

Final Project Report (to be submitted by 30th September 2016)

Instructions:

- Document length: maximum 10 pages, excluding this cover page and the last page on project tags.
- Start with an abstract (max 1 page).
- Final report text: Do not forget to mention your methodology; the people involved (who, how many, what organization they are from – if applicable); and the expected added value for biodiversity, society and the company. Finally, state whether the results of your project can be implemented at a later stage, and please mention the ideal timing and estimated costs of implementation.
- Annexes are allowed but will not be taken into account by the jury and must be sent separately.
- Word/PDF Final Report files must be less than 10 MB.
- If you choose to submit your final report in your local language, you are required to also upload your final report in English if you wish to take part in the international competition.
- To be validated, your file must be uploaded to the [Quarry Life Award website](#) before **30th September 2016** (midnight, Central European Time). To do so, please log in, click on 'My account' / 'My Final report'.
- In case of questions, please liaise with your national coordinator.

1. Contestant profile

▪ Contestant name:	Jozef Willems
▪ Contestant occupation:	Landscapedesigner, Art teacher, Master of Education in Arts
▪ University / Organisation	Kaleidoscoop: Organisation for Art and Cultural Education Community of Maastricht
▪ E-mail:	
▪ Phone (incl. country code):	
▪ Number of people in your team:	7 (it depends from school to school)

2. Project overview

Title:	"Naturally.....Art!"; An art based nature project.
Contest:	Benelux and International contest
Quarry name:	ENCI-Quarry Maastricht
Prize category: (select all appropriate)	X Education and Raising Awareness <input type="checkbox"/> Habitat and Species Research <input type="checkbox"/> Biodiversity Management x Student Project <input type="checkbox"/> Beyond Quarry Borders

Abstract

Cross-disciplinary learning, interdisciplinary work is up to date and relevant according to several literary sources (Aerts, 2010) (Schnabel, 2016). Art education, as stated herein, needs to join in with the curricula of other domains of learning and should be relevant. Therefore it is necessary for the education to take place in a meaningful and stimulating learning environment. The Project “Natuurlijk.....Kunst!” (“Naturally.....Art!”) around the renovation of the ENCI-quarry is an example of a relevant, meaningful and stimulating learning environment. Grade teachers, art teachers and educational workers in primary education have a need for information, practical resources and inspiring examples in order to be able to design interdisciplinary projects. The design research satisfies this need and focuses on an interdisciplinary combination of art education and natural sciences (Berg van den, 2010). The practical development of this research is the “Natuurlijk.....Kunst!” project around the ENCI-quarry in Maastricht. First of all the research question and its sub- questions is formulated in chapter 1, followed by a literature based description of the need for and the effect of interdisciplinary work and learning processes in projects. Thereafter chapter 2 treats the relation between nature and art and in what way this combination is an inspiration for nature and art educational projects. In which respect is their content related? As is the significance of the importance of the combination of nature and art in current and future projects. One of the core sources is *Building Blocks For High Impact Learning that Last (HILL)* by Dochy (2015). Chapter 3 contains a description of the design process and the test run of the project “NatuurlijkKunst!”. In this chapter the principles for the design of the project are formulated. Also from the same basic assumptions a design is created for 2 didactic tools intended for grade teachers, art teachers and other educational workers . These 2 tools will assist teachers in designing nature and art based projects themselves. The tools are “Tien bouwstenen interdisciplinaire natuur- en kunsteducatieve activiteiten” (Ten building stones for interdisciplinary nature and art educational activities) and the “Format Interdisciplinaire Natuur- en Kunst Activiteiten” (Format Interdisciplinary Nature and Art Activities). The “Natuurlijk....Kunst” project will be tested in three different Maastricht primary schools. The test results will be described and conclusions will be drawn. Chapter 4 contains the final conclusion and the answer(s) to the research question. Several points of discussion will be debated and suggestions will be made for supplementary study. The Art and Nature educational product of this design research (Berg van den, 2010) consists of 3 parts; the “Natuurlijk.....Kunst!” project around the ENCI-quarry in Maastricht, 2 didactic tools for teachers and inspiring examples. These examples are an elaboration of the ENCI-quarry project and are meant for the advanced stage (grade 7 and 8) of primary education. Starting September 1st 2016 the project as such will be integrated in the art educational catalogue of Kaleidoscoop; cultural education Maastricht.

The product of this design research (Berg van den, 2010) can be deployed for training purposes or refresher courses. The designed and tested project around the ENCI-quarry will be used as an inspiring example.

Introduction

Increasingly international critical thinkers question the current organization of primary education. Dochy (2015), professor at the Centre For Professional Education And Development of the Louvain Catholic University, is an example of this new way of thinking. Primary Education is primarily focused on instrumental acquisition of knowledge and delegation of knowledge such as language and arithmetic, and not nearly enough on future needs for knowledge and skills (Dochy, 2015) (Schnabel, 2016). As a result there is a lack of connections between separate learning domains and the environment/society. Thus the learning context is not meaningful enough. Whereas we know that unless the subject material can be made meaningful the effect is nominal (Geisen, 2013). Geisen states that subject material only becomes meaningful when its assumption is an authentic question or real world problem. Gardner (2006) confirms this by stating that meaningful education is based on the creation of coherence.

The “Natuurlijk.....Kunst!” project, based on the transition of the ENCI-quarry to nature reserve, is based on above mentioned fundamental ideas. The connection of school subject material with de ENCI-quarry transition, gives meaning and purpose to the child’s learning. It is a connection that assumes an authentic question originating in the immediate environment, from the real world. The research question put to all pupils is: Can the ENCI-quarry be designed in a manner that takes into account the needs and requirements of all its users, while at the same time ensuring the uninterrupted growth of nature, and insuring biodiversity?

The “Natuurlijk.....Kunst!” project chooses an interdisciplinary approach of nature and art education. It is expected to insure the largest possible learning return. Through the interdisciplinary approach the aspects head, hand and heart can be fully appreciated (Cavallini, 2011). The biggest challenge of this research is to get (art) teachers and educational workers to design and execute independently integrated nature and art educational projects around the ENCI-quarry. That they can independently refine nature and art educational projects and that they are able to integrate this new method of learning and working in the primary education curriculum.

Scandinavian countries have more experience with interdisciplinary education based on nature and art education. A representative is the Norwegian eco-philosopher Naess (2009). According to Naess children can learn to identify with other people, animals and plants and even with ecosystems, by connecting art and nature education. A harmonious relationship between man and nature is of the utmost importance for sustainable development.

Nature and art are intertwined, not each other’s opposites. The question is whether art and nature can provide the solution for acute ecological and social problems. In the art world there is a growing awareness that it could, if not should contribute to an improved world. Without cultural change (adaptation of behaviour) a climate change with catastrophical consequences cannot be averted (Jones, 2009). A change will have to be made in our relationship with each other and the environment, in order to save the world. A philosophical approach can provide us with insights by means of collective re-thinking, re-observing and re-acting (Oosterling, 2013).

The department of Education, Culture and Sciences (ECS) has responded to the cry for renewal by constructing the subsidy regulation Quality Culture Education For Primary Schools. The ECS minister has based the Quality Culture Education Brief on 21st century skills. Interdisciplinarity is mentioned as a means for future proof education. Other skills are: construction of knowledge, problem solving abilities, creativity, collaboration and working according to a plan.

The “Natuurlijk.....Kunst!” project around the ENCI-quarry is a joint production of Kaleidoscoop Culture Education Maastricht, the Maastricht Natural History Museum, the Foundation Development Company ENCI Area, the Maastricht Geology Federation and several primary schools. The project is meant for the advanced stage of primary education. The project team consist of a project coordinator, Kaleidoscoop art teachers, primary school teachers, educational workers of the National History Museum and experts in the field of nature education.

Chapter 1 The design of the research project “NatuurlijkKunst!”

The biggest challenge for primary education is how to put the education of the future into practice, as described in the introduction. The design research lends an impulse to this purpose, by creating the specific combination of nature and art education around the renovation of the ENCI-quarry.

1.1. Research goal and research question

The goal of this research is:

“The development of an integrated nature and art educational project around the renovation of the ENCI-quarry. The objective is the augmentation of the child’s involvement in and perception of nature development and biodiversity through artistic activities. Another important part of project to be developed is the design of didactic tools as well as inspiring examples. These have the purpose of enabling educators to independently develop nature and art educational lessons around topical nature projects in the immediate environment.”

The target group of this research are (art) teachers and other educational workers collaborating and working in primary education.

The research question is:

“How to develop an integrated nature and art educational project around the renovation of the ENCI-quarry for the advanced stage of primary education, while using the didactic tools designed as well as a number of inspiring examples?”

The sub-questions are:

- 1 What does literature tell us about contents and effects of integrated nature and art educational projects?
- 2 What are the design principles of a nature and art educational project intended for primary education and/or an institution for art education?
- 3 What are the design criteria for an inspiring nature and art educational project?
- 4 What demands should the didactic tools and inspiring examples meet when designing an integrated nature and art educational project?

1.2. The framework of the research

The answer to sub-question 1: The development of a nature and art education project around the ENCI-quarry begins by means of literature study. What is the relation between man and nature? What is the relation with art? What is sustainability and how does one further biodiversity in a nature project? The relation with art is to be investigated by studying several artists who use nature as their main source of inspiration. Natura Artis Magistra.

The answer to sub-question 2: Through literature study several pedagogic principles are to be formulated as the basis for the to be developed project “Natuurlijk.....Kunst!”. These pedagogic principles shall be translated into a thorough didactic construction of the project. Subsequently the project will be developed and tested in practice.

The answer to sub-question 3: Criteria will be formulated for the to be designed nature and art educational project “Natuurlijk.....Kunst!”. The project will be tested in practice several times. In response to the test results the project will be refined.

The answer to sub-question 4: The design of didactic tools is to be developed on the basis of literature study. The didactic tools should join together nature and art education. After designing said tools they will be employed and tested in the project “Natuurlijk.....Kunst!”. In response to the test results the didactic tools will be revised. Didactic tools add structure to the independent design of nature and art education projects.

Summary: The theoretical framework of the project “Natuurlijk.....Kunst!” is to be determined through literature study. Thereafter the project will be developed and tested in practice. The prototype of the project will be refined by means of an iterative process. Starting the 1st of September 2016 the project is to be integrated in the Kaleidoscoop (Maastricht art and culture education) art educational catalogue for primary schools. The final product of this research will consist of the tested project “Natuurlijk.....Kunst!”, complemented by 2 didactic tools and a number of inspiring examples for educators (see supplements).

Chapter 2: Litarature study

2.1 Interdisciplinary work and learning processes

The term interdisciplinary education is used for activities that offer a specific discipline in combination with another discipline. In the project “Natuurlijk.....Kunst!” these are the disciplines of nature education and art education. By co-ordinating these 2 disciplines they reinforce and complement each other (Verkuil, 2011). By working in an interdisciplinary way pupils will be prepared for a society that is getting more and more problematic and complex. By giving pupils the opportunity to contribute to the renovation of the ENCI-quarry, they will gather knowledge and skills they will need in the future. It is also a form of education that is sustainable and thus future proof.

The term sustainability is the linking element between different philosophical approaches. Sustainability was first brought under global attention when in 1987 the Brundtland Committee of the UN released a report wherein it articulated its concerns about the deterioration of global environment systems and the negative consequences hereof for our economic and social development. The Brundtland Committee (1987) defined this as “a development catering for the needs of current generations, without endangering the opportunity for future generations to satisfy their needs”. That this definition in itself is quite sustainable has become apparent through the fact that it is globally still the most common definition of sustainability, in spite of many past and present critics.

Dochy (2015) speaks of *High Impact Learning that Lasts*, the HILL model. This model is based on his perception of sustainable education. Dochy’s model consist of seven building blocks, namely: Urgency, hiatus and problem; self-management; cooperation and interaction; hybrid learning; action and knowledge sharing; flexible learning space and assessment. The first building block ‘Urgency, hiatus and problem’ forms the basis for the remaining building blocks. Dochy (2015) assumes that each and every learning process starts with a clearly substantiated problem, a challenge or a hiatus containing a measure of urgency. It is the urgency that demands a solution. It is the trigger that gets the pupil to a maximum state of involvement. The opportunity to contribute, the co-design, perhaps even the opportunity to co-decide in the renovation of the ENCI-quarry is a perfect example of authentic interdisciplinary learning with a high level of urgency. The transfer effect of constructed and acquired knowledge, skills and attitudes in interdisciplinary learning and working, turns out to be larger and endures longer. Motivation also turns out to be a great deal higher than in traditional education.

2.2 Art and nature as a source of inspiration

Inspiration for integrated nature and art education can be found in artist that use nature as an inspirational source for their works of art. Representatives are (amongst others) Herman de Vries, Andy Goldsworthy, Claudy Jongstra en Sjoerd Buisman. They share the fact that they link their identity as an artist with the knowledge of a natural scientist. Like a scientist they observe, collect, test and draw conclusions. Integrated nature and art education, like nature based art, researches the reliant relation between man and nature. This research is artistically, philosophically, as well as scientifically tinted. Nature is the inspiration for learning, researching, working and creating. Nature is the collective theme, their joint affinity and strong passion. Joining together nature and art education increases the knowledge about and the susceptibility and sensitivity to nature and art. The child acquires greater insight in complex issues and learns to solve these whenever necessary (Twaalfhoven 2012). By combining art and nature the child is more aware of its natural surroundings. The effect of this awareness is that the child will deal with nature and its fellow human beings in a more respectful and careful manner (Mantere, 1992).

2.3 Similarities between nature and art education in primary education

As in nature education, art education complements the methodology of learning by investigation and design. Learning by investigation and design presumes that there are learning questions as a result of an authentic question or issue (Graft, Kemmers, 2007).

This learning method is associated with 21st Century Skills: construction of knowledge, problem solving ability, creativity, collaboration and working according to a plan (Voogt, 2010). These qualities are also mentioned in the final recommendation Platform Onderwijs 2032 (Schnabel, 2016).

In the project “Natuurlijk.....Kunst!” an integrated form of investigative learning (nature education) and the creative ‘manufacturing’ process is applied. In the project transcendental learning skills are important. Here we are talking about the development of creative ability and effective collaboration. These are important skills in meaningful and future proof primary education, as mentioned in “21st Century Skills” (Voogt, 2010) and in the recommendations of the Platform Onderwijs 2032 (Schnabel, 2016).

Chapter 3: Design and testing of the Project “Natuurlijk.....Kunst!”

In designing the project and the inspiring examples, 3 literature-based design principles were applied.

3.1. Captivating and powerful, learning return targeting adequate education.

Setting up a **captivating and powerful learning environment**. This design principle is based on the necessity and the learning return of interdisciplinary work and learning processes, as well as on “Art and Nature” as a source of inspiration. Enabling children to experience the beauty of and responsibility for nature, and its use as a source of inspiration for the creation of works of art, is an important learning element.

The augmentation of the **learning return**. This design principle is based on the impact of integrated nature and art education in primary education. This is an important factor in an entrepreneurial sense. The school will be able to excel through excellent results.

Creating **adequate** education by tailoring the subject material to the educational desires and needs of the pupil. The development of all talents is an important pedagogic assignment. This design principle is based on HILL by Dochy (2015) and on the theory of Munnik and Vreugdenhil (2012).

3.2 The building elements of Dochy (2015)

Dochy’s seven building elements (2015) are used in the design of this project. These elements will be adapted to their use in integrated nature and art educational projects for primary education. The elements are: Urgency, hiatus and problem; collaboration and interaction; hybrid learning; action and knowledge sharing, flexible learning space and assessment. Dochy (2015) assumes that every learning process starts with a clearly substantiated problem, a challenge, or a hiatus. It is the urgency that demands a solution. It is the trigger that brings the pupil in a state of maximum involvement and intrinsic motivation. This “state of flow” is reached when a balance is generated between what the assignment demands from the learner and the capacities the learner has already acquired. Dochy (2015) indicates that motivation and curiosity are strong stimuli as well as fundamental conditions for efficient learning processes.

3.3. Design principles of Munnik and Vreugdenhil (2012)

The key concepts of subject material, pupil and social environment are important factors in the educational design process. The material might be introduced from a textbook by the (art) teacher or educational worker, but can also be invented with the child in mind. The latter forms a better link with interdisciplinary education around an authentic presentation of a question

When we talk about pupils we mean that a child is not a blank sheet of paper when entering school. Adequate education and the deployment of individual talents adds to this. The aspect of social environment mainly implies that the subject material is derived from reality, thus making it meaningful for the pupil (Munnik & Vreugdenhil, 2012). The Sint Pieters mountain in Maastricht is cultural heritage for all inhabitants of Maastricht.

3.4 The subject materials of the project “Natuurlijk.....Kunst!”

The subject material for the project consists of an introductory lesson taught by the educational worker of the Maastricht Natural History Museum. This phase of orientation and exploration pursues the history, the natural development and the biodiversity of the ENCI-quarry. The importance of the cement industry for the town of Maastricht is also discussed. A visit to the ENCI-quarry under the leadership of a nature guide will follow the introductory lesson. The research question is based on the renovation of the ENCI-quarry. The elaboration discusses, amongst others, the history, natural development, biodiversity, flora and fauna management, specific landscape components and the function of water. Different target groups will be taken into account when renovating the ENCI-quarry. The methods investigative leaning and learning by design will be applied. Pupils will start off by making several design sketches which will be discussed in class. Hereafter the collective and final design is created. The creative manufacturing model by Christophe (2006) will be applied in the next 3 art lessons. The ideas and desires of the group will be shaped in a scale model of the ENCI-quarry, exclusively using natural materials. The 3 art lessons will be followed by the creation of stop-motion videos. These videos should give an impression of the quarry's future use. Following these lessons the pupils will present their products. Group teachers will allocate at least an hour per week in their timetable for the pupils to work on the project independently and individually. The group teachers will offer compounding lessons around the project “Natuurlijk.....Kunst!”. For example an arithmetic class about the scale of the model, or about the volumes of marl excavated or the production costs of 1000 kg of cement.

3.5. The 3 test phases of the “Natuurlijk.....Kunst!” project

To guarantee the validity of the research the project is to be tested in 3 phases. This so-called triangulation offers a more reliable and nuanced image when answering the research question and its sub-questions. The research methodologies of focus group, interview and observations were applied.

Test phase 1: Prototype 1 of the project “Natuurlijk.....Kunst!” carried out at Maastricht primary school De Spiegel grades 7 and 8. 58 pupils in all.

The main results of the test: As far as the setup concerns the project was executed exactly as it was invented. All parts have been performed and 2 interesting scale models were manufactured. The pupils were enormously inspired by the way of working, as was the project team. The pupils were motivated, passionate and inspired. With respect to content there could be more in depth exploration. There was too much emphasis on performance and too little on nature education. Communication was fine. The project was also discussed outside the classroom. The instances involving independent work passed hassle-free, due to the high level of involvement. The organization of the project took up a lot of time. Synchronizing school hours, the deployment of the art teacher, arranging materials, transport to and from the ENCI-quarry, arranging a guide and arranging the school presentations took up a lot of time and energy. With respect to content there is a great deal to be gained. Teachers of the primary school suggested they needed more support and guidance in order to be able to independently give supporting lessons. They were extremely busy and had no time left to invest in complementary lessons and activities.

Conclusion and adaptations following the first test phase:

The organization of the project has been thoroughly documented for the benefit of the next project. The research question could be more acutely formulated. The project should start with a clear, urgent and topical question. Mr Peter Mergelsberg, managing director of the Foundation Development Company ENCI-territory will be asked to tell a motivational story to the group. The project could gain in content by synchronizing the lessons given by the educational worker of the Maastricht Natural History Museum with the history and natural development of the quarry. The presence of the museum's educational worker during the visit of ENCI-quarry is imperative. This will ensure that the contents of the lessons adds to the perception and experience of the visit.

To generate more involvement the pupils are going to carry out assignments at the ENCI-quarry. The research question needs to be expanded. When renovating the quarry pupils will have to give more consideration to the different target groups using the quarry in the future. The target groups are: the nature lover, the sportsman, the child, the lover of art and culture, the scientist and the economist. Use of the quarry should be brought into balance with natural development in order to guarantee biodiversity. The project team needs more didactic support and inspiring examples.

Test phase 2: Prototype 2 of the project “Natuurlijk.....Kunst!” carried out at Maastricht primary school Sint Pieter, grade 7. 32 pupils in all.

The main results of the test: The project kicked off with a project team meeting. Unfortunately the teachers of the primary school could not be present. At this meeting the organization and content adaptations were discussed. Also more substance was added to the theoretical assumptions of the interdisciplinary project. Two tools were introduced, namely the ten building blocks belonging to integrated nature and art education and a lesson plan for the independent design of nature and art educational activities. The research question was more acutely presented with regard to content through a better synchronization of the educational worker's subject material, the lecture by Mr. Peter Mengelsberg and the art teacher. Mr. Mengelsberg's participation added realism, urgency and topicality to the research question. Mengelsberg stated that the input of the pupils would be integrated in the formal organisation occupied with the renovation of the ENCI-quarry. The quarry visit will be expanded with an instructional video on cement production, to be screened at the ENCI main compound. The pupils carried out assignments at the quarry: taking photographs and collecting different materials. The art lessons started with a brief review of the design principles of the quarry renovation. The emphasis was on natural development, biodiversity and use of the quarry by the different target groups. The content of the art lessons remained unaltered. The division of the quarry into zones became clearly visible in the scale model. This was mainly due to the addition of the different target groups and the information provided by Mr. Peter Mengelsberg in the introduction. The educational worker of the Maastricht Natural History Museum and the art teacher built their subject material along the lines of the didactic tools offered to them. The primary school teachers did not prepare nor carry out complementary lessons.

Conclusions and adaptations following the second test phase: Due to them not being present at the kick off meeting the primary school teachers missed out on a considerable amount of information. This could also be the reason for them not giving complementary lessons around the project. The coordination between art teacher and educational worker was more successful but could be intensified, resulting in an even better assimilation of content and product. The use of Mr. Peter Mengelsberg should certainly be continued. His assistance added realism and urgency to the “Natuurlijk.....Kunst!” project. Filming his discourse and introduction is advisable, so that his presence is not fundamental to all occasions. The input by Mengelsberg has led to improved visibility of the results in the scale model. More diverse natural development was clearly visible and more attention was paid to the various uses of the quarry. There were recreational locations next to sanctuaries. Also, during the presentations the nature subject material was more clearly and thoughtfully formulated by pupils. The visit to the ENCI works and use of the video on the cement production process should be maintained. The assignments at the quarry were satisfactory but could be even more connected to art. Working with target groups should be continued. More consultation with the project team regarding the relation between man, nature and art and the principles of project education, interdisciplinary work and integrated nature and art education is mandatory. The primary school teachers need more encouragement in carrying out complementary lessons. This could be achieved through more frequent consultation and providing more examples.

Test phase 3: Prototype 3 of the project “NatuurlijkKunst!” carried out at Maastricht primary school De Vlinderboom, grades 7 and 8. 62 pupils in all.

The main results of test: When launching the “Natuurlijk.....Kunst!” project, more conditions were imposed on the primary school with regard to the deployment of teachers. At the start a communication scheme was drawn up, consisting of a 90 minute introductory meeting, 2 halfway evaluations of 60 minutes each and a 90 minute evaluation meeting. Not all meetings took place, due to other obligations. As a result of the intensification of consultation the people involved were more aware of the mutual assumptions namely: the building blocks of interdisciplinary work and the format for the design of nature and art education (see supplements) .

The content of lessons and total organization were more familiar. When executing the project the teachers of primary school De Vlinderboom were clearly more involved, showed more initiative and were more motivated. They brought in the chairman of the Maastricht Geology Society, Mr. Schins. He provided a class during the introduction and orientation phase. He also functioned as quarry guide. The use of a trainee from the Maastricht Art Academy was also an initiative of the teachers. The trainee, together with the pupils, carried out a “land-art” project at the ENCI-quarry. The filming of Mr. Peter Mengelsberg has been initiated but the video is still in the production phase. Following a suggestion of the teachers the art lessons were organised in a different way. The two groups were joined together so that they could work on the scale model of the ENCI-quarry, while under the supervision of the art teacher, for a total of 3 hours. This set up facilitated a more intense way of working. This was clearly visible in the quality and the detail of the final product. Art and nature were assimilated. The presentation took place at the Maastricht Natural History Museum, together with the pupils of Sint Pieter primary school. A panel of experts in the field of nature and art offered constructive feedback. The panel consisted of Mr. Peter Mengelsberg, Nicole Rokx as the delegate for ENCI, John Jagt – paleontologist for the Maastricht Natural History Museum and Edouard Disch – representative of Adembenemd, the interest group for Sint Pieters mountain. The teachers of De Vlinderboom primary school had received instructions for the coaching of their pupils on how to attractively present the renovation of the ENCI-quarry, using the scale model. That the teachers had successfully practised this with their pupils could be clearly seen and heard. The public relations department of the Maastricht Natural History Museum had called in regional television. That very evening a report of the presentations and exposition of the “Natuurlijk.....Kunst!” project was broadcasted on the “Maastricht Radio & Television”-channel. Central to the broadcast were the vision and concepts of the children around the renovation of the ENCI-quarry. The exposition of the project results at the Natural History Museum was also announced during the broadcast.

Chapter 4: Final conclusion and discussion

The research question was:

“How to design an integrated nature and art educational project around the renovation of the ENCI-quarry, targeted at primary education grades 7 and 8, using the designed didactic tools as well as a number of inspiring examples?”

The conclusion can be drawn that the developed project “Natuurlijk.....Kunst!”, based on a thorough study of literature, has made pupils aware in an active and collaborative manner of the great importance of nature and nature development now and in the future. By involving pupils and making them partly responsible for the renovation of the ENCI-quarry a large sense of citizenship was created in a natural way. Thus learning is placed in a local, meaningful context. The issue of nature development and sustainability with regard to the ENCI-quarry became more firmly internalised and will endure for a considerable amount of time by means of an artistic approach. The aspects head, hand and heart were better balanced and promote a harmonious and creative development of the child. A development targeted at a sustainable relationship between people, planet and profit. In order to ensure for sustainability to remain in people’s minds and on their retinas, thus enabling them to connect with each other as well as with nature, ecological consciousness in primary education needs to be further developed.

4.1 The product of this research and discussion

The total product of this research consists of three parts (see supplements).

The first product is the tested and evolved project “Natuurlijk.....Kunst!” around the ENCI-quarry for the advanced stage of primary education. Following 3 test runs a provisional end product has been developed. In the next few years the project is to be offered to primary schools in and around Maastricht by Kaleidscoop. There is clearly a keen interest. By now 14 groups have registered for the 2016-2017 school year. Supplementary study regarding the measuring of the learning return of integrated nature and art education is advisable. Development of a reliable measuring instrument is the objective.

The second product of this research are the 2 didactic tools offering support for (art) teachers and educational workers in the independent development, execution and evaluation of integrated nature and art educational activities. Monitoring and refinement of the 2 products is to be part of the supplementary study, which poses the question whether the didactic tools developed offer sufficient support for teachers in independently constructing nature and art educational activities. Furthermore, development of training for additional professionalization of the teachers is an option.

The third product of this research is a collection of inspiring examples of nature and art educational activities around the renovation of the ENCI-quarry. Aforementioned pair of didactic tools have been applied herein. These examples have yet to be tested in practice. This could also be part of the supplementary study.

The 3 parts mentioned before could mature into an innovative method of learning for nature and art education in primary education. The project "Natuurlijk.....Kunst!" around the ENCI-quarry is to be the reference project for the development of new projects based on nature and art.

4.3 Closing remarks

This research could not have been possible without the full collaboration and commitment of all parties involved. From the start there was absolute faith in the project's mission.



En tenslotte:

Who will win the Quarry Life Award? That is.....the child and Nature!

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Maastricht, 22-09-2016

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- In the supplements the product of this design research and the budget 2016 and 2017.

To be kept and filled in at the end of your report

<p>Project tags (select all appropriate):</p> <p>This will be use to classify your project in the project archive (that is also available online)</p>	
<p>Project focus:</p> <p><input checked="" type="checkbox"/> Biodiversity management</p> <p><input checked="" type="checkbox"/> Cooperation programmes</p> <p><input checked="" type="checkbox"/> Education and Raising awareness</p> <p><input type="checkbox"/> Endangered and protected species</p> <p><input type="checkbox"/> Invasive species</p> <p><input type="checkbox"/> Landscape management - rehabilitation</p> <p><input type="checkbox"/> Rehabilitation</p> <p><input type="checkbox"/> Scientific research</p> <p><input type="checkbox"/> Soil management</p> <p><input type="checkbox"/> Urban ecology</p> <p><input type="checkbox"/> Water management</p> <p>Flora:</p> <p><input type="checkbox"/> Conifers and cycads</p> <p><input type="checkbox"/> Ferns</p> <p><input type="checkbox"/> Flowering plants</p> <p><input type="checkbox"/> Fungi</p> <p><input type="checkbox"/> Mosses and liverworts</p> <p>Fauna:</p> <p><input type="checkbox"/> Amphibians</p> <p><input type="checkbox"/> Birds</p> <p><input type="checkbox"/> Dragonflies & Butterflies</p> <p><input type="checkbox"/> Fish</p> <p><input type="checkbox"/> Mammals</p> <p><input type="checkbox"/> Reptiles</p> <p><input type="checkbox"/> Spiders</p> <p><input type="checkbox"/> Other insects</p> <p><input type="checkbox"/> Other species</p>	<p>Habitat:</p> <p><input type="checkbox"/> Cave</p> <p><input type="checkbox"/> Cliffs</p> <p><input type="checkbox"/> Fields - crops/culture</p> <p><input type="checkbox"/> Forest</p> <p><input type="checkbox"/> Grassland</p> <p><input type="checkbox"/> Human settlement</p> <p><input type="checkbox"/> Open areas of rocky grounds</p> <p><input type="checkbox"/> Recreational areas</p> <p><input type="checkbox"/> Screes</p> <p><input type="checkbox"/> Shrubs & groves</p> <p><input type="checkbox"/> Soil</p> <p><input type="checkbox"/> Wander biotopes</p> <p><input type="checkbox"/> Water bodies (flowing, standing)</p> <p><input type="checkbox"/> Wetland</p> <p>Stakeholders:</p> <p><input checked="" type="checkbox"/> Authorities</p> <p><input checked="" type="checkbox"/> Local community</p> <p><input type="checkbox"/> NGOs</p> <p><input checked="" type="checkbox"/> Schools</p> <p><input type="checkbox"/> Universities</p>