

Education for Sustainable Development and Multidimensional Implementation. A Study of Implementations of Sustainable Development in Education with the Curriculum of Upper Secondary School in Sweden as an Example

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Abstract

This article discusses different interpretations of sustainable development in education and if different interpretations of the concept are implemented in Curriculum, with the Swedish Curriculum of Upper Secondary School as an example. According to Agenda 21 sustainable development should be implemented in a multidimensional way. In 2011, a new school reform of upper secondary school was implemented in Sweden which further strengthened the position of sustainable development in school by inserting the term into more syllabuses. However, the multiple instances of the concept do not necessarily mean that a multidimensional interpretation of the concept is implemented in accordance with the objectives of Agenda 21. By using Laclau and Mouffe's (2008) idea of discursive struggle as a theoretical framework it is possible to discern how descriptions of sustainable development essentially give rise to one discursive formation in the curriculum. The articulations of sustainable development in the curriculum rests on an idea of the ecosystem that seem to enforce the natural scientific rationality instead of letting different rationalities contribute to the meaning. The descriptions of sustainable development in the curriculum can be interpreted as a hegemonic expropriation of elements of other discourses, such as the social and economic, into the environmental (ecological) dimension. These results are consistent with other international studies, and emphasises the importance of taking a critical stance to the writings of Curriculum when putting them into practice.

Keywords: Sustainable development, education, politics, implementation, upper secondary school.

Introduction

The discussion, sometimes debate, on what sustainable development is and how it should be depicted in education is a good example of what the political scientists

Ernesto Laclau and Chantal Mouffe (2008) calls a discursive struggle. The struggle is not only about what sustainable development is and how education for sustainable development (ESD) should be implemented in education (Feinstein, Læssøe, Blum, & Chambers, 2013); it is also about politics, about worldviews, about meaning making, and about power.

There are those who argue that ESD is crucial for democracy and pluralism (Breiting, Mayer & Mogensen, 2005; Lundegård & Wickman, 2007; Öhman, 2006), since the concept sustainable development has been implemented as a concept that encompasses several dimensions; environmental, social and economic. Others argue that such education rather is an expression of globalization, homogenization, and ideological power (Jickling & Wals, 2008; Bonnett, 2013a; Knutsson, 2011), since different dimensions of the concept has been enmeshed into only one discourse in the implementation of ESD. According to the international agreement Agenda 21 the multidimensional implementation is what characterizes ESD (UNCED, 1992). Research shows, however, that different national curricula seem to be dominated by a single discourse (Bagoly-Simó, 2014; Chatzifotiou, 2006; Iyengar & Bajaj, 2011). This could mean that the curriculum mainly enforces one way of perceiving reality, one worldview, in contrast to the intention of Agenda 21. The connection between sustainable development and worldview has not been studied at any length so far and Sweden is an interesting example for that.

Sweden is becoming an increasingly pluralistic country. Sweden is also one of the countries committed to the Agenda 21 from the beginning. This should pave the way for a pluralistic implementation of ESD. In 2011, a new school reform of upper secondary school was implemented in Sweden which further strengthened the position of sustainable development in school by inserting the term into more syllabuses. By introducing the concept of 'sustainable development' in several syllabuses, sustainable development becomes integrated into more upper secondary education in Sweden. In contrast, the multiple instances of the concept do not necessarily mean that a multidimensional interpretation of the concept is implemented in accordance with the objectives of Agenda 21 (Jóhannesson, Norðdahl, Óskarsdóttir, Pálsdóttir & Pétursdóttir, 2011). An analysis of how ESD has been incorporated in the new Swedish curriculum is interesting both for comparison with similar international studies and as a contribution to the wider discussion on ESD and pluralism. The overall purpose of this article is therefore to make an overview of different interpretations according to research and then examine how education for sustainable development (ESD) is implemented in the curriculum of secondary school in Sweden in relation to this overview.

Overview of the Research

In 2008 Landorf, Doscher and Rocco noted that very few countries have integrated ESD into their educational curriculum. Much has happened since then, but the research on different comprehensions of sustainable development in curriculum is not extensive. Grice and Franck (2014) found a variation of possible interpretations of the concept in the new curriculum of secondary school in Sweden, but without exploring the interpretations further. Hillbur (2013) says that five syllabuses are central in the implementation of ESD in the new curriculum of Swedish compulsory school, but without any further discussion of how. Chatzifotiou (2002) investigated the curriculum in the UK and concludes that the concept of sustainable development is not clearly defined and that it

is sparsely scattered in the curriculum without control measures. In a later study Chatzifotiou (2006) argues that there seem to be two parallel course-tracks in the curriculum, but that Environmental Education (EE) discourse, focusing on the environmental dimension, tends to override the ESD discourse, focusing on both the environmental, economic and social dimension.

Beyond Europe, Iyengar and Bajaj (2011) analysis of state and national syllabi in India indicates a focus on conventional, natural sciences approaches to the environment, thus neglecting the social science aspects of ESD across all grade levels. Bagoly-Simó (2014) examined the lower secondary geography curricula in Germany, Romania and Mexico and found that the implicit conceptualizations of sustainable development focus on the environment and the protection thereof, and that elements of ESD are subject to neoliberal or post-colonial ideological interpretation.

The findings of Grice and Franck support scholars in ESD that argue that ESD consists of several different interpretations of sustainable development. This stance is further illustrated by Wals (2010, p. 388), who defines ESD as the creation of space for pluralism, consensus, disagreement, and counter-hegemonic thinking. Læssøe (2010) is on the same track when he argues that all approaches to ESD are part of an ongoing discursive struggle.

Other researchers argue that there are essentially two understandings of ESD, but they appear to merge into one. This might be what the results of Chatzifotiou's study (2006) indicate. Knutsson (2011) argue that it is distinctive to the understanding of ESD in Sweden. Although ESD started as an area comprising several discourses in Sweden, the urgency of setting the education in motion resulted in the conflicting understandings being downplayed (Knutsson 2011, 204), a tendency confirmed also in other countries. For instance, Jabardeen (2008), Selby (2006), and Stables (2001) identified two discourses in ESD, the ecological and the economic, but Selby claimed that the ecological understanding was absorbed by the economic discourse. Sustainable development therefore came to be about identifying and measuring sustainability of the ecosystem, in order to calculate how much resource extraction, it would withstand (Selby, 2006). Also Bonnett (2013b) elaborates on two discourses: the sustainability discourse where preservation is the centre and the developmental discourse where progress is the core. This is so, he argues, because ESD has been enmeshed in scientism unifying the two. Furthermore, Korfiatis (2005) identified two other discourses in ESD: the modern science and the ecological discourse, and stated that in reality, the hegemonic role of science causes them to merge.

Finally, some researchers regard sustainable development and ESD as essentially consisting of a single discourse. The results of Bagoly-Simó (2014) and Iyengar and Bajaj (2011) seem to point in this direction. Fergus and Rowney (2005) acknowledged that a scientific-economic paradigm, attained through scientific methodologies, dominated the interpretation of sustainable development. Læssøe (2010), on the other hand, identified ecological modernization as the dominant discourse of sustainable development in northern Europe. This discourse is characterized by a market driven economy, moving towards an environmentally sound practice. There is no conflict between ecology and economy in this single discourse; they support each other's perspectives. The homogenization, harmonizing of conflicting understandings, is occasionally linked to neoliberalism as a globalizing force (Ideland & Malmberg, 2014; Jickling & Wals, 2008; Öhman & Öhman, 2012).

These different argumentations show that the question of how sustainable development is/should be interpreted and ESD implemented is not settled. As in Bagoly-Simó (2014) study (unlike Grice's and Franck's study), this study will focus on how sustainable development is understood and ESD implemented in the curriculum. Chatzifotious, Bagoly-Simo's and Iyengar and Bajaj's results show that although different interpretations of sustainable development exist in the curriculum, they may coincide in a single dominant discourse.

A Theoretical Framework

To be able to analyse the comprehensions of sustainable development in the curriculum as a matter of possibly different ESD discourses (worldviews), the theories of the political scientists Chantal Mouffe and Ernesto Laclau are well suited. In the curriculum sustainable development might manifest itself as an expression of what Mouffe (2014; 2012) calls 'the political' (antagonistic pluralism) or as an expression of 'politics' (hegemonic practice).

The political (pluralism) is according to Mouffe characterized by being antagonistic with several discursive formations existing and struggling over meaning. The interpretation of sustainable development is then implemented by several competing discourses. Politics (consensus), on the other hand, is characterized by hegemony where a set of practices seek to establish a certain order. The interpretation of sustainable development is then implemented by one, dominant, discourse. Antagonism means that an idea, or an assertion, is contradicted by another, opposite, idea. It is therefore negative and represents the limit of a given order (Laclau and Mouffe, 2008, 183–186). This means that an interpretation not is able to dominate: the discourses 'remind' each other about the limit of what can be claimed. A discourse becomes hegemonic when, through articulated practice, it succeeds to expropriate and redefine one or more of the other discourse's elements in accordance to its own centre (Mouffe, 2000, 148). One interpretation dominates over the others; it spreads out and becomes limitless. The words 'politics / political' could lead to the idea that some people are responsible for discourse / -s, but that is not the case. Discourses are deeply rooted systems of meaning in a culture which structure individual's worldview and change slowly and often unexpected (Svalfors, 2008).

Some of the ideas of Laclau and Mouffe will be used as analytical concepts. Laclau and Mouffe describe *discourse* as an articulate practice, which constitutes and organizes social relations around a concept that will thus represent an idea and through that process ascribes meaning to the concept (Laclau & Mouffe, 2008, 169f). An *articulation* is accomplished by establishing chains of *equivalence*, i.e., *linking* an idea with elements creates contingent relationships. A *social phenomenon* is organized when linkages instills meaning in a disputed concept.

Materials and Methods

This study focuses on national policy documents – the curriculum and syllabuses – of upper secondary school in Sweden. They are central normative documents for education by setting goals for teaching and for students. In the knowledge requirements the goals of the students are related to various grades. The analysis comprised all texts in

Curriculum for the upper secondary school in Sweden 2011: the fundamental values and tasks of the school, overall goals and guidelines (Skolverket, 2011a) all 247 subjects of the secondary school and their syllabuses (in total c. 990; Skolverket, 2011b), with focus on parts that describes the meaning of sustainable development.

The analytical steps consisted of first searching for instances of ‘sustainable development’, second scrutinizing what elements that was linked to the concept and third to find out the meaning that articulations instills in ‘sustainable development’ and thus organizing it into a meaningful social phenomenon. The intention is not to give an exhaustive description of sustainable development in the Curriculum, but to highlight the relations that mainly organize the term into meaningful social phenomenon.

References in this study are made by subject and page according to the downloadable documents on the website of the National Agency of Education in Sweden (<http://www.skolverket.se>). ‘Science studies: 3’ hence means page three in the document of the subject Science studies. All titles of the courses and the content of subjects common to upper secondary school and its programs are translated into English by the National Agency. The texts of optional subjects and courses are translated by the author.

Research Results

The result is structured as follows. First the meaning of sustainable development is presented, received through the articulation of sustainable development. Then the meaning through the articulation of sustainable society is studied. Finally, the two articulations are compared and the question of one or several discourses is treated.

The expression ‘sustainable development’ was found in 55 of approximately 250 subject syllabuses, but was in most cases not organized as a social phenomenon. Sustainable development is something that a subject’s knowledge as well as models needs to be related to, but its precise implication is not determined in the formulations. A quite common use of the notion is found in Business Economics, which states that the subject should give the students the opportunity to develop:

The ability to reflect on the responsibility of business for sustainable development and on democratic values, ethics and gender when financial decisions are made (Business Economics)

The quote concerns the social and economic dimensions of sustainable development, but not the environmental dimension. Sustainable development is linked to democratic values, ethics and gender and thus it becomes something that primarily concerns the core values of the school. Sustainable development is further said to be something that the student is expected to reflect on in the context of economic decision-making. However, no further description of what the social and economic dimensions of sustainable development concretely mean in business terms exists. Thus, the formulation does not constitute an articulation in discursive terms. In some subject syllabuses, however, articulations of sustainable development are expressed.

Sustainable Development

In this section, linkages that primarily organize the sustainable development concept into a meaningful social phenomenon will be discussed. The analysis will show that

sustainable development is equated with the ecosystem, characterized by harmony and immanent development.

In the subject Science, the denotation of sustainable development is articulated in the following course objectives:

Issues concerning sustainable development: energy, climate and impact on the ecosystem. Ecosystem services, utilisation of resources and the viability of ecosystems. (Science studies, 3).

A recital like this might seem unproblematic at first sight, but each recital is preceded by a choice situation where some parts have been selected, while others have been discarded. In the recital above, the denotation of sustainable development is formed by its constitutive parts being recited after the colon sign. The colon is important here since it contributes to the organization of the discursive, it ‘accomplishes’ the equivalence. Energy, climate, and impact on ecosystem clarify what sustainable development ‘is’ without being identical with it, and ecosystem services, utilisation of resources, and the viability of ecosystems illustrate it further. These parts will represent the whole; these elements represent sustainable development. The recital is hence not a transcription of reality as such, but is performative; it creates actuality, and equates sustainable development with ecosystem.

Biology is in several aspects the ‘mother’ of the Science subject – Biology enhances the comprehension of concepts as well as the knowledge and capabilities that in the Science subject are introduced at a more simplistic level. Sustainable development is in Biology even stronger articulated, particularly in association with ecosystems, and ecology is constructed as ‘the logics’ of the ecosystem. The phrase ‘ecologically sustainable development’ clearly establish the relation between the two (Biology, 3). The subject syllabus furthermore states that biology is important in society because it protects ‘the Earth’s ecosystem through the ecology’ (Biology, 1), and sustainable development is what constitutes this protection. Expressions like ‘ecologically sustainable solutions’ (Construction, 9) and ‘ecologically sustainable way’ (Fishery, 1) further enforce the equivalence between sustainable development and ecosystem, even though the expressions not explicitly concern sustainable development or ecosystem. It might seem awkward to bring together different writings in this way. In reality they belong to different subjects and therefore might become totally different concepts in education. In this study, however, the curriculum and syllabi is regarded as one coherent meta-text enabling one or more perceptions of reality.

The equivalence between sustainable development and ecosystems is further strengthened in the curriculum. Concepts established in Sustainable society are related to concepts of the ecosystem: ‘The subject treat [...] environmental challenges, management of natural resources, ecosystem sustainability, technology development, community planning and environmental policy’ (Sustainable society, 1). This text presents two dimensions – the ecological and the social – but the ecological dimension dominates. And the expression ‘ecosystem sustainability’ re-establish sustainability as something related to the ecosystem again.

Other elements listed in relation to sustainable development are ‘climate changed world, access to water and arable land, natural hazards and abandoned threats, natural resource use and resource conflicts’ (Geography, 1). These elements enforce the equivalence between sustainable development and ecosystem in an indirect way. They are not

as strictly organized as in the examples before, but rather described as ‘examples’ of what matters concerning sustainable development might involve. Still the elements are partly the same as in the articulation in Science studies and Biology as described.

What is more – the Biology subject establish a linkage between sustainable development and religion. The core content includes:

Issues concerning religion, ethics and sustainable development linked to different working approaches of biology and its areas. (Biology, 6)

The formulation relates Biology to Religious studies, where religion and ethics mainly are processed in the curriculum. However, the subject plan of Religious studies does not contain the concept of sustainable development. This means that scientific rationality (biology working approaches and areas) instills meaning, also in the concept of religion in terms of sustainable development.

Sustainable Society

Another articulation that contributes to the meaning of sustainable development is ‘sustainable society’. This section shows how sustainable society is characterized as a vision of the curriculum and requires an active person who causes the development.

Articulations relating sustainable development to values, often appraise sustainable development in terms of sustainable society. The expression ‘sustainable society’ is used in only six subject syllabuses in the curriculum of upper secondary school (Architecture, Physics, Production philosophy, Social science, Sustainable society, Technology), thus occurring considerably less than the expression ‘sustainable development’. It is nevertheless of major import in the curriculum, in constructing the meaning of sustainable development.

In the Sustainable society syllabus, sustainable society is established as a specific subject in which education is carried out: ‘The teaching of the subject sustainable society should aim to develop the students understanding of the conditions, motivations and values underpinning work with sustainable development’ (Sustainable society, 1). This stance distinguishes sustainable society from sustainable development. Sustainable society is furthermore described as comprehending all three dimensions of sustainable development: ‘[t]he subject of sustainable society is interdisciplinary and illustrates the concept of sustainable development from ecological, social and economic perspectives’ (Sustainable society, 1). The expression differs from sustainable development, which is instead described as a field that contains concepts: ‘The teaching of the subject sustainable society should give students opportunities to develop following: [...] [a]bility to apply concepts in the field of sustainable development’ (Sustainable society, 1). Sustainable society is also depicted as a phenomenon that is linked to lifestyle issues: ‘Associations between lifestyle patterns and the design of a sustainable society’ (Sustainable society, 2). Sustainable society is in summary established as an idea that encompasses different perspectives and values regarding sustainable development. What really sets the two apart is this: In sustainable development, nature stands in the centre, but the sustainable society places mankind in the centre: ‘It [the subject Sustainable society] deals with the interaction between humans and their environment’ (Sustainable society, 1).

The sustainable society is in a sense constructed as the social and economic dimensions of sustainable development. At the centre of its articulation, the active, community-

building human is moulded. The teaching should give the students opportunities to develop '[k]nowledge of various conditions and opportunities for achieving sustainable development [...] [a]bility to identify, analyze and define the problems and propose and compare alternative courses of action [...] [a]bility to plan, implement and interpret their own inquiries and suggestions' (Sustainable society, 1). Sustainable society is articulated as a social phenomenon with an active human that plan, implement, interpret and value different actions at the centre.

Sustainable Society in Technology

Besides the subject Sustainable society, Technology is the subject most prominently using the term 'sustainable society'. Technology is depicted as a subject balancing between natural and humanistic sciences in the curriculum, as it is focusing on human exploitation and transformation of nature's resources: '[t]echnology involves fulfilling human needs and preferences by transforming the physical resources of nature or immaterial assets in products, processes, facilities and systems.' (Technology, 1). This constitutive part of the subject Technology makes it coincides with the subject Sustainable society.

Sustainable development, as it is understood in the natural science subjects, mainly involved preservation of the balance or harmony of the system as discussed. In contrast, sustainable society is in Technology equated with a vision of something that provides perspective on the subject. The vision of a sustainable society may affect and change the meaning of technology. The students are expected to develop: '[t]he ability to analyse and assess technological solutions taking into account sustainable societies' (Technology, 1).

The Technology subject is thus harbouring another kind of critical facet than the subjects of natural sciences: the own subject's results (obtained by the subject's methods and knowledge) should be assessed from the view of a sustainable society. The goal is that students will be able to assess the solutions obtained with the subject methods based on a vision – the vision of a sustainable society. The Technology subject then turns more 'ethical' in character in the sense that the articulation establishes value judgement as constituent of the subject. According to the general description of the subject, this is also the case: 'Teaching should prepare students to actively take part in and influence technological development from an ethical perspective' (Technology, 1).

Antagonism or Consensus?

Are these two articulations (1. ecosystem – nature – immanent development and 2. vision – human – intentional development) antagonistic? In other words, do they generate different discursive formations with diverging comprehensions of sustainable development, competing with each other? The answer is yes – and no.

Yes, they do compete. As already discussed above, their focus and approach to development differ. The focus in sustainable development is nature, the ecosystem, and maintaining balance. This is accomplished by allowing as few disturbing elements as possible. In this articulation, development is depicted as immanent, interwoven with evolution. The focus in sustainable society is instead the human and her vision of a better future. To be able to achieve this state of affairs, man needs to be active, adopting

a critical approach to knowledge, and valuing different actions. In this articulation, development is depicted as intentional.

But the opposite answer is also legitimate: No, they don't compete. What links the two viewpoints is a central position of resources and resource distribution in both. In relation to sustainable development: "Issues concerning sustainable development: [...] utilisation of resources [...]" (Science studies, 3) and in relation to sustainable society: "[t]he subject [...] deals with issues of [...] management of natural resources" (Sustainable society, 1). Both articulations presume that a balance exists (or should exist), and that it must be maintained by mankind. In the one case, this must be attained by not disturbing the natural order and in the other case by acquiring a deliberate standpoint at a global level. The idea of a system in balance is shared by the two different types of articulation. This perception, we argue, rests on the articulations harbouring the same idea of the ecosystem.

The curricular account of sustainable development's history of ideas supports this interpretation:

The [Science] subject covers health, energy and sustainable development, knowledge areas that have emerged in the intersection between science and social science (Science studies, 1).

Sustainable development emerged in the tension between nature and mankind/culture, between laws of nature and the needs and sociality of humans, i.e. between biophysical causal systems and socio-cultural contextual systems, a fact that explains its double focus – nature and mankind. Effectively, the double focus is not double. Sustainable development centres on a system in balance, where development displays different expressions depending on whether mankind or nature is highlighted in the articulation. We therefore argue that the two articulations generate one discursive formation with one comprehension of sustainable development.

Discussion

The overall aim of the present study was to uncover how sustainable development can be comprehended in the curriculum of upper secondary school in Sweden with a discourse perspective and thus understand how ESD has been implemented in the text. Focusing on the relation that mainly organized the term into meaningful social phenomenon, the readings disclosed that the curriculum contains two articulations: sustainable development and sustainable society. These discursive articulations constructed one discursive formation with mainly one comprehension of sustainable development. In this section these results will be related to earlier research and to the discussion on politics/the political.

The ongoing discursive struggle that no ESD can avoid (Læssøe, 2010) is not visible on the surface of the curriculum of upper secondary school in Sweden. Bonnett's (2013a) understanding of ESD seems to closely resemble what can be discerned in the texts – the articulation of sustainable development centres on preservation, and the articulation of sustainable society centres on progress. In the Swedish curriculum they are however part of the same discursive formation, based on the ecosystem. This is in congruence with Bonnett's argument that the two discourses have been enmeshed in ESD, sanctioned

by modern science (Bonnett, 2002, p. 17). The articulated practice establishes a certain order, the order of natural scientific rationality.

As an alternative approach to natural scientific rationality, Bonnett suggests an eco-centric approach to sustainable development. Korfiatis argues that the ecological science is no alternative to modern science, since science appropriates its categories in a hegemonic gesture (Korfiatis, 2005, p. 236). This is one way to interpret the implementation of ESD in the curriculum – sustainable development substantially enables only one worldview. The articulations of sustainable development in the curriculum rests on an idea of the ecosystem that seem to enforce the natural scientific rationality instead of letting different rationalities contribute to the meaning, according to our analysis.

Even if the curriculum is presenting sustainable development as emerging in the tension between nature and humankind, between ‘physical science and humanities’, as Stables (2001) put it, the term sustainable development does not appear as a ‘paradoxical compound policy slogan’ (2001, 252) in the curriculum. On the contrary, it appears to be relatively consistent. The ecological modernization discourse, which is the dominating discourse in northern Europe according to Læssøe (2010), is visible in the descriptions of sustainable development in the curriculum and syllabuses. The formulation of sustainable development may therefore in the curriculum be understood as a hegemonic expropriation of elements of other discourses, such as the social and economic, into the environmental (ecological) dimension. The identified two articulations were not found to be antagonistic – they did not represent the limit of each other’s order.

This result is consistent with the results from the Chatzifotiou’s (2006), the Baoly-Simó’s (2014) and Iyengar and Bajaj’s (2011) studies. As in the British, Indian, German, Romanian and Mexican curriculum, the environmental dimension tends to appropriate the other dimensions of the concept. Without drawing any further conclusions from these few and limited studies, it is still interesting given that they represent three different continents.

Excluded from the Swedish curriculum is hence an equally thorough understanding of the social and economic dimensions of sustainable development that might challenge and balance the natural scientific. They are not absent, but they do not permeate the understanding of sustainable development in an equally significant way. They are not part of the central linking processes and do not thus construct sustainable development as a social phenomenon in a discursive sense. This means that the social and economic dimensions have little impact on ideas of what sustainable development is. Consequently, and in accordance with Badjanova and Ilisko (2015) argumentation, it is up to the individual teacher to apply a more holistic understanding of sustainable development in their class. The curriculum and the syllabuses do not seem to promote socio-cultural competence, so vital for sustainable development (Zygmunt, 2016).

Transferring such analytical categorizations to the ambiguous context that school and society constitute is not easily accomplished. It is nonetheless possible to deliberate over the interests arising as a result of students becoming overdetermined within the framework of the policy documents of the secondary school. In line with the reasoning of Laclau and Mouffe (2008), one could say that the technicians in the society are the ones conveying the discourse, making it manageable, with the ambition to perfect it as a societal vision. Following the thought of Popkewitz (2008, 32ff), one might argue that to the technician, ‘reasonability’ and ‘science’ overlap in such a fashion that it forms communal belonging and salvation themes. The articulations pave the way for the techno-

crat in the vision of a sustainable society (Greek: techne – skill, kratos – exercise of power). Through knowledge, and capability of managing sustainable development, the engineer becomes the expert in the field. The findings of Biasutti and Surian (2012) seem to point at the same direction: engineering students at the university level have a more pro-sustainability attitude than students in for instance health sciences and social sciences.

We conclude that this consensus of sustainable development constitutes the comprehension of sustainable development in the curriculum of upper secondary school in Sweden as politics – the environmental perspective dominates. Since these results are congruent with international studies, it emphasises the importance of taking a critical stance to the writings of Curriculum when putting them into practice. Not the least to be aware of if the natural rationality excludes other rationalities and by that excludes a multidimensional implementation. In the Swedish Curriculum it appeared to be the technology student that acquires the needed competence to for contributing to a sustainable development. This is not that surprising, since Sweden has a long history of engineer entrepreneurship. Further research on implementation in other countries may reveal other rationalities.

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