

SUSTAINABLE DEVELOPMENT, EDUCATION AND GLOBALIZATION

Ulrich Juedes

Institute for Science Education (IPN) at the University of Kiel, Germany

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Summary

Recognizing that education in the context of sustainable development is very much dependent on the general discussion of the subject in society, which is highly diverse and partly contradictory, a theoretical approach to the sustainable development vision is presented:

- (a) The basic terms and key concepts of a paradigm of sustainable development are described.
- (b) Four different levels of the sustainable development discourse are differentiated (problem analytical–ethical, epistemological–conceptual, organization theoretical, and realization) and characterized.
- (c) Different levels, aspects, dimensions, and elements establish a hierarchical concept for understanding sustainable development.
- (d) The goal function concept in systems ecology is adapted for use in sustainable development theory.
- (e) Six strategies are important for implementing sustainable development: the strategy of consistency, of efficiency, of sufficiency, of diversification, of participation, and

of education.

- (f) The cultural aspect represents the link between humans and nature, and between humans.
- (g) Therefore, sustainable development is interpreted as a cultural process leading to a culture of sustainability, which is indicated by its co-evolutionary functionality.
- (h) The role of communication and education is discussed, and some pedagogical dimensions are described in the context of sustainable development.
- (i) Some global initiatives in education are mentioned.

This theoretical approach might pave the way for further interdisciplinary discussion and analysis of sustainable development. It contributes to a deeper understanding and better rationale of the sustainable development discourse and establishes a framework for reflection and innovation of education during global change.

1. Introduction

In traditional conservation, nature has to be protected against human beings because humans impair the fundamental life-support systems. Sustainable development, however, is directed at protecting nature by human activities and by a wise integration of all aspects of human systems with the life-support systems of nature. This is a new vision that implies a totally different paradigm.

Four perspectives on sustainable development relevant for educational policies are to be here differentiated (*see Knowledge for Education; Methodological Knowledge; Future-Oriented Knowledge, Lessons of the First Nuclear Age, 1945–1991; Cultural Knowledge; Knowledge of the Environment; Bio-Social Knowledge: Human Adaptation in Different Ecological Niches of the World; and Knowledge for Sustainable Development*):

- A historical perspective
- A political perspective
- A conceptual perspective
- A curriculum perspective.

Of these, the conceptual perspective is selected to pave the way for a better understanding of the sustainable development paradigm, especially for teaching students about sustainable development. For that purpose some theoretical topics are presented:

- Groups of stakeholders and their functions are described
- Different levels of the sustainable development discourse are differentiated
- Relevant disciplines are related to that analytical framework
- The connections between ecological, economic, and social dimensions are identified
- Some basics of the sustainable development paradigm (terminology, fundamental suppositions, and key concepts) are analyzed
- Strategies for sustainable development are described
- Some starting points for intra- and interdisciplinary reflection on strategies and

measures are selected.

As a further step, different pedagogical approaches in the context of sustainable development are described for clarification of the curriculum perspective and of educational practice. In the future, sustainable development theory has to be better correlated with the more general fields of educational science, such as some foundation studies, forms of knowledge, and educational structures, and with specific questions of education for sustainable development, such as educational policies, gender, and mass media (see *Education for Sustainable Development; Education and Development; Educational Policies for Sustainable Development; Education Policies and Gender; Mass Media and Nongovernmental Organizations in Education; Transferring Knowledge of Sustainability; Education and the Consumer Society; and Information Technology and Education*).

2. Agenda 21: Its Vision and Some Obstructions

Agenda 21, as agreed upon by delegates of 178 countries at the United Nations Conference on Environment and Development (UNCED) in 1992, is a reaction to increasing global problems such as the effects of externalization of social and environmental costs of industrial production, the decrease of nonrenewable resources, increasing social differences in many countries, global inequality, the dissemination of allochthonous species (to places other than where they originated), disease vectors and pests, and loss of biodiversity. The political vision of sustainable development is therefore concerned with two types of problems:

- (a) conflicts between humans and nature (environmental problems), and
- (b) conflicts between humans (socioeconomic problems).

Both had already been discussed before 1992, separately. The innovative step of UNCED was to come to an agreement on more or less pragmatic suggestions for global as well as regional and local action, and to aggregate the results of the diverse discussions into one political document (Agenda 21). This offered to the present hope for a better future for human societies and for culture in general.

Making this a reality demands of all stakeholders, politics, science, and social groups in general (Figure 1) a discourse on a new paradigm. Politics as well as the public communication of sustainable development (for example, in local agendas) tends to be very pragmatic and problem-oriented. Due to the heterogeneity of the topics of Agenda 21, there are multiple perspectives on sustainable development, and different perspectives may conflict one with another.

Of the different groups participating in the sustainable development discourse, science has the honorable task of developing a theoretical framework for analysis and discussion of the different perspectives on sustainable development; but science itself is discipline oriented. Starting from one discipline rarely allows the possibility of fulfilling the demands of a theory necessary for understanding and even for evaluating sustainable development measures and sustainable development projects.

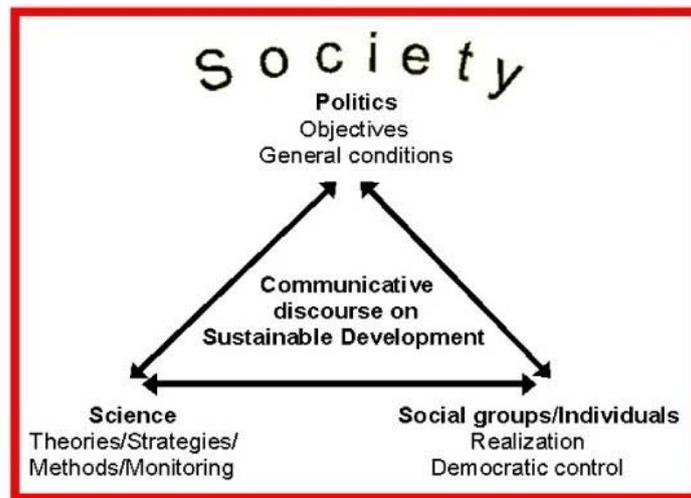


Figure 1. Communicating the vision of sustainable development

So, looking at the actual situation, although the vision of sustainable development has already been studied scientifically from various perspectives and is becoming increasingly integrated into many scientific programs, there is as yet no theoretical concept unifying the different aspects. Educational policies in particular demand clarity in their concepts. For such purposes, a transdisciplinary systems approach seems likely to be helpful that pays attention to such central questions as:

- What basic suppositions underlie the vision of sustainable development?
- What kinds of characters (i.e. aggregates of essential qualities establishing distinctive system components like elements, structures, principles) are to be considered in the sustainable development discourse?
- What are the relevant strategies for implementation of sustainable development?
- What kinds of relationships exist between the perspectives of different disciplines on sustainable development?
- What is the specific role of education in the sustainable development process?
- What sort of knowledge and skills are necessary for the discourse on and acting out of sustainable development?

A further crucial task of a systems approach is to identify starting points suitable for communication between the disciplines and for mediation between conflicting interests of groups. The need for such a comprehensive framework is urgent in order to prevent an even further degradation of sustainable development through its misguided use in science, politics, and by special interest groups, which use the words but intend something else (“sustainabilism”). Misunderstanding and misuse of the sustainable development idea arise from a disregard of factors or conditions that may prevent sustainable development from being realized, for example:

- The widespread inability to think in an interdisciplinary way and understand complex situations
- The divergence of prognostic uncertainty and the urgency of decisions, which raises

- the question of human unpretentiousness or arrogance in view of a lack of knowledge and lack of understanding of complexity
- The limited practical use and the dependence on theory of statements derived from complex scientific models due to the tension between theory and practice
 - The eventual danger of unforeseen unsustainable effects of well-intentioned practical measures
 - The inconsistency of different prognostic limits to growth (question of qualitative growth or of ecological growth)
 - The inconsistent roles of technologies that are burdened by the paradox of being reason and cure
 - An idealizing and a dogmatizing of the ideas of freedom and liberty (for example, personal, civil, and political liberty, freedom of travel; poetic license, independence of science; privilege of economic mobility of capital, goods, and services)
 - Widespread conflicts between individual and collective interests of people, of social groups, and of countries, known as the tragedy of the commons
 - The inconsistency of different concepts of justice (e.g. equality, individual parity, equivalence of opportunity, justice of needs and of performance)
 - Serious contradictions between intra- and intergenerational justice
 - Some antagonistic trends in society (e.g. individuation and pluralization versus concentration and globalization)
 - The dilemma of democratic rules for decision making and the urgency of a resolute and accurate ability to act
 - Institutional or bureaucratic blocking reactions (e.g. resistance, marginal change, incompetence, opportunism) in view of new demands.

This collection of obstructive factors may indicate the importance of a theoretical reflection of all sustainable development activities, especially when teaching in the context of sustainable development.

3. Towards a Theory of Sustainable Development

Current scientific discussions on sustainable development usually start from more or less well-established disciplinary perspectives. A comprehensive and really transdisciplinary view is mostly lacking and therefore theoretical requirements of a paradigmatic concept of sustainable development are rarely fulfilled.

From a systems perspective, sustainable development can be seen as a macroprocess (of the global system) consisting of an unlimited number of microprocesses (of subsystems). Both scales differ in their dynamic characteristics: the macroprocess of sustainable development is by definition directed from conditions of unsustainability (originated by humankind) toward those of sustainability (this, however, is not obligatory for each microprocess). The microprocesses fit given specific environmental situations and can include highly dynamic and even catastrophic events when seen on their specific scale. This means that although the microprocesses may be unsustainable themselves, their results can contribute to sustainability on a higher scale. This idea, well known in ecosystem research, has so far been widely neglected in discussions in other fields of sustainable development.

3.1. Structure of a Sustainable Development Concept: Discourse Levels and Dimensions

Studies in ecology, economics, business and industry, agriculture, forestry, science and technology, energy, transportation, tourism, architecture and urban planning, health, politics and planning, social science, education, philosophy, and ethics contain specific contributions to or at least consideration of the process of sustainable development. Each of these aspects is based on disciplinary concepts and characters (elements, structures, principles) helpful in understanding subsystem components or microprocesses of sustainable development (for example, ecosystem structures, energy flow between trophic levels and productivity in ecology; resource use, allocation, and growth in economies; human rights, basic needs, and justice in social sciences).

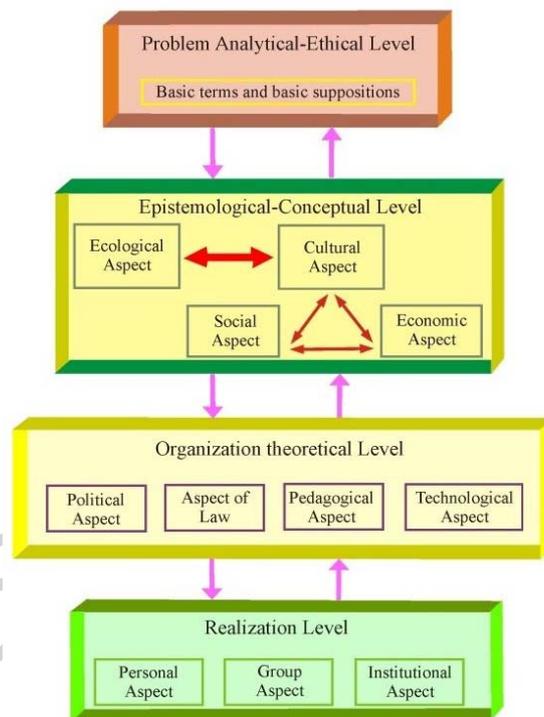


Figure 2. Levels and aspects of the sustainable development discourse

These disciplinary concepts and characters are necessary for mediating measures of sustainable development in conformity with accepted scientific standards, but a sustainable development paradigm requires a transversal “good sense” unifying controversial ideas and models. Therefore, it must be both communicable to individuals and social groups and operable for pluralistic reasoning and transdisciplinary judgment of sustainable development processes.

In general, two contexts for viewing sustainable development are differentiated: a goal context and an organizational context. Thinking a little more about the “logic” of the sustainable development discourse, one can describe four levels to which all fields or disciplines relevant to sustainable development can be assigned:

- (a) A problem analytical–ethical level
- (b) An epistemological–conceptual level
- (c) An organization theoretical level (strategic planning)
- (d) A realization (practical) level.

These levels constitute a hierarchical system: Levels (a) and (b) focus on the definition of the problems and the clarification of their context, levels (c) and (d) are directed to problem solving.

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Biographical Sketch

Ulrich Jüdes was born at Lübeck (Germany) in 1949. In 1967 he graduated from Gymnasium and worked for three months at an industrial company for medical technology and filter systems (Drägerwerk Lübeck). After military service (1967–1969) and three months of practical work in the chemical laboratory of the Drägerwerk, Lübeck, he entered Karl Albrechts University (Kiel) and until 1977 was a student of zoology, botany, geography, philosophy, and pedagogy at Karl Albrechts University Kiel and Eberhard Karls University Tübingen. He qualified as a teacher for secondary school (biology, geography) and was awarded a doctorate in natural sciences (zoology, botany, geography). After working as a secondary school teacher, he was appointed to a postdoctoral position at the Medical School of Lübeck (Institute of Human Genetics and Institute of Pathology) working on mammalian cytogenetics and experimental embryology (especially embryo banking), for which he undertook methodological training in Great Britain. From 1982 to 1987 he was university assistant at the Institute for Science Education (IPN) in Kiel working on science education, conservation, and environmental education. He has been the founder and head of an environmental NGO in north Germany; a member of the IUCN Species Survival Commission Bat Specialist Group; consultant to the European Bat Agreement under the Bonn Convention; honorary member of Bat Conservation International (BCI); a member of the Consulting Boards for Conservation and Landscape Planning of Kiel City Council and of Herzogtum Lauenburg. Dr. Jüdes won a German Science Journalism Prize. Since 1989 he has been senior scientist at the Institute for Science Education (IPN) of Kiel University (managing the annual German Environmental Project Contest and working in various environmental education projects). He is German member of the IUCN Commission on Education and Communication and a member of the Stolpe Village Council Board for Building, Roads, and Environment and Conservation Commissioner for that village.