. These categories are:

- Cognitive learning, concerning the acquisition of knowledge and understanding.
- Affective learning, which relates to the development of pupils attitudes.
- Behavioural and physical learning, involving personal behaviours.
- Interpersonal and social learning, which concerns communication.

Passy et al (2005) conducted research commissioned by the National Foundation for Education Research about the impact on school gardening on learning. The following paragraphs illustrate the above categories based on the research of Passy et al.

Cognitive learning: while working in the garden pupils are encouraged to become active and independent learners. The cognitive learning outcomes are visible in scientific knowledge and understanding, and a wider vocabulary. Some of this learning is linked to gardening and the garden, while other learning relates more to being outdoors and being able to engage in physical activities that are not possible in the classroom. The range of strategies teachers used in the school garden are broader than possible in a classroom and involved children moving about, touching, feeling, exploring and observing for themselves. Gardens prove to be a fertile ground for mathematical thinking for pupils of all ages. Therefore the garden is seen to provide an arena for a deeper learning experience than in the classroom.

Affective learning: working in the garden is an instrument to improve children's self-esteem, particularly for those who lacked confidence and self-belief. Some children learn to overcome their fear of touching worms or beetles, and to enjoy getting dirty; others discover the virtue of patience as they wait for crops to be harvested; others simply enjoy being outside and watching things grow. Pupils feel proud of their garden and take pleasure in the bright colours of the plants, and teachers frequently observe that children like to show off the work they have done in the garden. The garden has this positive impact because it creates a calm environment for both pupils and teachers. A word frequently used by teaching staff in relation to garden activities is 'enjoyment', and the pleasure through this type of work is thought to help children to achieve something that they tend to find difficult.

Behavioural and psychical learning: the garden is an appropriate place in which to gain new physical skills and to learn about healthy food and sustainable living. Therefore a behavioural change in relation to eating food has also been observed. Pupils learn to be careful around the plants, and to learn the type of behaviour that is appropriate around potentially dangerous chemicals and sharp instruments. One particular outcome is children's willingness to try new vegetables such as cabbage, marrow and courgettes. This is because the pupils are involved in growing the plants and often in cooking the result. Also a

significant outcome of gardening is the effect on children who are disaffected and/or have behavioural problems in the classroom.

Interpersonal and social learning: more social and interpersonal outcomes are identified during school gardening, both internal and external to the school. Pupils work towards a common goal. School garden teachers report moments in the garden, which prompted interesting, and thought-provoking empathic conversations that they believe would not happen in the classroom. One outcome of the growing involvement of children in gardening in schools is the opportunity for the child to contribute to the home economy. Children that are involved in gardening are able to take products home and introduce new ideas and cooking styles to their parents, while sales of home-produced fruit and vegetables from the school grounds provide the opportunity for all parents to try fresh products.

More information about the history of nature education and an overview of more nature and environmental education programmes provided in Amsterdam can be found in appendix 12.1

Expertise of the school garden teachers

In the school gardens of Amsterdam, thirty-five school garden teachers are active. They provide lessons in thirteen different school gardens spread over the city. Most school garden teachers are qualified to teach (Amsterdamse Stadsdelen, 2011). There are also school garden teachers who started their career with the school garden as gardener. After years of experience and interaction with the children they become school garden teachers. Most school garden teachers do have a horticultural background, on a professional level as well as a hobby.

The year-around-programme is developed by ANMEC commissioned by the districts of Amsterdam. The school garden workbook will help the pupils to process the information. This workbook is renewed in 2008 by ANMEC in cooperation with the school garden teachers. School garden teachers are using this workbook as method especially during the theoretical lessons.

The teachers will value the year-around-programme based on their educational method. School garden teachers have had training about different educational methods, but it turned out to be hard to adapt different educational methods if you do not own them.

4.1.2 Quality of the organisation

This subchapter will describe different organisational structures according to Mintzberg.

Mintzberg (1984) states that an organisational structure emerges from the organisational strategy and the environmental forces it experiences. When these fit together, the organisation is able to perform at a high level of quality. Different structures arise from the different characteristics of the organisation. By understanding the organisational types defined by Mintzberg, the level of performance can be measured.

Entrepreneurial organisation has a simple and flat structure. It consists of one large unit with one or a few managers. The organisation is relatively unstructured and informal, and because of lack of standardised system the organisation is flexible. A young company controlled by the owner is a common example of this type of organisation. The

entrepreneurial organisation is fast and flexible, but when the organisation grows this structure is not most efficient.

The machine organisation is defined by its standardisation. Work is more formalised, tasks are grouped by departments and jobs are clearly defined. The organisation has a vertical structure, functional lines go all the way to the top and managers maintain control. These organisations can be very efficient, but formalisation leads to specialization and so goals can differ within the organisation.

The professional organisation is very bureaucratic. It differs from the machine organisations in that the professional organisations rely on trained professionals who demand control of their own work. The professional organisation is complex and there are lots of rules and procedures.

The divisional organisation is built from a central headquarters that supports a number of autonomous divisions that make their own decisions and have their own unique structures. These structures are often found in large companies. Managers of these structures are able to control the different departments; the weakness is the inflexibility of the organisation.

The innovative organisation is most popular with young companies. Experts from a variety of areas form a creative and functional team. Decisions are decentralized and power is delegated to wherever it is needed. The organisation is very flexible and creative; challenges are conflicts regarding authority and power.

The professional structure is most applicable for school garden education in Amsterdam. There are different professional organisations with trained professional who demand control of their own work. Since there are only three groups involved, the structure is not complex with a lot of rules and regulation. The most intensive period is at the end of every seasonal year when a new schedule is made for the next school garden year.

4.1.3 Quality of the school garden terrain

School gardens have been operational in Amsterdam since 1920. The city has expanded over the years; therefore many school gardens are located throughout the whole city. Every school garden consists of necessary aspects such as a classroom, gardening plots, and a fence. Besides the necessary aspects some school gardens have specific qualities such as: a pet farm, kitchen garden and insect-yard.

There are no specific rules or legislation established for the school gardens. The school gardens are following the legislation for education in general. This includes the following security aspect: RI&E (risk assessment and evaluation). Since 1994 RI&E has been compulsory for every employer. A complete risk assessment is a required aspect of the RI&E as stated in by the Arbo (stands for working environment). Every company that has personnel should investigate if the operation of work processes could harm the health of the employees. The risks should be documented in the RI&E report. The employer will document in the proposal how to decrease the risks by concrete actions. RI&E for education (schoolyard) focuses on: clean, complete and safe.

During the improvement process a school garden terrain inspection is developed, based on the RI&E. This inspection is conducted once a year at all thirteen school gardens. Based on indicators, certain criteria's are set and three independent people will determine whether

the school garden meets the criteria's or not. The inspection will look to several indicators, following some examples:

- Hospitality and accessibility: Signage is readable and visible. Welcoming atmosphere with a sign at the entrance. Coffee and tea for teachers and guests. Neat and nicely decorated classroom. School garden is easy accessible for the pupils, base is walking access for the pupils.
- Challenging learning environment: The classroom has sufficient facilities; a maximum of thirty-five pupils should be able to receive lessons in the classroom. The classroom has inspiring furnishings, but not too much stimulus for the pupils. There are good and sufficient lesson materials.
- Suitable for gardening: There is a green house, nurseries and workroom available. There are sufficient, complete and safe tools for the pupils and school garden teachers. There is a classroom outside with a roof. The surface of the plots for the pupils should be a minimum 10 m².
- Clean: Sanitation facilities are proper and clean. Pupils do have the opportunity to wash their hands after the lessons. The classroom is proper and clean.
- Complete: The pupils are able to complete assignments with proper tools and materials. The pupils are able to follow a coherent educational programme
- Safe: A lockable gate surrounds the school garden terrain. School garden tools are safe to work with for pupils and school garden teachers.
- Legal requirements: School garden have a RI&E, which is respected. School garden teachers are working according to Arbo law.

Another sort of risk that should be taken into consideration is that children might hurt themselves during the lessons in the garden, for example being hit by a rake or stung by a bee (GGD Rotterdam, 2011). There is sufficient basis in the laws and legislations of the Arbo and being outside is a great advantage for children because playing and discovery will lead to development. It is important is to define and weigh up the risks. Some parents see falling down as a risk, but in fact lack of exercise or slowness of their children is more harmful to their health. The discussion is about acceptable risks, as Tovey states: "There is always a certain risk to being alive and if you are more alive there is more risk". A safe environment is where safety is not seen as security against all harm, but an environment where freedom is to experience, trying and taking risks (Tovey, 2007).

4.2 Perception of teachers related to quality

4.2.1 Educational environment

An educational environment stands for: 'conditions, forces, or factors within or exogenous to an educational setting capable of influencing the setting or those within it'. The educational environment is also determined by the goals and content of the educational programme. A division of educational environments is made based on different activities (Lowyck, 1995):

Information environment: presenting and sharing information

The pupils will receive a lot of required information in a certain time. The application of information is more important than memorizing (Elen et al, 1991). The level of the quality of

the environment needs to be high. Foreknowledge is an essential aspect: the teacher is a specialist on that subject, and therefore must ensure that the knowledge is passed on to the pupils in a proper way. The structure of the lessons is important, this provides an overview of information for the pupils. Tools are: concept maps, a preface that clearly introduces the (new) information and summaries that highlight the most important aspects of the information. Examples of an information environment are: a lecture from a teacher and written study materials.

Interaction environment: to stimulate interaction between participants

Learning is a social activity that helps the pupil to establish newly acquired knowledge. Together with peers, learning is able to promote relationships as well as motivation and dignity (Nastasi & Clements, 1991). Pupils develop their cognitive skills, such as exchanging information, problem solving and creating new ideas. They also develop their social skills: discussing, listening, accepting other opinions and keeping to agreements (Slavin, 1987). Cognitive effects arise when pupils structure and organise their acquired information. When pupils interact socially they learn to handle different opinions, perspectives and learning manners. Example of interaction environment is group work.

Practice environment: to perform in order to learn

Learning environments do not only include the acquirement of knowledge or insight, but also the development of skills. The initiative of the pupils is essential; if there is a lack of motivation then it is hard to reach the goals of the lesson programme. The pupils receive an assignment. There are two kinds of assignments: open problem statements and closed assignments. Examples of the open problem statements are: lectures or mathematical problems; examples of a close assignment are: repetition and application of knowledge. The responsibility of the pupils will increase, because (Brabander, 1985): learning needs become clear; based on the learning needs a plan of action will be created; reached results will be evaluated.

School garden education is using both an informational environment and a practical environment. During the theoretical lessons, the school garden teacher is implementing the informational environment by providing information to the pupils. They will implement and experience the theoretical information during the practical lessons at their own plot of land. Emphasis is on the informational environment and while the pupils receive a lot of new information, the information will endure through the practical environment: learning is doing.

These learning environments are chosen to implement nature education. The question is whether the teachers agree this method is the best way to teach the pupils. They will value the quality of nature education in the form of the year-around-programme mainly based on two aspects: educational philosophies and individual characteristics.

4.2.2 Educational philosophies

The Montessori Method was founded by Maria Montessori in 1907. Her work included the development of specific educational methods and materials based on her beliefs about how children learn. A summary of the method is: Teach me to do it myself. Montessori acknowledges every pupil as an individual; every pupil is different and is allowed to choose activities. Pickering (1992) states that: “trusting the child’s sensitive periods will guide him to choose the work for which he is ready”. In this approach, children learn at their own pace

through the manipulation of objects. As such, personal independence, self-discipline and initiative are essential for learning and motivation (Kendall, 1993). The role of the teacher is to create a preparatory environment for the pupils. The school garden is a part of the preparatory environment. In the Montessori approach, teachers do not follow a direct learning approach, but respect the pupil's efforts toward independent mastery. Instruction is based largely on sensory materials developed by Montessori (Ryniker & Shoho, 2001). Montessori makes hardly any use of textbooks, grades or punishments. Grades are not important, the intrinsic motivation of the pupils counts.

Teachers of the Montessori method prefer school garden teachers to take into consideration the intrinsic motivation of the pupils by implementing the philosophy 'teach me, to do it myself', in order to educate them about horticulture.

The Dalton plan was founded by Helen Parkhurst and named after the town in Massachusetts where Parkhurst first experimented with the methodology (Semel, 1999). Parkhurst was dedicated to the Montessori method and greatly influenced by the work of Swift (1908). She believed that pupils could learn to manage their own time effectively once they are able to perceive the time as their own. The Dalton plan embraced the range of ability in each class, stressing cooperation and self-improvement above competition. Later, the Dalton plan drew attention to the importance of a questioning mind, to learning beyond school and placing the pupil firmly at the centre of school policy and development. In her book *Education on the Dalton plan* (1922), Parkhurst drew attention to the relationship between education and preparation for life. The role of the teacher is very important; the teacher is seen more as a guide and less of an autocrat (Parkhurst, 1922). The Dalton plan enables the teacher to become a resource for the pupils, and places trust in them to exercise self-discipline. The Dalton plan is based on three main principles: responsibility, independence and cooperation.

According to the teachers of the Dalton plan it is important for the school garden teachers to implement the main principles. They consider pupils as an individual and support them by the discovery of Mother Nature. The school garden teacher has to be a resource and a guide for the pupils.

The Jena plan is founded by Peter Petersen in 1921, and named after the town Jena located in the east of Germany. Activities are based on talk, play, work and celebration, all designed in a weekly schedule. Emphasis is on world orientation established through participation and thinking (Boes, 1979). Through discovery and investigation the world of the pupils will increase, which will help them to enter into and maintain relationships. Petersen called physical movement of the pupils: 'food for the growing child's body, preventing them from the movement is tarnish on the body'. The teacher is seen as a professional educator, who has an important role, together with the parents, to create a firm foundation for the development of the pupil (Both, 2001). The authority of the teachers is based on their personality and the way pupils are treated. The teacher will take the following values into consideration while teaching: inclusive thinking, dialogue, freedom, creativity, truth and critical thinking.

Teachers of the Jena plan see school garden education as an essential part of their education. They encourage the school garden teachers to implement talk, play, work and celebration during the school garden lessons. According to Jena plan pupils will learn by doing.

The Waldorf method is founded by Rudolf Steiner in 1919. The educational method is based on anthropology. The starting point of the Waldorfschool is the intrinsic values and developments of the pupils. The important aspect of this development is the soul: many artistic activities are conducted. Pupils of the Waldorfschools have a lower score for the final tests than the average Dutch pupil. This is caused by the approach since Waldorf education is development based and not knowledge based. Waldorf education implements the *head, heart and hands* approach as the school garden methodology (Easton, 1995). Nature is an important aspect for Waldorfschools, and school buildings are decorated with organic products. The teacher has a role of coach and supporter in the development of the pupils. By teaching the pupils think-, emotional- and development impulses, the teacher will contribute to a healthy psycho development. Steiner (1991) said: 'Proper pedagogy is always healing, spiritual transformative art of education'. The role model of the teacher will inspire the pupils. Teachers will maintain a good relationship with every individual pupil in order to meet the needs of the pupils. The teachers should be capable of the following skills: respectful and reverent, enthusiastic and self-development (Steiner, 1991).

According to the teachers of the Waldorf method school garden education is in line with their educational method. They encourage the school garden teachers to emphasize the development of the pupils instead of focussing on the grades of the students.

4.2.3 Individual characteristics

"Different people, different ways", as Big Bird stated in Sesame Street. This is also very relevant for the opinions people have. Besides the preferred educational philosophy and educational environment, the characteristics and personality influence on the opinion on teachers. The aspect that influences the opinion of the teachers is the age of the teachers, or better: the number of years they are operational in education (De Nobile, 2008). For example, a teacher who just started can be very enthusiastic about new initiatives besides the traditional programme, and will value school garden education in a positive way. Or the junior teacher is only just surviving because the responsibility of a group of pupils is tough. Such teachers see school garden education as burdening and will value it less positively. This example is also applicable for a senior teacher.

Another aspect of valuing school garden education is the level of education in the school. Every pupil in the Netherlands is ranked in a system based on the educational level of the parents, the so called weight regulation (Rijksoverheid, 2011). This system assumed the higher the educational level of the parents, the smarter the pupil, and therefore less additional support and attention is needed from the teacher. A pupil with parents in a low educational level are more likely to incur an arrear, those pupils need more support and attention from the teacher. Teachers who are operational can see school garden education as a burden, or alternatively they like the opportunity for the pupils to learn in a practical way. Both perspectives will value school garden education differently.

5. Conceptual framework

Out of the five dimensions of the improvement process, four are applicable to the opinion of the teachers and chosen by ANMEC the as most important: quality of year-around-programme, quality of organisation and quality of the school garden terrain (figure 1: conceptual framework). In order to avoid the idea of assessment: the fourth, the expertise of school garden teachers, is covered under quality of the year-around-programme. The dimension quality of coordination is not applicable to the teachers, since this has to do with internal coordination between ANMEC and the school gardens.

Based on the literature a final main question is formulated, concentrating on the background of the teachers that will influence their perception of quality. Different educational philosophies are essential to how teachers perceive the quality of school garden education. The final main question is: how do primary school teachers of different educational philosophies, who are involved in the year-around-programme, perceive the quality of school garden education in Amsterdam?

For the majority of teachers, the content of the year-around-programme is most important. In this research indicators of the year-around-programme will be divided into the structure of the programme, information for the teacher, the content of the programme and the expertise of the school garden teachers. In respect of time, this research will not elaborate on the topic information of the teachers. The sub question for this research is: what is the quality of the year-around-programme according to primary school teachers of different educational philosophies? Since the teachers' perspectives on the quality of the year-around-programme is most important to this research, this sub question is divided in three questions:

- 1.1 What is the quality of the structure according to the primary school teachers of different educational philosophies?
- 1.2 What is the quality of the content according to primary school teachers of different educational philosophies?
- 1.3 What is the quality of expertise of the school garden teachers, according to primary school teachers of different educational philosophies?

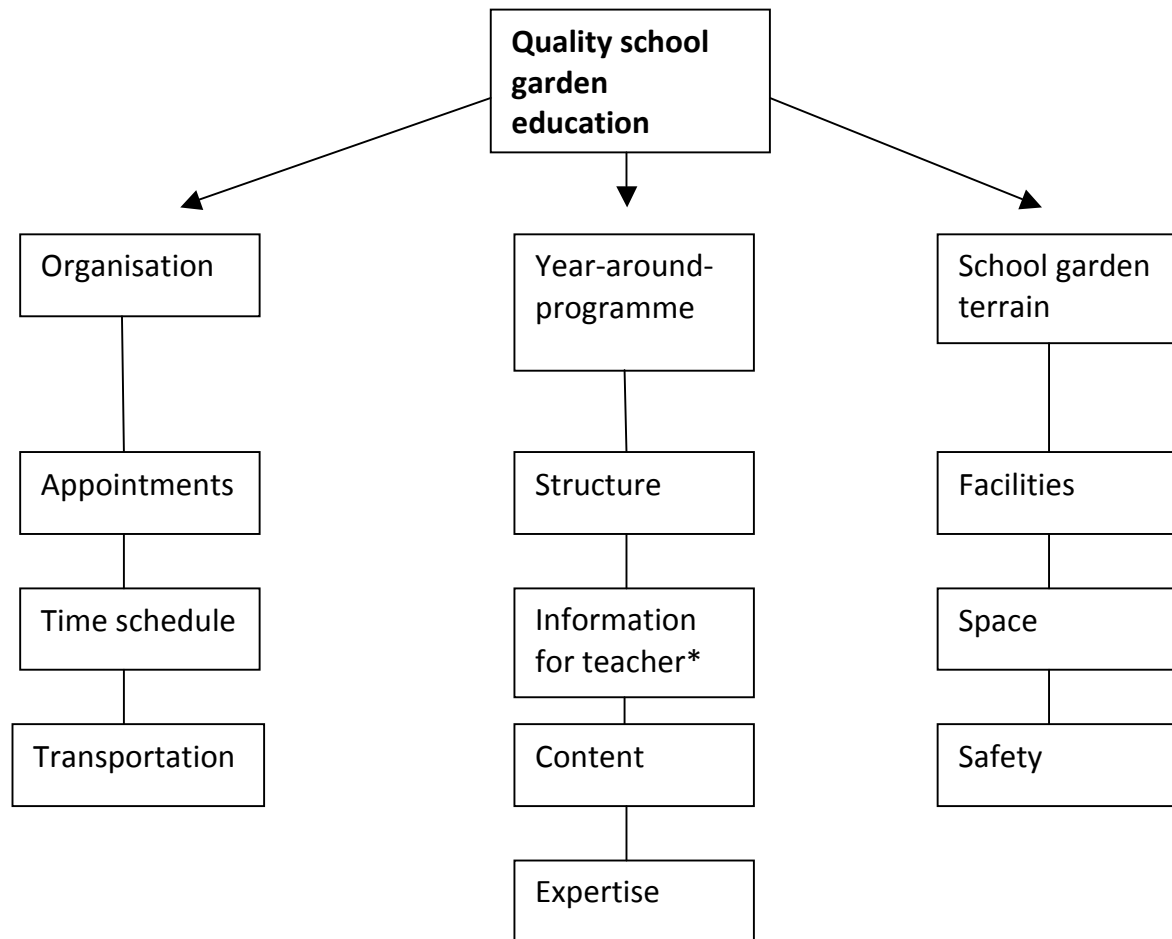
The quality of organisation includes agreements between ANMEC, school gardens and schools. These agreements have to do with the schedule for school garden education; the base of the schedule is the school's travel time to visit the school garden. The sub question for this research is: what is the quality of the organisation concerning school garden education? For this sub question no division between different educational philosophies is made since the background of the teachers will hardly influence on how the quality of the organisation is perceived.

The school garden terrain will contribute to the quality of school garden education. At the terrain pupils should be able to implement the assessments given by the school garden teachers. This research will focus on the following indicators: facilities, space and safety. The sub question for this research is: what is the quality of the school garden terrain according to primary school teachers of different educational philosophies?

Figure 1 provides an overview of the main- and sub questions. The conceptual framework as described above visualized.

Figure 1: Conceptual framework

* In respect of time, this research will not elaborate on this topic.



Final main question

How do primary school teachers of different educational philosophies, who are involved in the year-around-programme, perceive the quality of school garden education in Amsterdam?

Sub questions

1. What is the quality of the year-around-programme according primary school teachers of different educational philosophies?
 - 1.1 What is the quality of the structure of the year-around-programme according to primary school teachers of different educational philosophies?
 - 1.2 What is the quality of the content of the year-around-programme according to primary school teachers of different educational philosophies?
 - 1.3 What is the quality of expertise of the school garden teachers, according to primary school teachers of different educational philosophies?
2. What is the quality of the organisation concerning school garden education?
3. What is the quality of the school garden terrain according to primary school teachers of different educational philosophies?

6.1 Data collection

As established in the research proposal, a quantitative survey was conducted to measure the level of quality of school garden education by the involved teachers. The online survey was sent by email to three hundred teachers. Since ANMEC requested a quantitative survey no sampling of teachers was required. ANMEC chose to ask all the teachers to answer superficial questions instead of asking some profound questions to a sample of teachers. This research method will make a clear division between a satisfaction survey instead of a need assessment.

The format for the online survey was the website Survey Monkey and was also used for the analysis of the results. The questions in the survey had the following structure: seven general questions, eleven questions about the quality of the organisation, twenty-seven questions about the quality of the year-around-programme and eight questions about the quality of the school garden terrain. Most questions were statements and teachers answered the statements with one of the following: absolutely correct, correct, incorrect, absolutely incorrect and no opinion. Teachers were able to include an additional explanation about their given answer with every statement. There were some open questions to be answered as well. The general questions provided information about the background of teachers; this contributed to the value of the given answers, taking into consideration the perspective of the teachers and how they perceived the quality of the school garden education.

The survey was not anonymous, the teachers were asked to fill in the name of the school. In the instruction letter for the survey, teachers were informed that the data was only used to analyse the results. They were also aware that the reports from this research would not contain names of schools. Still ANMEC has chosen to have the option to trace the respondent in case of remarkable answers.

The 'klankbordgroep', a sample of school garden teachers, monitored the content of the questions based on their knowledge and expertise. Three random teachers conducted a pre-test in order to check whether the questions were clear. Based on the pre-test ANMEC decided to postpone the send date of the online survey to the end of April instead of the end of March. The results, based on a small research, showed that 40% of the teachers were involved with school garden education for the first time. The project starts in January with three theoretical lessons as preparation for the fifteen practical lessons where students cultivate their own plot of land. It is important for teachers to experience both theoretical lessons and practical lessons. At the end of April some practical lessons are conducted so teachers who are involved for the first time with school garden education can also value the quality of theoretical and practical lessons in a proper way. Ideally, the best time to conduct the survey among the teachers is the end of June after the first part of school garden education. But, since my thesis period is from February till May, this is in respect of time not possible.

A desk study was conducted for two reasons: 1) to increase information resources besides the results of the online survey and 2) to confirm the findings of the survey with literature. Based on the outcome of the survey a follow-up study was conducted among teachers with remarkable answers, by means of a brief interview by telephone.

6.2 Data processing

The survey was sent to three hundred and thirty teachers; after one week a reminder was sent to all the teachers. Eventually one hundred and ten teachers responded, the amount of the respondents is remarkable because most teachers do not prioritize surveys. One third of the teachers filled in the survey; this demonstrates good involvement of the teachers regarding school garden education.

Table 1: Overview of the relation of respondents per educational philosophies.

	<i>Montessori</i>	<i>Dalton</i>	<i>Waldorf</i>	<i>Jena plan</i>	<i>No specific educational philosophy</i>	<i>Special education</i>	<i>Total</i>
Total teachers in Amsterdam	39	21	4	6	234	26	330
Total respondents	11	11	3	2	73	10	110
Percentage of respondents	38%	52%	75%	33%	32%	38%	33%

Table 1 provides an overview of the relation of respondents to the different educational philosophies. On average 33% of the teachers responded to the survey. Teachers of Waldorf education and Dalton education responded above average, 75% of teachers of Waldorf education and 52% of the Dalton teachers responded on the survey. Data was selected on the basis of the different educational philosophies. Data was processed and analysed by using the tool provided by Survey Monkey, the same web designer used to design the survey and send the emails. Remarkable results were presented in graphs or table design by Survey Monkey or Windows Excel.

Based on the outcome of the survey ten teachers were contacted for a brief follow-up study, by means of a telephone interview. The selection of these teachers was based on their given answers on how they prepare and reflect on the school garden lessons. Explanations were asked about the structure of school garden education, level of experiences for the pupils and the preparation for, and reflection on the school garden lessons.

7. Results of the conducted survey

The online survey was sent to three hundred and thirty respondents, one hundred and ten of them responded in the indicated time of two weeks. This chapter provides an overview of the results categorised into: background of the teachers, quality of the year-around-programme, quality of the organisation and quality of the school garden terrain.

Note: these results are based on the perception of one third of all primary school teachers in Amsterdam who are involved in school garden education. These results might not correspond with how school garden education is perceived by all primary school teachers in Amsterdam who are involved in school garden education.

7.1 Background of the teachers

On average teachers are operational in primary education for over sixteen years, this varies from one year to forty-nine years. On average, teachers are involved in school garden education for six years, of which one third are involved in school garden education for the first year. Table 2 provides an overview of the one hundred and ten respondents per school garden. The teachers involved with the school gardens Broekhuijsen-Leeuwis, Gerrit Kalf and the Nijkamp responded less than the teachers involved with other school gardens. An overview of the relation of respondents between different educational philosophies is shown in table 1. On average Waldorf education and Dalton education responded the most.

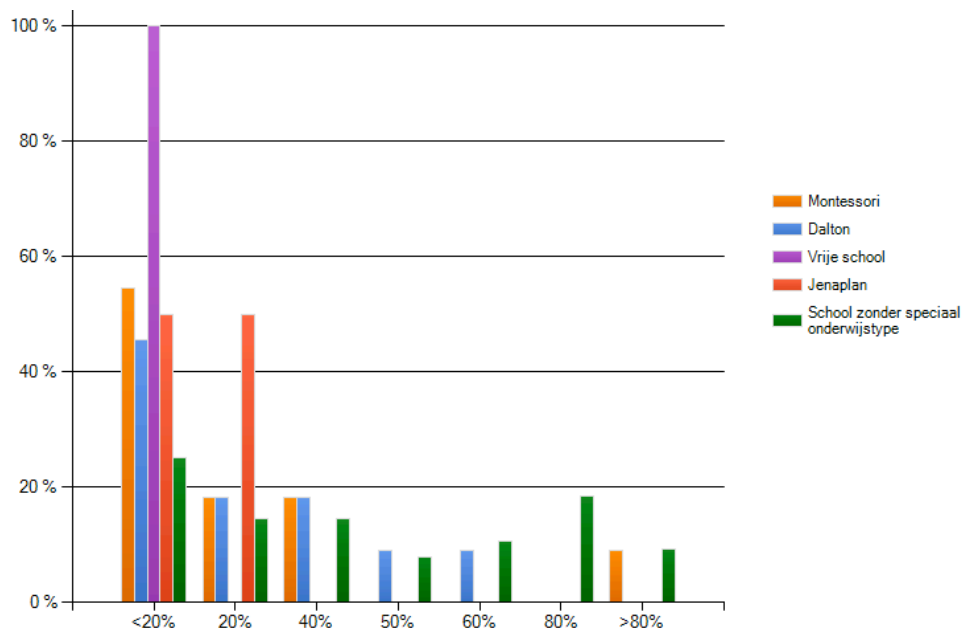
Table 2: Overview respondents per school garden.

<i>Names of the school gardens</i>	<i>Total amount of involved teachers</i>	<i>Total amount of respondents (N)</i>	<i>Total amount of respondents (%)</i>
School garden Alma	18	9	50%
School garden van Bijldestijn	25	13	52%
School garden Broekhuijsen-Leeuwis	23	4	17%
School garden Gaasperdam	39	16	41%
School garden Gerrit Kalff	23	4	17%
School garden Nijkamp	17	2	12%
School garden Osdorp	29	8	28%
School garden Ridderbos	24	9	38%
School garden de Roos	24	7	29%
School garden Schaap	36	13	36%
School garden Jan Toorop	31	11	35%
School garden Vink	21	14	67%
School garden Adalbert Wagner	18	7	39%

As indicated in this report the background of the pupils is interesting to look into. One question to the teachers was to indicate the percentage of pupils who receive extra financial support from the government based on the level of education of their parents, the so call weight regulation. Based on figure 2: almost half of the schools (45%) receive additional

support, 20% extra support for pupils is most common. Interestingly, Waldorf education received hardly extra support from the government for their pupils.

Figure 2: Weight regulation divided into different educational philosophies.



Explanation legend: Montessori education, Dalton education, Waldorf education, Jena plan education and School without specific educational philosophies.

Note: x-axis provides percentages of total amount of pupils who receive extra support by the government; y-axis provides percentage of given answers by respondents.

7.2 Quality of the year-around-programme

The quality of the year-around-programme is very interesting, making a division of the different educational philosophies in order to answer the main question of this research.

7.2.1 Structure of the year-around-programme

In total 97% are satisfied with the ratio of the school garden lessons (eight theoretical lessons and twenty practical lessons). Some respondents gave additional explanations with their answers:

“Good ratio of theoretical and practical lessons”¹

“The theoretical lessons provide sufficient information for the practical lessons”

The period of the school garden programme is from January until December; for 97% of the teachers this is well perceived. Three respondents mentioned that a shorter period would be preferred. 94% of the respondents are satisfied with this frequency of lessons, one theoretical lesson per month and every week a practical lesson. Explanations are:

“It takes at lot of time, but for the pupils it is a good and interesting experience”

“I prefer once per two weeks, so no precious educational time gets lost”

95% of the respondents are satisfied about the duration of each lesson (ninety minutes). Amongst these positive outcomes, the explanations are more critical:

¹ Note: All quotes of the satisfaction survey are translate from Dutch

“Practical lessons require ninety minutes of education but to stay concentrated for the pupils is hard even when the instructions for the assessments are very clear”

“It is long but not realistic to reduce in time”

The methods used during the theoretical lessons are well perceived by 97% of the respondents, of which 51% answered the question with ‘absolute true’. Methods of the practical lessons are likewise well perceived by 96% of the respondents.

7.2.2 Content of the year-around-programme

The preparation of the school garden lessons by the teacher is mostly done through nature education lessons, other options include group discussions, Dutch lectures, and mathematics lessons. The school garden book is often used for preparation. Only 27% of the teachers prepare the school garden lessons regularly, Waldorf education is prepares for the school garden lessons the least. Also, for processing and reflecting on information after the school garden lessons, nature education is mostly used. 20% of the teachers are supporting the pupils through reflection, only Dalton education and schools without specific educational philosophies are implementing reflection lessons quite regularly. Nature education lessons are not only used for reflection, writing small essays are frequently used as well. Table 3a gives an overview of the given answers for preparation by means of nature education lessons. Table 3b provides an overview of the given answers for reflection by means of nature education.

Table 3a: Overview detailing how often teachers prepare their pupils for the school garden lessons by means of nature education.

	<i>Montessori</i>		<i>Dalton</i>		<i>Waldorf</i>		<i>Jena plan</i>		<i>Schools without specific educational philosophy</i>		<i>Total</i>	
	N	%	N	%	N	%	N	%	N	%	N	%
Never	1	9%	1	9%	-	-	-	-	11	15%	13	8%
Sometimes	7	63%	7	63%	4	100%	1	50%	41	57%	60	65%
Often	2	18%	2	18%	-	-	-	-	13	18%	16	12%
Always	1	9%	1	9%	-	-	1	50%	6	8%	9	15%

Table 3b: Overview detailing how often teachers help their pupils to reflected on information of the school garden lessons by means of nature education.

	<i>Montessori</i>		<i>Dalton</i>		<i>Waldorf</i>		<i>Jena plan</i>		<i>Schools without specific educational philosophy</i>		<i>Total</i>	
	N	%	N	%	N	%	N	%	N	%	N	%
Never	-	-	2	18%	-	-	-	-	7	7%	9	7%
Sometimes	9	90%	6	54%	4	100%	2	100%	38	53%	59	73%
Often	1	10%	2	9%	-	-	-	-	11	15%	14	6%
Always	-	-	1	18%	-	-	-	-	15	21%	16	14%

For most respondents (96%) the total amount of content in the year-around-programme is realistic. The teachers that disagree are from the schools without specific educational philosophies. Explanations are:

“Sometimes too much”

“Sometimes there is not enough time to come across with the complete content which leads to quickly dealing with the matter”

92% of the respondents feel that there is enough time for experience during the school garden lessons. The level of the content is well perceived by 97% of the respondents. Explanations are:

“Tough, but desirable”

“Language is adapted to the level of the pupils”

76% of the teachers are using school garden education to replace aspects of nature education. The quality of the school garden book is well perceived by 88% of the respondents. Schools who are disagreeing are mostly the Dalton education respondents (9%), Jena plan education respondents (50%) and the schools without specific educational philosophy respondents (5%).

7.2.3 Expertise of the school garden teachers

97% of the respondents agree that a proper introduction of the lesson is implemented, 9% of Montessori education respondents disagree. The closure of the lessons is valued in a positive way at 83%. 18% of the Montessori education respondents, 45% of the Dalton education respondents and 10% of the schools without specific educational philosophies respondents disagrees. Explanations are:

“This could be better, time flies when you are having fun, so no time for a proper closure of the lesson”

“Preview for the next lesson does not happen and is also not necessary; pupils are tired and want to go home”

According to 98% of the respondents, the instructions for assessments are proper and clear, although they can be disturbed by background noises.

95% of the respondents are aware of the task division between teachers and school garden teachers. 93% of the respondents feel that they are involved in the lessons by the school garden teacher.

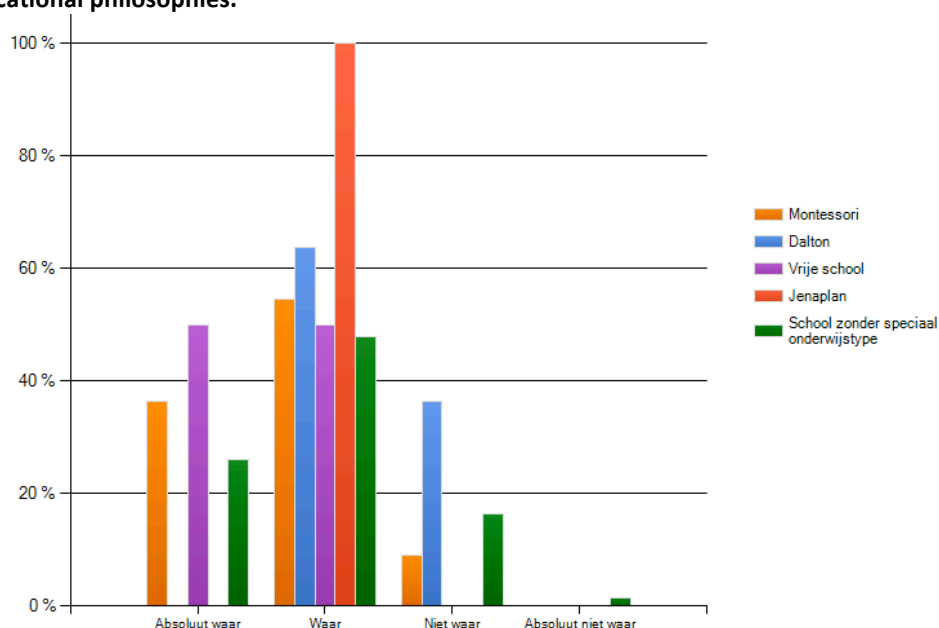
The school garden teachers' choice of language is not always appropriate, given reactions are: rude language or difficult language for non-native Dutch speakers. 91% are satisfied with the language; 9% of Montessori education respondents, 18% of Dalton education respondents and 4% of schools without specific educational philosophies respondents are not satisfied with the language used by school garden teachers. 75% of the respondents are satisfied with the way in which school garden teachers handle the differences between pupils. 9% of Montessori education, 36% of Dalton education and 16% of schools without specific educational philosophies disagree. Explanations are:

“Some pupils receive additional instructions when needed”

“The school garden teacher has no eye for differences between pupils”

Figure 3 shows an overview of the given answers on how school garden teacher take into consideration the differences between pupils.

Figure 3: The school garden teacher is aware of differences between pupils, as perceived by different educational philosophies.



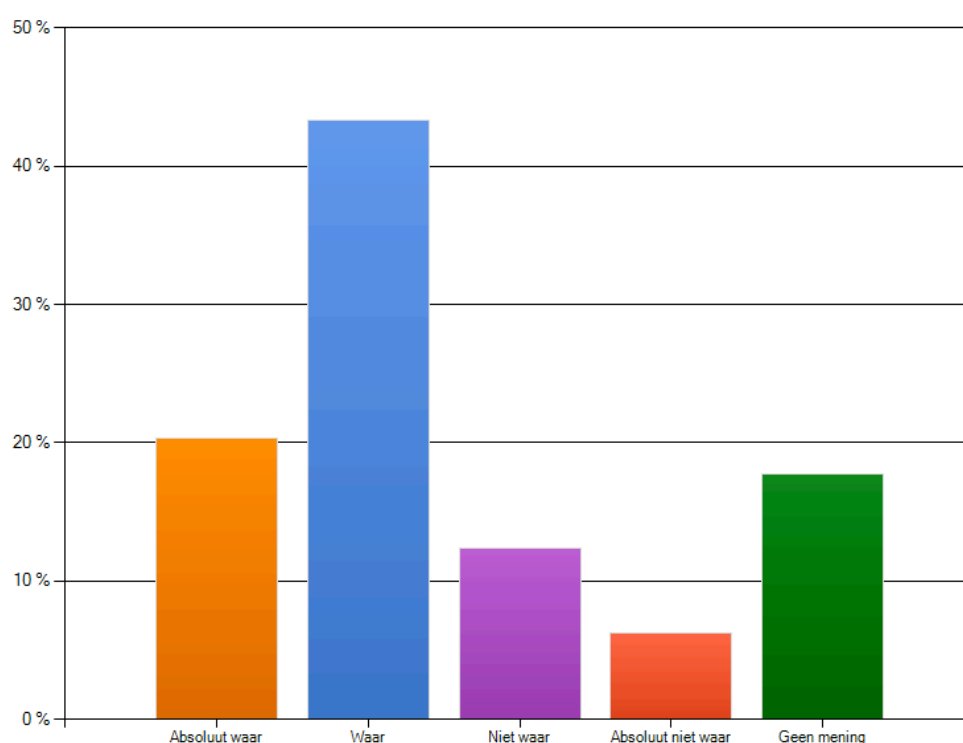
Explanation legend: Montessori education, Dalton education, Waldorf education, Jena plan education and School without specific educational philosophies.

Note: x-axis provides given answers absolute true, true, not true, absolute not true; y-axis provides percentage of given answers by respondents.

7.3 Quality of the organisation

There is no division made between educational philosophies in this subchapter, since perceiving the quality of organisational structures is not influenced by different philosophies. Agreements between teachers and school gardens are understood by 98% of the respondents. The school gardens and teachers, agreeing on the basic conditions and requirements, sign a contract every year. 79% of the respondents are aware of this procedure. Information for the pupils' parents has been found adequate by most respondents, besides some small exceptions (8%). The manual for the teachers is also well perceived by 63% of the respondents, the rest of the respondents answered with 'no opinion'. In general, teachers are satisfied with their schedules and transportation to the school garden. Most teachers and pupil walk to the school garden (67%); the second most common is hired transport (12%). 15% of the respondents are not satisfied the way they have to travel to the school gardens. On average the travel time is 20 minutes. 22% of the respondents are not satisfied with the travel time, in most cases they have to travel for over 25 minutes. The route to the school gardens is well indicated according to 62% of the respondents. 19% feel that the route is insufficiently indicated and 17% of the respondents do not have an opinion. Figure 4 illustrates how the respondents perceive the indication of the route.

Figure 4: The route to the school garden is well indicated.



Note: x-axis: provides possible answers of the statement: absolute true, true, not true, absolute not true and not opinion; y-axis provides percentage of given answers by respondents.

7.4 Quality of the school garden terrain

Most teachers are truly satisfied about the school garden terrain. 100% of the respondents feel welcome at the school garden terrain, of which 66% responded with absolute true. Explanations are:

“We receive a friendly welcome from the school garden teacher and other employees when we enter the school garden terrain”

“The pupils are always happy to be at the school garden”

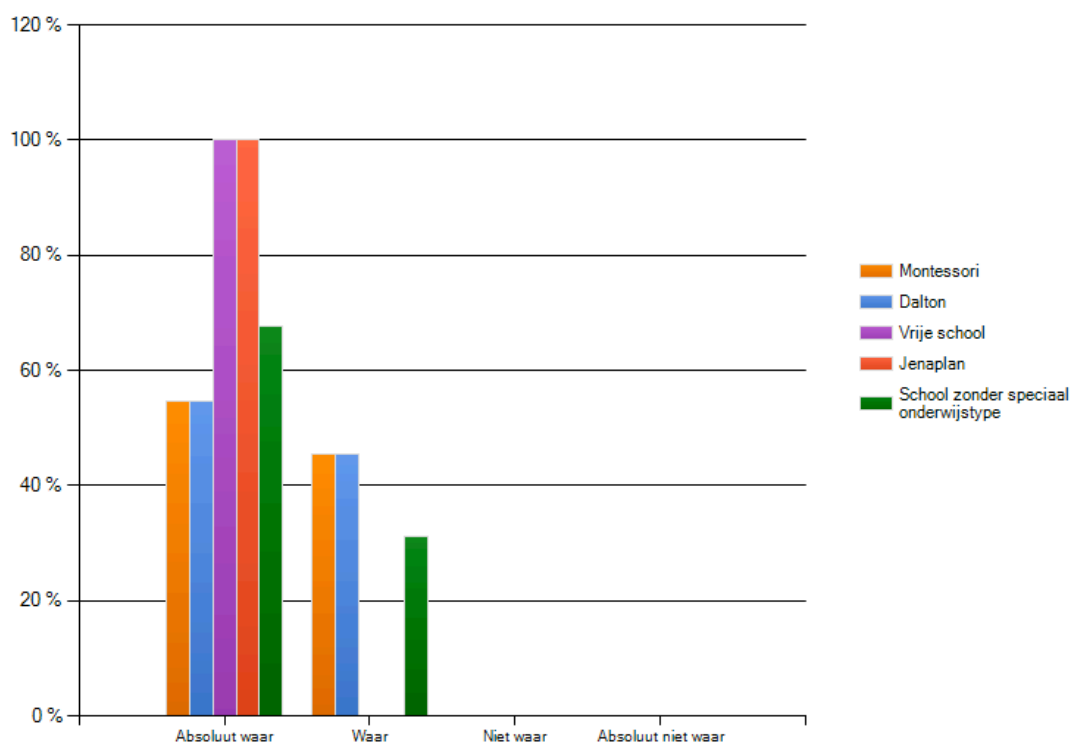
Also 100% of the respondents agree that the classrooms are suitable for school garden lessons. Explanations are:

“Inspiring environment, triggers pupils to discover”

“Old fashion classroom, but provides enough facilities for the pupils”

97% of the respondents agree that the pupils are able to work safely, with contributions from the school garden teachers who ensure safe working methods. 80% of the respondents agree that there are enough and proper sanitation facilities. Figure 5 shows the most positive outcome for the statement: we as teachers and pupils feel ourselves at home at the school garden. This is especially true for Waldorf education and Jena plan education who are very pleased with the environment of the school gardens. What is remarkable is that most teachers do not know where to find the first aid equipment, see figure 6.

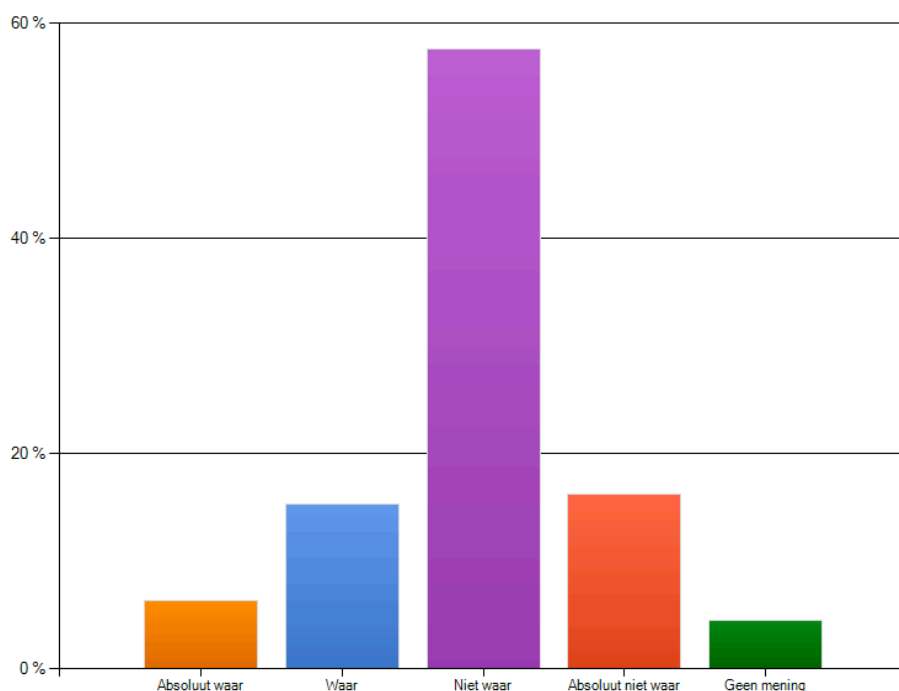
Figure 5: We feel at home at the school garden as perceived by the different educational philosophies.



Explanation legend: Montessori education, Dalton education, Waldorf education, Jena plan education and School without specific educational philosophies.

Note: x-axis: provides possible answers of the statement: absolute true, true, not true, absolute not true and not opinion; y-axis provides percentage of given answers by respondents.

Figure 6: I know where I can find first aid equipment.



Note: x-axis: provides possible answers of the statement: absolute true, true, not true, absolute not true and not opinion; y-axis provides percentage of given answers by respondents.

This chapter discusses the results based on the literature of the desk study and the results of the quantitative survey. First a justification will be given; thereafter the same subdivision of the results will be used: the background of the teachers, the quality of the year-around-programme, the quality of the organisation and the quality of the school garden terrain. Finally, limitations of this research and possibilities for further research will be provided.

8.1 Justification

One third of the teachers responded to this survey. The amount of responses can be linked to the timing of sending the online survey. We chose to send the survey at the end of April in order to give the teachers, who joined school garden education for the first year, the opportunity to formulate their opinions about the practical lessons; the practical lessons start at the beginning of April. The argument to postpone the survey has been valid, based on the one third of the respondents that are involved in school garden education for the first year. Unfortunately, at the end of April and the beginning of May most schools have school holidays for one or two weeks. Therefore not all teachers read their email on a regular basis and it might be that they read their email too late in order to respond to the survey. Another reason might be that respondents to this survey are satisfied with school garden education and the teachers who did not respond are less positive, and therefore did not respond to the survey.

The teachers that visit the school gardens: Broekhuijsen-Leeuwis, Gerrit Kalf and the Nijkamp had a lower response than the teachers who visit the other school gardens. School garden Gerrit Kalff has problems with the soil and this was the given reason for the limited amount of responses.

It is remarkable that negative responses are hardly given, the majority was positive about the quality of school garden education. Besides the positive answers on the statements, additional explanations were more critical.

8.2 Background of the teachers

Teachers are operational in primary education from one year to over forty years; what is remarkable is that most teachers are either operational less than ten years, or over thirty years. This implies a big gap between junior and senior teachers, confirmed by the Central Bureau for Statistics (CBS, 2003). On average teachers are involved for six years in school garden education, of which one third are there for the first year. This either implies that many internal shifts within a school took place, based on the previous results of operational years in primary education; or that many teachers have just started to work in Amsterdam's primary schools. Due to insufficient data collecting it is not possible for this research to compare the answers of teachers who are involved for only a couple of years and those who are involved for many years.

What is interesting is the outcome of the weight regulation for pupils who need extra support. The most common answer is less than 20%. This implies that there are fewer primary schools who receive support from the government than this research expected, or

that schools who receive support from the government did not fill in the survey. The results of Waldorf education are particularly remarkable. Pupils of Waldorf schools have a lower score than the average Dutch pupils, since Waldorf education is more development-based than knowledge-based. The results of this survey show that these schools receive less additional support from the government. One reason for this outcome might be that especially well educated parents like to send their children to Waldorf schools.

Some teachers see school garden education as a burden, others appreciate the opportunity for the pupils to learn in practice (Rijksoverheid, 2011). Based on the results, teachers of schools who receive 80% or more financial support from the government, see school garden education as an opportunity for the pupils to learn in practice. The teachers did not value the structure of school garden education as time-intensive, but enjoy the experiences pupils gain.

It is remarkable that this survey does not show significant differences in outcomes between the various educational philosophies. This research expected that the backgrounds of the teachers would influence how quality was perceived. This outcome implies that the philosophies are valued as direction, probably caused by the rules and regulations of the Dutch government; so less significant differences are visible between philosophies. This argument is confirmed in discussion with an experienced teacher who said that in former times teachers and parents adhered more to educational philosophies, nowadays this is decreasing. This is caused by government restrictions aimed at maintaining high quality education. Schools are reluctant to offer alternative or adjusted educational programmes in case they are regarded as a weak school.

8.3 Quality of the year-around-programme

8.3.1 Structure of the year-around-programme

It was expected by employees of ANMEC and the school garden teachers that most comments would be on the structure of the school garden lessons. Based on the conducted survey this expectation was unfounded. Still, an expert of ANMEC shared her experiences: teachers are satisfied with an additional programme if they do not know any alternatives. The expert recalled that after rearranging an educational programme in Rotterdam and Apeldoorn, teachers were impressed by the improvement. This might have been caused by the fact that teachers are not school garden experts and appreciate school garden education as such; therefore they are not aware of the alternatives to improve the structure of school garden education. What is noticeable is that the survey had a positive outcome, but the additional explanations were less enthusiastic.

Based on these results the educational environment, as well as the adopted educational method of school garden education, is well perceived by the teachers (Lowyck, 1995). The educational environment of school garden education is both informational environment and a practical environment.

8.3.2 Content of the year-around-programme

Preparation for the school garden lessons is hardly done; most of the time nature education is used. The processing of the information is often done by the pupils by means of writing a small essay. This can imply that school garden education takes a lot of educational time, so teachers do not invest more in it besides the lesson itself. ANMEC is starting a new project to include more language and mathematics in the school garden lessons. Attention should also

be paid to the preparation and processing of information. Based on the follow-up study by telephone, teachers indicated that it would be helpful to receive preparation and reflection material from the school garden teachers, to avoid the extra effort.

It was expected that the teachers would like more time for the pupils to experience Mother Nature (Dragt and Schuurman, 2007). The results of the survey show that 92% of the respondents agree that experiences during school garden lessons are sufficient and taken into consideration. This implies that teachers are satisfied with the content of the programme, or they do not know any alternatives. Based on the follow-up study, teachers indicated that pupils are able to experience the circle of life especially through the process of sowing and harvesting. The amount of content per lesson as well as the level of the lesson is well perceived by the teachers.

Most teachers are replacing aspects of nature education for school garden education, which is one of the goals of school garden education. The school garden book is well perceived by the teachers. Comments from Montessori education teachers were expected since the philosophy makes hardly any use of textbooks (Ryniker & Shoho, 2001), but only a few teachers from other educational philosophies were not completely satisfied with the quality of the school garden book. This proves one again that the educational philosophies are less dogmatic than in former years.

8.3.3 Expertise of the school garden teachers

The expectation of this research was that, in general, teachers are satisfied with the expertise of the school garden teachers, since they lack horticultural knowledge. It was expected that some teachers would not be satisfied with the level of didactic skills of some school garden teachers. Based on the results of this research the expectations are founded. There are some differences between the educational philosophies but they are hardly significant. The introduction of the lessons is well perceived by the teachers, they appreciate the enthusiasm of the school garden teachers. A proper closure is not always sufficient, caused by the limited time of the lessons. A quick-scan conducted among teachers, in order to get an insight into the quality of school garden education, shows that proper instruction of assessments was one of the most important aspects. The results of the research indicate that instructions are well implemented by the school garden teachers. The chosen language of the school garden teachers is not always well perceived, this differs per school garden teacher. Complaints are about rude language, using jargon or difficult language for pupils who are not native Dutch speakers. How school garden teachers handle any differences between the pupils is not always well perceived. This is caused by the quality of the school garden teachers and the relationship between school garden teachers and the primary school teachers. This can partly be solved by proper communication about the characteristics of the pupils. Most teachers are satisfied with the cooperation of the school garden teachers, most agreements are made in the beginning of the year. The relationship slightly differs per person.

8.4 Quality of the organisation

It was expected by this research that the quality of the organisation would be well perceived by the teachers, besides some individual exceptions. Based on the results of this research the expectations are founded. Agreements between teachers and school gardens are clear. Basic conditions that should have been signed every year are not done by every school garden, and not every school garden is using the same format. This can be caused by the fact

that most teachers are involved for many years (on average 6 years) and therefore cooperation between teacher and school garden teachers is more informal. This is the same for the manual for the teachers and the information letters for the parents. Some school gardens do not hand out these letters and manuals or they are insufficient and outdated. Some respondents indicate that they are writing the information letters themselves and are fine with that procedure. What is interesting to see is that documents such as the basic conditions, the manual for the teachers and the information letter for the parents, are available but only used by some school gardens, or using own formats.

Based on the follow-up study adequate travel time became essential. The teachers indicated that whilst the structure of school garden education is sufficient, the extra travel time to the school garden makes it a burden. On average it takes twenty minutes to visit the school garden, and this has been perceived as burden. This indicates that extra effort should be made to make travel time as short as possible, in order to keep the teachers motivated to participate in school garden education.

The route to the school garden is well indicated, according most teachers. Still, there are some who disagree or do not have an opinion. This indicates that most teachers are familiar with the route and therefore answered the question with no opinion, since this is not applicable for them anymore.

8.5 Quality of the school garden terrain

Teachers are mostly satisfied with the school garden terrain. They feel welcome, which implies that the decor and the natural environment are appreciated by pupils and teachers. School gardens with pet animals are especially popular. So the terrain and the classrooms are contributing well to school garden education. Most teachers do not know where to find first aid equipments, which implies that most school garden teachers do not communicate that information properly. It is agreed that school garden teachers encourage the pupils to work safely, which implies that school garden teachers are strict when it comes to the safe use of materials and tools. To increase a safe environment, attention should be paid by the school garden teachers to a proper RI&E (Risk Inventory and Evaluation); all accidents happening during school garden education should be properly registered.

Sanitation is sufficient but not always clean, this differs per school garden.

8.6 Conducting a satisfaction survey among teachers

Based on the experiences while conducting this research, the following aspects should be taken in consideration in order to implement a sufficient and professional piece of research.

- The survey should be sent out during first week of June. Teachers will have had the opportunity to experience the theoretical as well as the practical lessons. The end of June is a demanding period for all schools so sending the survey out in the first week of June is most suitable. Besides a long weekend of Pentecost, no holidays are scheduled in that period. By sending the survey out this time of the year, more respondents can be expected. Another option is the last week of November in order to get an insight into how teachers of the seventh grade perceive the school garden education; or inform teachers in advance about the survey.
- In order to analyse the data most effectively: no open questions should be asked. By using closed questions, reactions can be linked to other questions. Using the design of Survey Monkey is sufficient. Another possibility is to conduct a semi-structured interview with a selection of the teachers. The open questions of the semi-structured

interview provide more information and probing on the given answers is also possible.

- Although many teachers responded to the survey it is important to put effort into convincing more teachers to fill out the survey. For this research we sent a reminder after one week and raffled cinema coupons. Another initiative would be to conduct qualitative research, instead of quantitative research, with semi-structured interviews; or inform teachers in advance about the survey. Approaching teachers for semi-structured interviews is different and the researcher is able to control the number of approached teachers.

During this research the following suggestions for further education came across:

- Needs assessment for the primary school teachers. In discussion groups teachers are able to provide suggestions in order to improve the quality of school garden education according to their perspectives. It would be interesting to form discussion groups with primary school teachers as well as school garden teachers in order to get acquainted with each other's perspectives.
- Further research could be conducted regarding the integration of school garden education in regular education. A desk study would provide an overview of how teachers organise their lessons and how they adapt their programme for new initiatives. Teachers could contribute with information on how they see school garden education integrated into their educational programmes.
- To investigate whether the goal and objectives of school garden education are clear and whether these goals and objectives are received according to the teachers. A clear overview of the goal and objectives of school garden education could be given. Information about the teachers could be gathered by survey or interviews.

The results of the surveys show that school garden education is well perceived by the majority of the teachers. This chapter provides answers to the research questions.

9.1 Main question

How do primary school teachers of different educational philosophies, who are involved in the year-around-programme, perceive the quality of school garden education in Amsterdam?

Based on this research there are no significant differences between educational philosophies on how school garden education is perceived. This might be caused by the rules and regulations of the Dutch government in order to maintain quality of education. In former times, teachers and parents were more dedicated to a certain educational philosophy, whereas nowadays schools are reluctant to offer alternative or adjusted programme in fear of being regarded as a weak school.

In general, teachers of primary education are satisfied with the quality of school garden education in Amsterdam. Teachers appreciate that pupils are made enthusiastic and are able to learn more about nature and the environment in the garden than could ever happen in the classroom. Teachers are satisfied with the content of the year-around-programme, they realise the added value of school garden education in relation to the educational time they have to invest. The quality of the organisation regarding school garden education is sufficient, besides some individual exceptions. Travel time to visit the school garden is an important consideration particularly as this is a time-intensive programme. Most school garden teachers are the “added value” of school garden education due to their expertise and enthusiasm. According to the teachers, the quality of the school garden terrain is excellent and contributing to the quality of school garden education in Amsterdam.

9.2 Sub questions

1. What is the quality of the year-around-programme according to primary school teachers of different educational philosophies?

In general the quality of the year-around-programme is well perceived by the teachers of different educational philosophies. The structure of the programme is tough but worthy in relation to its benefit to the pupils. The content of the programme contributes to the level of quality and the content is sufficiently adapted to the level of pupils. The teachers see the enthusiasm and expertise of the school garden teachers as added value to the quality of school garden education.

1.1 What is the quality of the structure of the year-around-programme according to primary school teachers of different educational philosophies?

It was expected that the teachers would not be satisfied with the structure, since school garden education is time-intensive. Based on the results of this research, the majority of the teachers are satisfied with the division of time concerning school garden education. According to the teachers of all educational philosophies, pupils are able to experience and discover nature during the lessons. The invested time is worthy in relation to the benefits of school garden education. Used educational methods are well perceived.

1.2 What is the quality of the content of the year-around-programme according to primary school teachers of different educational philosophies?

School garden lessons have an additional value according to teachers of all educational philosophies: pupils are able to experience the circle of life. The preparation of and reflection on the school garden lessons are not well executed by the primary school teachers. The content of the lessons is realistic according to the teachers and suits the level of the pupils. The majority of teachers are replacing aspects of nature education with school garden education, equivalent to one of the goals regarding school garden education. The school garden book contributes to the quality of school garden education.

1.3 What is the quality of expertise of the school garden teachers, according to primary school teachers of different educational philosophies?

Teachers of all educational philosophies are satisfied with the expertise of the school garden teachers. They are impressed by the knowledge and enthusiasm of the school garden teachers, teaching pupils about the circle of life. School garden teachers employ proper didactic skills, visible through proper introductions of the lessons and an appropriate use of language. The closures of the lessons are not always sufficient. Pedagogical skills are sufficient; in most cases differences between pupils are taken into consideration by school garden teachers. Sufficient social skills are visible in relationships between teachers and school garden teachers.

2. What is the quality of the organisation concerning school garden education?

Teachers are satisfied with the quality of the organisation of school garden education. Agreements between schools and school gardens are clear. Documents such as the basic conditions and an information letter for parents are available but not frequently used by every school garden. The majority of the teachers are satisfied with the schedule for school garden education, besides some individual exceptions. Most teachers are satisfied with the travel time to school gardens; the travel time takes on average twenty minutes. Travel time is essential to how school garden education is perceived in relation to invested educational time. In general the route to the school garden is well indicated, although this differs per district of Amsterdam. There are differences in the quality of organisation among the different school gardens.

3. What is the quality of the school garden terrain according to primary school teachers of different educational philosophies?

Teachers of all educational philosophies are very satisfied with the quality of the school garden. They feel themselves at home and welcome. The classroom and the terrain are contributing to the quality of the school garden lessons. Teachers agree that the learning environment is aiming safety, physically as well as mentally. The location of first aid equipments is not known by most of the teachers.

10. Recommendations

Based on the results and conclusions of this research the following recommendations are formulated. This chapter is divided into: improve the quality of the year-around-programme, improve the quality of the organisation and improve the quality of the school garden terrain.

10.1 Improve the quality of the year-around-programme

Other than expected, teachers are satisfied with the ratio of theoretical and practical lessons. Still it would be wise to conduct an experiment in order to rearrange the division of lessons and duration of each lesson. The duration of the lessons can be perceived as good, but it may be that the duration is not suitable for the concentration ability of the pupils. Furthermore, pupils have to carry out many assessments in one lesson which leads to less time for experiences and wonderment for Mother Nature. Rearranging the content of the lessons and carrying out fewer assessments may make the lessons more relaxed with time for more questions and wonderment. This test should be carried out by two school gardens and based on the results of the tests it can be decided whether or not to rearrange all the lessons in every school garden. Through positive results the quality of school garden education will increase, but since such major changes can lead to resistance in teachers and school garden teachers, this process should be slow and properly guided and communicated. During this pilot extra attention could be paid to preparation and reflection of the school garden lessons by the teachers.

The implementation of this recommendation should be coordinated and guided by ANMEC as part of the improvement process. This pilot should be guided by ANMEC and implemented by ANMEC and the school garden teachers. Primary teachers should be consulted in order to measure how they perceive the rearranging of the content of school garden education.

10.2 Improve the quality of the organisation

Quick wins can be achieved by designing standard forms for: the contract with the basic conditions, a manual for teachers and an information letter for the parents. The contract for the basic conditions should be signed by the teachers and the school garden teachers at the beginning of the year. A standard format is available at the moment, but most school gardens are using their own format or do not sign the contract at all. A manual for the teachers is also available at the moment, but this manual is outdated and incomplete. For the teachers involved in school garden education for the first time, this document can be especially helpful in preparing for the school garden lessons. The manual for the teachers should include a clear overview of the learning goals per lesson, in order to help the teachers to adapt their own nature education and to avoid double effort. These standard forms should be composed by the school garden teachers based on the current forms, in order to increase support from the school garden teachers. A proper communication plan should be designed in order to ensure the school garden teachers hand over these forms every year.

The implementation of this recommendation should be coordinated and guided by ANMEC, with actual implementation of the school garden teachers. A needs assessment can be executed among the primary school teachers in order to fulfil the needs of the teachers properly.

10.3 Improve the quality of the school garden terrain

School gardens should maintain the quality of the school garden terrain since most teachers really appreciate the atmosphere adjusted for education.

All school gardens should register accidents that happen during lessons in order to gain a sufficient risk inventory. Since most teachers do not know where to find first aid equipments school garden teachers should inform the teachers more than once about the location of the equipments. First aid equipment should be situated near the group of pupils, so during theoretical lessons in the classroom and during practical lessons outside in the garden the equipment should be visible for everyone.

The implementation of this recommendation should be coordinated and monitored by the different districts of Amsterdam; they are responsible for the quality of the school garden terrain. ANMEC should check that it is implemented by every district in Amsterdam. School garden teachers are responsible for registering the accidents which happen during school garden education and the district is responsible for acting on it in order to reduce the risks. School garden teachers are responsible for communicating the location of first aid equipment.

11. References

Amsterdamse Stadsdelen, 2011. Internal document.

Arbo 2011. *Arbowet- en regelgeving*. [online] Available at: <<http://www.arboportaal.nl>>, [Assessed 07 April 2011]

Ausubel, D.P.; 1963. *The psychology of meaningful verbal learning*. New York Grune & Stratton.

Ballantyne, R et al; 2005. Measuring Environmental Education Programme Impacts and Learning in the Field: Using an Action Research Cycle to Develop a Tool for Use with Young Students. *Australian Journal of Environmental Education*, [e-journal] vol. 21, pp. 23-3, Available through: Eric database [Accessed 4 April 2011]

Boes, A. W; 1979. *Jenaplan; historie en actualiteit*. Groningen: Wolters-Noordhoff.

Both, k; 2001. Jenaplan, wat doe je ermee? *De Wereld van het Jonge Kind* , p. 273-276

Brabander, C.J. de; 1985. Het ontwikkelen van zelfverantwoordelijkheid leren op school. *Pedagogische studiën*, 62, 100-113.

Bruner, J.S.; 1964. The course of cognitive growth. *American Psychologist*, vol. 19, pp. 1-15.

Burk, F; 1915. Letter from Frederick Burk to the National Montessori Promotion Fund.

Centraal Bureau voor de Statistiek; 2003. Bevolkingstrends: Statistisch kwartaalblad over de demografie van Nederland. Jaargang 51 – 1e kwartaal 2003

Dragt, E; Schuurman, J; 2007. *Jong en Groen: kinderen over hun schooltuin*. Press: Raad voor het landelijk gebied.

De Nobile, J; McCormick J; 2008. Job satisfaction of Catholic primary school staff: a study of biographical differences. *International Journal of Educational Management*, Vol. 22: 2.

Dillon, J. et al; 2005. *Engaging and Learning with the Outdoors: the Final Report of the Outdoor Classroom in Rural Context Action Research Project*. Slough: NFER.

Easton, F; 1995. Educating the whole child, “Head, Heart, and Hands”: Learning from the Waldrof experience. *Theory into practice, College of Education*, Volume 36, number 2.

Elen, J; Lowyck, J; Branden, J van den; 1991. *Ontwikkelen van schriftelijk studiemateriaal*. Leuven: Acco.

Fröbel, F; 1965. *Kleine pädagogische Schriften*. Klinkhardt: Bad Heilbrunn.

GGD Rotterdam 2011. [online] Available at: <<http://www.ggd.rotterdam.nl>> [Assessed 07 April 2011]

Kendall, S.D; 1993. The development of autonomy in children: An examination of the Montessori educational model. *The NAMTA Journal*, 18, 64-83.

Keys, C et al.; 1997. *Third International study, Second National Report, part two*. Slough, National Foundation for Educational Research.

Lowyck, J; 1995. *Onderwijskunde. Een kennisbasis voor professionals*, pp. 215-247. Groningen: Wolters-Noordhof.

Mintzberg, H; 1984. Power and Organization Life Cycles. *The Academy of Management Review*, Vol. 9, No. 2, pp. 207-224.

Nastasi, B.K; Clements, D.H; 1991. Research on cooperative learning: implications for practice. *School Psychology Review* 30, 110-131.

Parkhurst, H; 1922. *Education on the Dalton plan*. New York.

Passy, R et al; 2005. Impact of school gardening on learning. In commission of National Foundation of Educational Research, submitted to the Royal Horticultural Society.

Pickering, J. S; 1992 . Successful applications of Montessori methods with children at risk for learning disabilities. *Annals of Dyslexia*, 42, 90-109.

Rijksoverheid, 2011. *Wat is de gewichtenregeling in het basisonderwijs?* [online] Available at: <<http://www.rijksoverheid.nl>> [Assessed 10 April 2011]

RI&E 2011. *Informatie voor brancheorganisaties*. [online] Available at: <<http://www.rie.nl>> [Assessed 12 April 2011]

Ryniker, D. H. & Shoho, A. R; 2001. Student perceptions of their elementary classrooms: Montessori vs. traditional environments. *Montessori Life, Winter*, 45-48.

Semel, F; 1999. The Dalton School: The transformation of a progressive school. *Schools of Tomorrow, Schools of Today: What happened to progressive education*, pp. 171-212.

Slavin, R.E; 1987. Cooperative learning and the cooperative school. *Educational Leadership*, 45, 7-13.

Steiner, R; 1991. *Opvoeding en onderwijs: spirituele grondslag*. Press Rudolf Steiner Stichintg. Zeist: Christofoor.

Swift, E; 1908. *Mind in the making a study of mental development*. New York: Charles Scribner's Sons.

Tovey, H; 2007. *Playing outdoors, spaces and places, risks and challenges*. Berkshire: Open University Press.

Westerman, W.E; 2003. De invloed van Fröbel in Nederland. *De wereld van het jonge kind*, november.

12.1 Background information about nature education

History of nature education

Founder or inventor of the school garden is Friedrich Fröbel (1782-1852). As a child, Fröbel was lonely and left to himself but found inspiration and comfort in nature. In his professional life he was inspired by a famous pedagogue from Swiss: Pestalozzi. By means of systemic education the empowerment of pupils will increase. Pestalozzi used the approach *head, heart and hands*. Head stands for knowledge, heart stands for feeling and hands for practising. According to Fröbel (1965) it was necessary to maintain a close relationship between school and real life. Within the *head, heart and hand* approach, Fröbel's emphasised on the heart. He wanted pupils to develop respect and admissibility for nature. Wondering is the keyword. Through out gardening, a pupil will experience that they can help another creature grow, but only when they meet the needs of the creature. To experience diversity and cohesion of nature, pupils will learn more about themselves. Forces will be awakened and developed in the pupil such as: patience, loyalty, perceiving and wondering. In the Netherlands the influence of Fröbel is most visible in the sandbox present in most schoolyards, in the sandbox pupils are able to experience the element of earth (Westerman, 2003).

Nowadays, influenced by curriculum pressure and national assessment tools school gardens initiatives are decreasing. The most common argument is lack of time. In Amsterdam school gardens have been operational for more than ninety years. Luckily there are more initiatives in the Netherlands, but the school gardens and its projects in Amsterdam are the longest running.

Other nature and environmental educational programmes provided in Amsterdam

Besides school garden education ANMEC is providing more nature and environment education methods. There are several projects that employees of ANMEC are providing such as lectures about animals, weather, sustainable energy sources, litter and many more. Besides lectures, it is possible for children to join an excursion as a forester or a farmer. After school time many programmes are available for children to learn more about nature, these programmes are organised to keep children active after school time.

Besides many lectures given by employees of ANMEC, it is possible for teachers to hire teaching materials in order to teach the children themselves. In the library of ANMEC backpacks are filled with information about certain topics regarding nature and environment, additional information and stuffed animals are also available. Teachers appreciate the collection of information which saves them a lot of time when preparing the lessons.

12.2 Questions of the conducted survey (translate from Dutch)

General questions

<i>Question</i>	<i>Possibilities to fill in the question</i>
1. What is the name of the school?	Open question.
2. What is the name of the school garden?	Respondents are able to chose one of the thirteen school garden in Amsterdam.
3. How many years have you been working in primary education?	Open question.
4. How many years have you been involved in school garden education?	Open question.
5. Which educational philosophy is implemented at your school?	Montessori education, Dalton education, Waldorf education, Jena plan education and schools without specific educational philosophies.
6. In the Netherlands weight regulation is implemented in order to provide extra support for pupils who need it. Which percentage is most applicable for the amount of pupils utilizing this facility?	<20%, 20%, 40%, 50%, 60%, 80% or >80%.

Quality of the organisation – Agreements

<i>Question</i>	<i>Possibilities to fill in the question</i>
7. There are clear agreements between school gardens and teachers.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
8. I am aware of the basic conditions. Explanation of 'basic conditions' added.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
9. The information for parents of the pupils is clear and proper.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.

Quality of the organisation – Schedule

<i>Question</i>	<i>Possibilities to fill in the question</i>
10. The preferences for the schedule of our school is taken in consideration.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
11. The schedule is communicated in time, in order to implement school garden education in the annual planning of the school.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
12. The school garden is easily accessible.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.

Quality of the organisation – Transportation

<i>Question</i>	<i>Possibilities to fill in the question</i>
13. We travel the following way:	Walking, cycling, with public transportation, with hired transportation, different.

14. For us this is the best way to travel.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
15. What is the travel time in minutes?	Open question
16. I am satisfied with the spend time for travel to the school garden.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
17. The route to the school garden is well indicated.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.

Quality of the year-around-programme – Structure of the programme

<i>Question</i>	<i>Possibilities to fill in the question</i>
18. I am satisfied with the ratio of the school garden lessons (eight theoretical lessons and twenty practical lessons).	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
19. I am satisfied with the period of school garden education (January until December).	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
20. I am satisfied with the frequency of the school garden lessons (one theoretical lessons per month and every week a practical lesson).	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
21. I am satisfied with the duration of the school garden lessons (ninety minutes).	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.

Quality of the year-around-programme – Information for the teacher

<i>Question</i>	<i>Possibilities to fill in the question</i>
22. I am able to use the website of ANMEC to find information about school garden education in Amsterdam.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
23. I am satisfied with the manual for the teachers.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
24. I am aware of the learning goals for the school garden lessons.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
25. The learning goals of school garden education correspond with the learning goals for nature education at our school.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
26. It is clear which learning goals connecting the core objectives are determined by the Dutch government.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
27. I use school garden education to replace aspects of nature education at our school.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
28. It is clear what the task division is between the teacher and the school garden teacher.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.

Quality of the year-around-programme – Content of the programme

<i>Question</i>	<i>Possibilities to fill in the question</i>
29. School garden lessons are prepared the following way (more answers are possible): Group discussions Nature education lectures Dutch lessons Mathematics lessons Different, namely	Never, sometimes, always or often
30. School garden lessons are processed the following way (more answers are possible): Group discussions Nature education lectures Dutch lessons Mathematics lessons Different, namely	Never, sometimes, always or often
31. There is time for experiences during school garden education.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
32. The amount of content is realistic for one lesson.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
33. The school garden lessons are connecting with the level of the pupils.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
34. The school garden book is contributing to the quality of school garden education.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.

Quality of the year-around-programme – Level of the programme

<i>Question</i>	<i>Possibilities to fill in the question</i>
35. The school garden teacher involves me during the lessons.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
36. The lessons are starting with a proper and enthusiast introduction. Explanations of 'proper introduction' added.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
37. The lessons are wrapped up with a proper closure. Explanations of 'proper closure' added.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
38. The pupils received clear instructions to help carry out the assessments.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
39. The language of the school garden teacher is suitable for the pupils.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
40. There is interaction between the school garden teacher and the pupils during the lessons.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
41. Differences between pupils is taken into consideration by the school garden teacher.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
42. A safe learning environment is created during the lessons.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.

43. I am satisfied about the used learning methods of the theoretical lessons. Explanation of 'learning methods' added.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
44. I am satisfied with the used learning methods of the practical lessons. Explanation of 'learning methods' added.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.

Quality of the school garden terrain – Facilities

<i>Questions</i>	<i>Possibilities to fill in the question</i>
45. There is sufficient sanitation.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
46. The sanitation is proper cleaned.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
47. I am satisfied with the tools and lessons materials for the pupils.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.

Quality of the school garden terrain – Space

<i>Questions</i>	<i>Possibilities to fill in the question</i>
48. We feel at home at the school garden.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
49. The classroom is suitable for the theoretical lessons.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
50. The school garden terrain is suitable for the practical lessons.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.

Quality of the school garden terrain – Safety

<i>Questions</i>	<i>Possibilities to fill in the question</i>
51. It is ensured that pupils work safely.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.
52. I know where I can find first aid equipments.	Absolutely correct, correct, incorrect, absolutely incorrect and no opinion.