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Using a Raft for Early Childhood Education in Nature

„Help me to explore it myself“

Maria Montessori, a famous progressive pedagogical icon, claimed that learning is a process we must experience on our own. With this approach she helped to establish a picture of the child as a competent human being. One hundred years later, this anthropological view of children is starting to gain increasing attention. Moreover, there is an undeniably increasing focus and attention on early childhood education. Nurseries from New Zealand travel to Europe to study Germany's concept of "bush kindergartens"[1], the Swedish curriculum "Kunskapens Träd"[2] has spread all over Europe and newspapers discuss monthly the value and importance of child's early years. This shows that present discussions about early childhood education are no longer simply about the importance to start early. Rather the discussion has shifted to focus on the method and contents of preschool education, especially with regarding science and nature education[3].

This paper introduces a project run by the German youth care organization bsj Marburg e.V. (Verein zur Förderung bewegungs- und sportorientierter Jugendsozialarbeit) since spring 2009: A raft floating on the quiet river Lahn, is used for early childhood education programs. Kindergartens and primary schools (along with other institutional childcare services) can go aboard on an enchanting vehicle, encountering a nature shaped by water.

Details about the raft project

Marburg is settled in a small valley formed by the meandering river Lahn. Once used for shipping, mills and controlling flooding, dams are still found in certain

1 "A really wild way to grow kids", Sunday Star Times, New Zealand, 4.10.2009

2 Baum der Erkenntnis, literally: Tree of knowledge (BERGER n.d.)

3 This is mainly an economic discussion which is caused by the lack of skilled workers (engineers, scientists). The lack of young academics is often named as one reason for a necessary change in the educational system.

areas. The raft is used in a dammed section close to the city that encloses about three kilometres of the river. There are three waterside areas where we can land which we use for playing and exploring. The raft which, in the narrow sense is a catamaran, is 7.5m long and 3.5m wide (27 square meters). A soundless electric motor is used to drive upstream from April to October, during the rafting season. Eight small benches can be opened to store daypacks, changing clothes and material. The range of material is limited: paddles, scoops, buckets, spades, carving knifes, a saw, rope, some books, paper and pencils. A glass aquarium (160 litre) in the centre of the raft can be filled with water and used in many ways. The raft satisfies all safety regulations, including the demand to have a foot- and handrail, a life buoy on board and life jackets for every person on board.

The journey on the raft should not be a unique event, therefore there is a minimum stay of five days for each group. Having a lot of time is one basic element for deep nature experiences. A maximum of 15 children in a kindergarten group (aged 4-6) or school class (aged 6-11) go on board every day from 8 in the morning (approximately) until after lunch (around 2pm). Two educators and a bsj worker (and occasionally parents) accompany them.

The raft project includes a preparation phase, the actual trip and a debriefing phase. In advance, educators meet with the bsj worker at the raft in order to share and discuss expectations of the project. In co-operation with the parents, the institution and the bsj, the project is planned. Meetings during and after the project help to understand processes, and to deal with difficult situations.

Educators are fully involved in the project: they learn how to steer the raft, make their own discoveries and reflect on their personal approach to nature. In addition to that, they experience how children love the outdoors and how they conquer the river. The project wants to give educators an idea about a didactic approach for the early years so that there can be transferable benefits, bringing principles of teaching in their everyday life teaching environments and institutions.

Some theoretical concepts are discussed in the following pages of this document. These thoughts help to understand our approach to nature as well as the learning process and knowledge of nature. This theoretical section is introduced with a statement about the current situation of education in natural spaces. Following this, the paper focuses on the question of how we can support the approach to learning about nature. Therefore the outdoor spaces and the importance of a focusing on senses are discussed. Furthermore the role of

experimentation in early education is described and a deeper insight of our methods is given.

Being outdoor (in Germany)

Germany does not have a cultural tradition of using the outdoors in the school or kindergarten[4] system. There is no national outdoor history – neither in people's daily life, nor in educational settings – compared to traditions as Friluftsliv or Uteskule (Skandinavia) or extended wilderness programs, such as the ones available in the United States. Nevertheless, Germany is well known for its bush kindergartens[5]. Over the last twenty years they have been founded by groups of parents or educators convinced that the natural environment offers a richer and healthier place for their children to grow up[6]. Most foundations are built on the reaction to childrens' changing living environments. Until now, there are no communally run bush kindergartens in Germany. They are all registered associations or owned privately.
When considering Germany's schooling system, similar observations can be made. Some engaged teachers enforce a Draußentag[7] in their class that often entails several obstacles and requires convincing parents, headmasters and colleagues. However, such personal effort based settings are rare. There are no governmental inputs to implement consistent "outdoor hours" in the national curriculum.

Senses and science

What are the potentials of the outdoors, even (or especially) for the little ones? Why do we go on the river with a raft and why do we encourage kindergar-

4 In Germany children can attend the kindergarten from the age of 2, and start primary school at the age of 6. A special pre-school is not common.

5 Waldkindergarten, translated literally to bush kindergarten. Most of them are outdoors every day and only have a shelter. Some call themselves Waldkindergarten, although they have a decent house next to the forest, but go in the bush everyday.

6 www.bvnw.de (20.08.2009)

7 Draußentag, translated literally to „a day outdoors". One school class is outdoor for one day a week, e.g. every Wednesday. It can be found in Germany only in a couple of primary schools. See also SCHÜLER 2003a

ten groups to implement outdoor days in their programmes? The advantages of being outdoors, and the resulting potential outcomes are various. Peter BECKER explains the importance of the sensual perception in human development and life, considering the ongoing "process of desensorisation" (BECKER 2010, 8). He gives suggestions for more sensual work in the field of (outdoor) education and points out that especially water, this various and challenging element, holds a space for important first hand experiences.

The actual discussion about nature education in a child's early years often presents a picture of a child as a "born scientist". This picture of the young child as a primal researcher appears in many publications[8]. What is the special habitus of a researcher? A physicist is curious and wants to understand a natural phenomenon that they observe. Therefore they study literature, build hypotheses and develop experiments to verify or falsify their hypotheses. They draw conclusions and change their hypotheses in order to construct theories. Are children really doing research? It is evident that children are curious and ask questions about phenomena they discover. They have ideas and use the objects and materials of their environment to find out more about these assumptions regarding their world. But if we take into consideration the significance of senses when we observe children, and how they playfully explore the environment (cf. BECKER 2010), we should see the child as a discoverer of the world through their senses[9].

SCHÄFER (2008, 166) further displays how senses are the basis for abstract knowledge about physical laws. A child's sensory perception represents the first step in their development and it is fundamental to the construction of language and written words. Even really young children have an intuitive (naive) idea of physical principles; it is some sort of inert knowledge. So if we teach, or if we want to provide opportunities to understand nature and its principles, we have to offer children the possibility to make primary experiences. LIECHTI points out the correlation between senses and knowledge. "The aptitude for physical and sensory perception, as can be shown especially in taktile-kinesthetic activities, takes on an epistemic function"[10]. Thus the whole body has to experience, for example, how hard it is to make a somersault uphill, in order to develop an abstract understanding about gravitation and to understand the need for a tree to

8 e.g. ELSCHENBROICH 2007

9 SCHÄFER (2001, 2008) calls the child a „sensual researcher".

10 LIECHTI quoted by BECKER 2010, 8

have very deep roots to hold it's place on the slope.

This approach to science and knowledge about nature via the senses and sensory perception follows theories of childhood development and gives a stronger justification for outdoor education in the early years than the shallow vision of the child as a born scientist. Consequently, if we put aside the myth of the natural born scientists and consider the influence of the senses, we also get hints of how to realize nature education oriented towards sensual perceptions and cognitive knowledge.

Curiosity and experiments: why to start with the natural phenomenen?

In order to allow sensory experiences it is necessary to move outdoors and to interact with the natural phenomena that occur. WAGENSCHEIN (1997) based his whole didactics on phenomena. They astonish us, request the pupil to find answers, support to develop ideas and even invite the reader to philosophise about nature. Children are curious, and if they find themselves in a natural space they ask questions about the phenomena they discover: Why are leaves green? Where are ladybugs in winter? Do insects sleep? Can fish hear us (because we never see them)? Why does our raft float? This curiosity and interest of the child opens educational opportunities. Experiments to find answers can be developed, theories and ideas can be verbalised, further insights and knowledge arise as a result. The childish curiosity is considered as the engine for education and lifelong learning. To keep alive the greed for new is an underestimated task in the educational system.

Reviewing literature about nature education in preschool, we learn that even in kindergarten we can (and should) conduct experiments. Some regularly quoted authors recommend to introduce experiments (adapted to the child`s ability) in the kindergarten. Without a natural, meaningful phenomenon (problem or question) an arranged series of experiments evokes an impression of school lessons; except the participation is optional and they do not get marked. Although such abstract experiments are popular amongst children, we need to question the actual benefits of these settings. Do they really understand that air needs a space (just as liquids) or that air expands when its heated[11]? Do these technical

11 LÜCK 2009, 114 f., experiment 1 and 2

experiments really involve the senses and support an interest in nature? Do these kind of settings not make pupils in school feel clueless about what is going on?

Especially in early nature education, we should go to the roots of science and start with some basic questions such as where does the water comes from? Why does it rain? Why does our raft float and yet a small stone does not? How deep is the river? Experiments might bring the answers to such questions. Thus it is not the experiment which represents the problem, but it is the problem which requires an experiment.

Additionally we should consider that science is really just one way to understand nature (although the most common one in Europe). We understand and teach it with the opinion, the logic and the assumption that if people have some knowledge about nature, they will treat it with care. But it is self evident that this is not the whole truth. The most effective way to encounter nature is to involve emotions, feelings and senses. Additionally, this emotional way to approach the world and an aesthetic relationship offers a wide range of educational potential for children and adults.

The educational moment lies in the modality of learning

Experiments are not used daily as an educational medium. We still focus on free play and open situations which allow children to explore the environment. Consequently a lot of questions and interests are developed through playful discovering, creating, building and inventing stories about the world.

The steps a child goes through when learning through experimentation is phenomenon – question – experiment – knowledge. An example of this, that occurs on the raft almost every week is the question "How deep is the river?" Instead of giving the answer I throw the question back by asking "I am not sure, how could we find out?" Children have many ideas and some of them may turn into small experiments, for example, dunking a paddle in the water. It might be too short and a longer stick has to be found. While trying, the children experience that it is variably hard to hold the paddle depending on its angle in the water, and this difficulty changes depending on whether the raft is moving or not. Ropes are dipped in and after noticing that they float, a weight must be knotted on the end of them. Measuring methods (comparisons) are found. Common comparisons are "the river is deeper than I am tall", "my dad could stand in the water and keep

his head above it" and "it would be too shallow for a whale". This experiment can be supported by asking them to observe the water with questions like "can you see through it? Is it very dark? How deep does it look?" Knowledge arises due to processes like measuring, comparing, experimenting and observing.

As mentioned, the approach to nature can be supported through special ways of asking questions[12] called asking as Socrates. Socrates, the ancient Greek philosopher, was always asking people "are you sure? How do you know? Did you see it?" These questions give an impetus to think and wonder. The question "what colour is the water?" is most spontaneously answered by children with „Blue", as water in children`s books is often coloured. „But take a close look at the surface, is it really blue? Or is it green? Or even brown?" A conversation about colour starts and experiments how to make water clear keep us busy the following day.

An approach via the curiosity and interests of the child requires patience and trust in the educators. It might sound easy, just go outdoors and wait. But to understand when and what kinds of impulses support the educational process could be considered the art of teaching. Help me to explore it myself. Education is understood as a social moment, meaning that both the child and the adult bring in their ideas. Therefore there are different ways to achieve an outcome and always an unpredictable outcome (the adult does not pull the child toward the ideas they, as the adult, want to realize). What is important are the processes, not the aims. For example, a common statement in the project is „I want to catch a fish". The educators could answer „I think we won`t be able to catch one" or they could say: „That would be nice. Do you have any ideas how we could catch one?". The children give ideas (using a bucket, a dip net, a fishing rod) and both try, through a common process (e.g. making a fishing rod out of a stick, rope and wire), different methods to get a big catch. This independent problem solving is a further key point in education. The difficulty is to identify meaningful situations and questions that open rich experiences. Therefore educators have to learn how to interpret situations and how they can support educational processes by asking questions, acting with the child and using appropriate materials.

12 Refering again to Wagenschein, it is important to intend a real understanding of phenomena, not a sketchy renarrate of what an adult told. That is why he always asked his students: Really? Did you see it? What would that mean ? He wants them to understand the whole phenomen and helps them to penetrate to the bottom of the problem.

Conclusion

We still have to find out a lot about education in a child's early years, although there is at present a hype surrounding early childhood education. Most trends appear to discuss nothing more than the possibility and value to a child starting school earlier. BECKER (2010, 11) writes, "free play and exploration of the environment become superfluous (...) Kindergarten is also being taken over by learning programs which allow early access to cognitive resources." However, it has been shown that free play in a nature environment, native creativity and vivid imaginations are important and should be encouraged in education, as well as meaningful experiments and scientific knowledge.
The raft project described in this paper is one example of the various possibilities for experiential learning and therefore a progressive way of being outdoors with children.