THE AGENTIVE ROLE OF CHILDREN’S VIEWS IN SUSTAINABLE EDUCATION

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Abstract

The environment and peoples’ ideas of the environment are intertwined in the Education for Sustainable Development (ESD). The environment has an effect on the educational content and people have an effect on the environment. Thus, sustainable education includes producing culture by children and with children. Sustainable learning should include finding ways to consider the effects of actions. The theoretic framework presented in the article was operationalized and studied in four Finnish kindergartens. The results bring children forward as producers of educational content. Children’s views have an effect on the educational setting. In agentive learning children learn things that they themselves have been taking part creating. In discussion, the emerging roles of a teacher for ESD are considered. To be balanced, ESD may not only consider the equilibrium between accommodation and assimilation, but also the equilibrium between adaptation and agency.

Key words: education for sustainable development; adaptation; accommodation; assimilation; agency.

When development meets the needs of the present without compromising the ability of future generations to meet their own needs (see Morris, 2004; Brundtland Commission, 1987), it calls for people to seize the opportunity for needed change. The re-orientation should not be done separately (see United Nations’ Commission on Sustainable Development, 1996) but must be embedded in the whole educational process.

As McCormick and his colleagues put it, Education for Sustainable Development (ESD) is more than education about sustainable development. It is increasingly recognized that rather than focusing on the transfer of knowledge, education for sustainable development needs to enhance the capacity of individuals and organizations in dealing with change. Learning about how to influence systems and participate in decisions are, moreover, the underlying goals of ESD (see McCormick, Mühlhäuser, Nordén, Hansson, Foung, Arnfolk, Karlsson & Pigretti, 2005). The more accustomed the children are to participating in the processes of their surroundings, the more prepared they will be for participating also as adults (see Reunamo, 2004).

The agentive role of children’s views has become a central issue for ESD. Santone (2003) states, that to bring about a secure future, students need to be fully engaged in
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creating a better world. Sustainability education should equip students to become informed, caring, and effective citizens. Children confront questions that are important to Sustainable Development (SD): How can we improve our community? How do personal choices affect others? Sustainability education envisions citizens not only as voting and obeying the law, but also as actively contributing to bringing about a sustainable world (cf. Santone, 2003). To ensure a prosperous and peaceful world for future generations it is not enough that children know how to change the world. Their knowledge and visions have an agentive nature in themselves. The purpose of the article is to connect the philosophical roots of the very idea of development to the concrete consequences of these views for educational practice. The purpose of the article is to give glimpses about the connections between our views and the way the environment takes shape. The environmental change in this study concerns mainly the socially constructed environment. Children’s ideas and orientation change our culture. Our ways of seeing education have an effect on the educational settings and on children too. To clarify the relationship between ideas and environmental change, the model of agency of perception has been introduced (see Reunamo, in press). This theoretical orientation is outlined in Figure 1.

Figure 1. Different views of the relationships between perception and environmental change
The first, horizontal continuum concerns the formation of ideas. Do the experiences require changes in the structure of the mental outlook (accommodation, openness) or are they processed as fitting in with the existing mental structure (assimilation, closed views)? The second, vertical continuum is characterized as that of adaptation-agency. On this continuum, change is central. Nevertheless, is the change caused by action seen as happening through internalization, where the environmental change is not considered? Further, is perception accompanied by the seeds for environmental change?

According to Piaget, accommodation is compensation for discrepancy between the mental image and the object (cf. Gruber & Vonèche, 1995: 216). The environment puts pressure on ideas. However, we can also consider people’s views as changing the structures of the environment, which means that both people’s views and the environment change at the same time. Piaget is not interested in this productive nature of thought. We can consider accommodation also from the environment’s point of view: The ecosystem on the large scale, for example, must adapt to the pressures for change caused by the existence of civilization.

Assimilation is the integration of external objects into parts of oneself (Gruber & Vonèche, 1995: 216). We try to fit the environment into our own mental outlook. However, assimilation is not just about incorporating environmental elements and interaction into our existing mental structures, because assimilation also means that we use the environment in ways that our outlooks suggest.

According to Kitchener (1986: 54-61), adaptation serves as the equilibrium (balance) between assimilation and accommodation. Adaptation is here conceived as the dialogue between internal outlooks and our perceptions. We find an internal dissonance or an external deficiency, which requires either our internal change or an environmental change.

Agency refers to action that has an effect on something. In a broad sense, agency involves the real world consequences of actions in the environment. According to Piaget (1978: 159), there are two kinds of evolution, an organizing evolution and a modifying evolution. For our purposes, it is enough to say that agency induces change through actions. As Cooney and Selman (1980) point out, children’s constructions have a connection to children’s social acting. The agentive nature of children’s actions and views has been discussed at length (see Reunamo, 1988; James & Prout, 1997: 4-5; Solberg, 1997: 126-127; Corsaro, 1997). Bodrova and Leong (2006) point out that to develop self-regulation children need to engage in regulating others too.

Adaptive accommodation is a central point of reference in current theoretical and practical discussion about childhood and the development of children’s thinking. The Piagetian idea of evolution originates in his study from the development of species. Piaget sees us as self-regulating systems, which use mental images as the tools in adaptation. When we concentrate our attention on the child’s ideas changing, the environment looks stable. The theory of child development has examples of the consequences of this type of concentration. Because the environment exists, the task is to become acquainted with it and to cope with it better. In genetic epistemology, the question is: How do the representations of environmental operations become internalized? We need to understand the static environment. We look at the environment through the images matched by the meanings produced during the course of our lives. When we study ideas, meaning or perception, different interpretations usually refer to different modes of understanding, not to a different reality produced by that understanding.
When discussing assimilation as the act of confirming of environmental experiences with personal mental structures, and adaptation as the interchange of personal and environmental meanings, **adaptive assimilation** refers to the application of one’s own images in the given environment. Adaptive assimilation does not consider the environmental change. The schemas are closed; they do not change during interaction. Thus, as the environment does not seem to change, our use of two mental images means that we act in two different ways. It is possible to assimilate new knowledge into the existing knowledge structures without changing the existing structures. Thus, we can have information that is not related in any way and we can acquire new information without changes during the process. As the relations of this knowledge remain unclear, the knowledge is often restricted for use within the specific situation or the specific context within which it was acquired. As the old knowledge remains in force, new revolutionary views do not result in change but in chaos. In assimilative adaptation, the human view of reality starts to resemble that of poststructuralism (cf. Peters, 2001), where the event is on a complicated crossroads of preferences, discourse, needs, and social forces. Therefore, evolution does not look like development but appears as a fragmentation of choices and possibilities.

The term ‘agentive’ indicates the human impact on something, while assimilation is the application of ideas without adjusting or modifying them. Thus **agentive assimilation** here indicates an environmental change according to a certain view. According to Aristotle, nature adapts to the intention, not on the contrary. Teleological (Aristotelian) examination and anticipation of the future is important (see Bulajeva, Duoblienë, & Targamadžé, 2004: 24). As Breuer (1985: 71) puts it, intentionality is a concept, that not only has an effect on development, but also has a genetic nature of its own. In this way, human intentional action can be examined more broadly. As Galperin observes (cf. Arievitch & Haenen, 2005), the ability of looking ahead (orientation) is a precondition to and even a prime aspect of learning. When teleological thinking is interpreted in such a way that the ideas’ real value or nature is situated in the future, things happening right now seem to be inadequately developed. Important things are not located here and now, but exist in the forthcoming future. This emphasizes the importance of human intentions and motives.

**Agentive accommodation** refers to the change of both the environment and the mental representations of it. Accommodation refers to the relatedness of action and the image of that action. The image is not just applied here, but it is open for environmental feedback, that is, it is open to change. In accommodation, there is a mutual contact between people and the environment. Agentive accommodation is a process, which also results in perceptible changes caused by symbolic representations. Planning humans can use tools invented by other planners. When we test our ideas, it causes an environmental change, which can to some extent be anticipated, but as the environment changes, it must be monitored constantly in order to keep up with the changes. Here, we are approaching the ecological way of seeing nature, wherein it is the change in the relations among all participants which is important. Not only species change, but their relationships with others change (cf. Costall, 1986: 11). The tighter the integration between ideas and actions, the more conscious the change is.

According to Popper (cf. Popper & Eccles, 1984), by testing our hypotheses and evaluating the effects of this testing we can arrive at an increasingly valid picture of reality and eliminate wrong ideas as we test them. According to Popper, the perception
of our continuous test results is not a mere copy of the environment, but an outcome of a creative interaction. In Popper’s view, theory is always situation-specific and it is related to the historical and cultural process. When we test the properties of new things, our conception has an effect on the tests we carry out. Popper defines cultural evolution as a possible result of the emergence of mind through natural selection (Popper & Eccles, 1984).

Long ago, Fröbel tightly interwove the aspects of perception and process. Both Fröbel’s and Piaget’s thinking were influenced by the concept of evolving nature. When Piaget looked at the development of knowledge processes in the environment, Fröbel saw the knowledge processes changing the environmental development process itself. According to Fröbel, life is an evolutionary process, and education enriches this evolution. Human beings can thus discover a more profound idea of their own evolution and, in such a manner, the idea can become an evolutionary property in itself (cf. Curtis & Boultwood, 1958: 374-375). Thus Fröbel can be seen as an early advocate of agentive accommodation.

We need to redefine sustainable education and sustainable learning. Sustainable education should include the production of culture together with children. Sustainable learning should thus include finding ways to consider the effects of actions. But how do we study the agentive nature of children’s views?

Methods

Often the issues in educational or psychological research concern children’s development or learning. The change in children is studied. To study the effects of children’s ideas and orientation on the environment we need to turn the traditional research model upside down. Here we study children’s views and then we study how these views are reflected in children's actions and the environment.

Altogether 73 children from four randomly selected kindergartens took part in the research. The children were 3-7 years old and lived in the Helsinki region. In the interview, the children encountered fifteen different kindergarten situations (cf. Reunamo, 2007). They were asked what they would do in that situation. Altogether there were 1005 answers. Some of the questions are presented in Figure 2.

In the observation, systematic sampling was used. The children were observed in their normal kindergarten setting between 8.00 and 12.00 hours. Altogether there were 1679 observations. In each observation there were several things to observe (cf. Reunamo, 2007). The third part of the research data consisted of teachers’ and parents’ evaluation of the children (cf. Reunamo, 2007).

All three parts of the research were done independently. The children were the same in all three parts of research. Teachers and parents evaluated children separately and did not know of each other’s evaluations. The observation and interviews were done by the author of this article who did not know about the teachers’ and parents’ evaluations.

All 1005 answers were classified in one of the four categories:
1. Adaptively accommodative answers;
2. Adaptively assimilative answers;
3. Agentively assimilative answers;
4. Agentively accommodative answers.
Examples of children’s answers in different categories can be seen in Figure 2 in the results section. Classification of the answers was not always easy and 114 answers had to be left without any classification at all. To ensure independence between observation and interviews, the classification was done question by question and the classifier did not know which child had answered which question. The reliability of the research is questionable because it can not be compared with other classifiers’ evaluations.

Children’s answers in each category were counted. The distribution of answers in different categories describes the child’s typical way of seeing kindergarten situations. In addition, children’s actions during observation were added up. The distribution of children’s different actions in different kindergarten situations describes the children’s typical way of acting in the kindergarten setting and the environmental change that takes place.

While observing, children’s closest child contact was written down. At the time of data input the average of all closest child contacts’ variables was added. This way a profile of a typical child contact was provided.

The data gives opportunity to study the children’s way of acting in the kindergarten and the environmental change produced. Thus, it is possible to study the correlations between children’s views and environmental change. The correlations used in the results section are partial correlations, in which the effects of children’s age and gender are controlled. This means that children’s development over the years do not interfere with the connections. We have turned the almost self-evident study of children’s development or learning upside down. Now we can examine the connection between children’s views and the action in an educational setting. In this way, we are now able to study children’s views and the content these views produce.

Results

First, in Figure 2 the children’s way of viewing the kindergarten settings is reflected. The categories are tied to the theoretic model (cf. Figure 1). The purpose of the categorization has been to operationalize the model. The underlying concepts of the basic four generalizations presented in Figure 1 can be seen in Figure 2 as examples of specific real life situations perceived by children. In answers that were classified as adaptive and accommodative, children were considering the given situation openly but did not try to change it. In the answers that were classified as adaptive and assimilative, the children did not consider the situation openly. Instead they saw themselves as doing something else or withdrawing from the situation. In answers that were classified as agentive and assimilative, the children did not open up to consider the situation. Instead they saw themselves as doing something that changed the conditions of the situation. In answers that were classified as agentive and accommodative, children considered the situation openly but added a new element to the conditions of the situation.
Now as we are familiar with the children’s views, it is possible to view the partial correlations of children’s views and environmental change (for the original partial correlations of children’s views and changes in the situations cf. Reunamo, 2007). All three parts of research results were correlated with each other. The conclusions of the correlations are condensed in Figure 3.
Discussion

The research design needs some consideration. In different research methodology different epistemological assumptions about the nature of scientific knowledge and how to acquire it are made. In sustainable education the agency of children’s perception mixes up the boundaries between quantitative and qualitative research. In this research children seem to have many of the features assumed in qualitative research (cf. Gall, Gall & Borg, 2007: 32). Here the social reality is constructed by the participants in it and it is continuously constructed in local situations. Human intentions play a major role in explaining causal relationships among social phenomena. In the same time such research carries many features of quantitative research (cf. Gall, Gall & Borg, 2007: 32). The research design tries to take an objective, detached stance toward research participants and their setting. The representative samples are studied. Behavior and other observable phenomena are studied in a natural setting, the theory is operationalized, variables are discerned, and preconceived concepts and theories to determine the selective collection of data were used. Even statistical inference procedures to generalize findings from a sample to a defined population have been used. The study described here suggests reconsideration of the research methodology: qualitative ESD research has to take seriously the different influences of different interpretations while in quan-
titative ESD research children’s interpretations need to be considered also as independent variables.

The agentive role of children’s views has some consequences on ESD. The child not only perceives how to change the environment, the perception has an element of change in itself. The different ways children look at environmental change have different consequences. The educator of SD can no more think of children’s answers as simply being right or wrong, because children’s views embed changes in the reality questioned. When children are perceived as producers of educational content (cf. Reunamo & Nurmilaakso, 2006), there is nothing to be learned before something has been produced. Children perceiving environmental change differently live differently and they produce different environmental change. The hermeneutic (cf. Castle, 2006) manner of interpretation has to be revised to include the interpretation’s impact. Also adapting and accommodative ways of looking at environmental change have an influence on the educational setting, maybe even more so. The research results reported here are all correlations, which means that the studied phenomena affect each other. Because the other correlative variables are always children’s views, none of the correlations would exist without children’s views. We have to conclude that the phenomena studied here can only be perceived in relation to children’s views. Furthermore, only things that engage in mutual exchange can be perceived; the existing elements leave no trace. In ESD we have to evaluate the production and refinement of the tools for development. Children learn things they themselves have been developing. The learning is effective when children see that their ideas have something to do with real change. As children’s ideas reveal their real power in educational content production, we as educators have to act on it. The educator does not need to get in touch with children’s ideas only to understand, but to stay in touch with the educational content. ESD means that the mind emerges as part of reality. Humanity, culture, and civilization can be seen as ways to regard change.

The evolving view of learning and education also has consequences on ESD. The agentive nature of children’s perception puts ESD and educators in a new role. Education not only exhibits a balance between accommodation and assimilation but also exhibits a balance between adaptation and agency. Figure 4 condenses the essence of the different roles of the ESD teacher. The teacher needs to act within the range of all four dimensions in order to embed all aspects of teaching.
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Figure 4. The different roles of the ESD teacher

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