

All Mixed Up? Instrumental and Emancipatory Learning Toward a More Sustainable World: Considerations for EE Policymakers

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World wide, policymakers are looking for ways to use education and communication strategies to create a world that is more sustainable than the one currently in prospect. They often find themselves trapped between instrumental (behavior change) and emancipatory (human development) uses of such strategies. This study sheds light on this apparent divide by investigating four exemplary cases representing both orientations and mixes thereof. One outcome of the study is that EE policymakers but also EE professionals first need to reflect on the kind of change challenge that is at stake. Only then are they able to determine what kind of education, participation, communication, or mix thereof is most appropriate, what kinds of results can best be pursued, and what monitoring and evaluation system can best be employed.

INTRODUCTION

Sustainable development is currently a major issue on the policy agenda internationally, nationally, and locally in many parts of the world. The Dutch government, for instance, considers Environmental Education (EE) and Learning for Sustainable Development (LSD) as communicative policy instruments to promote sustainable

development in society. Recently, the effectiveness of existing EE policies was examined by the Netherlands Environmental Assessment Agency (MNP) (Sollart, 2004). This study revealed that little information was available about the way educational instruments to enhance sustainability in society work in practice. The MNP therefore commissioned a follow-up research project to examine how different policy approaches to EE are reflected in EE practice. This article presents the results of this study, which have been presented more elaborately in a Dutch report titled *From "Adopt a Chicken" to Sustainable Urban Districts* (Hubeek et al., 2006). The study examined four policy-induced manifestations of

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EE in an attempt to answer the following questions:

1. How do the various EE approaches contribute to processes leading to new practices that are more sustainable than the ones they seek to change? How can the use of these approaches or “instruments” be reinforced and/or improved?
2. How can (EE) policymakers become more competent and effective in using communicative instruments in moving society toward sustainability?
3. What is the role of “knowledge” in these approaches?

The research project studied three approaches to EE: one that can be classified as being predominantly *instrumental*, one that can be labeled predominantly *emancipatory*, and one that seems to mix both.

INSTRUMENTAL ENVIRONMENTAL EDUCATION AND COMMUNICATION

An instrumental approach assumes that a desired behavioral outcome of an EE activity is known, (more or less) agreed on, and can be influenced by carefully designed interventions. Put simply, an instrumental approach to EE starts by formulating specific goals in terms of preferred behavior, and regards the “target group” as a mainly passive “receivers” who need to be well understood if communicative interventions are to have any effect. The models underlying such an approach have become more sophisticated over the years than the classic “from awareness to action” models that emerged in the sixties and seventies of the last century. Figure 1c represents one of those models based on the work of Ajzen and Fishbein (1985). In the model there are several entry points for instrumental environmen-

tal education and communication that can be used depending on the results of a behavioral analysis preceding an intervention (i.e., raising problem awareness, influencing social norms, attitudes, increasing self-efficacy/personal control and/or carefully designed combinations).

The Dutch government, and many other governments around the world for that matter, uses and supports a range of educational activities and communication strategies to influence citizens’ environmental behavior: awareness campaigns, public service announcements, environmental labeling and certification schemes, but also environmental education programs and activities that have clearly spelled out objectives of a behavioral nature. A characteristic of proponents and designers of more instrumental approaches is their continuous quest for well-articulated, more measurable outcomes and sophisticated indicators in order to make these interventions more effective and to be able to “prove” that they indeed are effective. Critics of the instrumental use of environmental education argue that using education to change peoples’ behavior in a pre- and expert-determined direction has more to do with manipulation and indoctrination than with education. Proponents of such a use of education argue that, because the future of our planet is at stake, using all means available is legitimate. Interestingly enough, in the Dutch policy arena these proponents can be found in the Ministries that focus on Agriculture, Land-use, Nature Conservation, Environmental Protection, Food Safety, Energy, whereas critics of such use of education can be found in the Ministry of Education.

EMANCIPATORY ENVIRONMENTAL EDUCATION

An emancipatory approach, in contrast, tries to engage citizens in an active dialogue to establish co-owned objectives, shared meanings, and a joint, self-determined plan of action to make

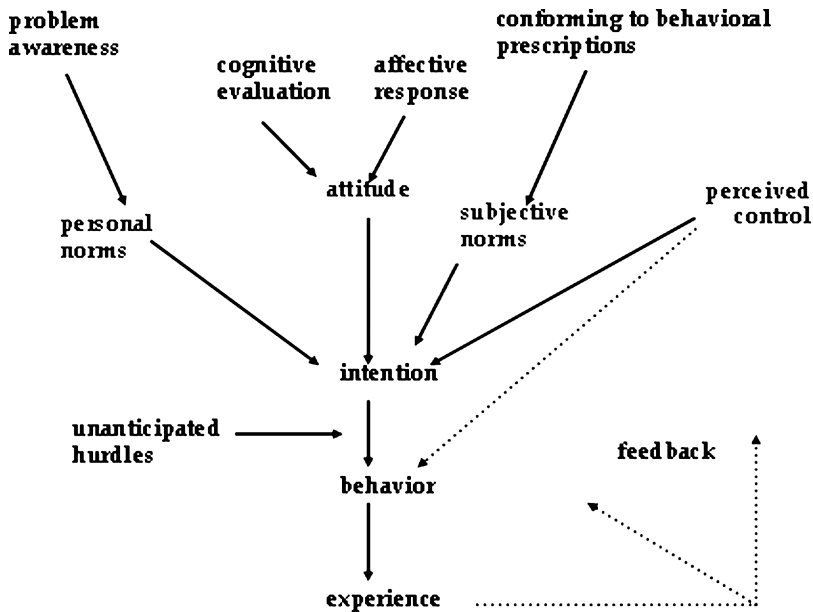


Fig. 1. An instrumental behavioral change model (based on Ajzen & Fishbein, 1985).

changes they themselves consider desirable and of which the government hopes they, ultimately, contribute to a more sustainable society as a whole (Wals & Jickling, 2002). In other words, the specific objectives and the way to achieve these are not established beforehand. Social learning processes, supported by participatory methods, have been identified as appropriate mechanisms for realizing a more emancipatory approach to EE (van der Hoeven et al., 2007; Wals, 2007) and to environmental management (Keen et al., 2005). Figure 2 illustrates this spiraling process during which people are continuously seeking for situation improvement.

The Dutch government has generated policies that specifically focus on creating space for multistakeholder participation in searching for a situation that is more sustainable than the present one—in other words, policies that do not spell out specific behavioral outcomes, other than getting people actively involved and allowing multiple voices, including marginalized ones, to be heard. The Dutch memorandum on Learning for Sustainable Development (Dutch Learning for Sustainability Program, 2004) specifically identifies social learning as a

key focal point. In the memorandum it is stated that “learning arrangements” need to be supported where stakeholders, citizens, and organizations are brought together in concrete situations, and are stimulated to engage with one another in a collective learning process. Here emphasis is placed on capacity building, agency, and creating space and structures that allow for the emergence of social learning. With this relatively new approach new questions and uncertainties emerge among policymakers: How do we assess whether providing such space and creating supportive structures is actually working? What kind of indicators do we use for this?

Proponents of such an emancipatory approach argue that the nature of sustainability-challenges seems to be such that a routine problem-solving approach falls short as transitions toward a more sustainable world require more than attempts to reduce the world around us into manageable and solvable problems. Instead, such transitions require a more systemic and reflexive way of thinking and acting with the realization that our world is one of continuous change and ever-present uncertainty. Critics of such an approach tend to argue that we *do* know

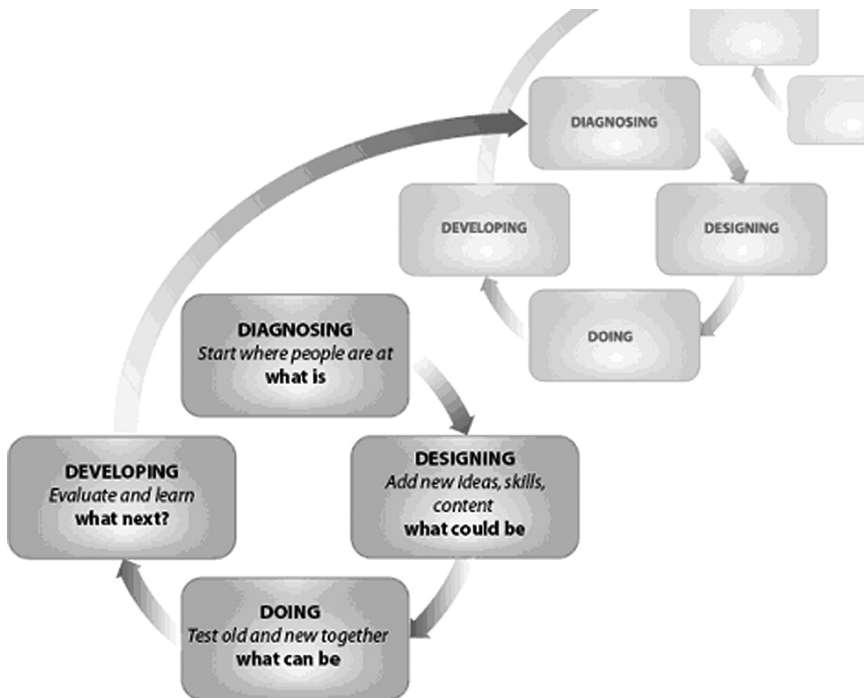


Fig. 2. Emancipatory spiraling towards sustainability (source: Dyball et al., 2007).

a lot about what is sustainable and what is not, and that by the time we have all become emancipated, empowered, reflexive, and competent, the Earth's carrying capacity will have been irreversibly exhausted.

BLENDING ENVIRONMENTAL EDUCATION, COMMUNICATION, AND PARTICIPATION

Dutch environmental sociologist Gert Spaargaren builds on Giddens's structuration theory to create a model that links actor-oriented and provisionary structure-oriented approaches (Spaargaren, 2003). Spaargaren does so by putting social practices at the center where human agency is mediated by lifestyles. The interplay between agency and structure consti-

tutes a wide range of social practices. Spaargaren's model might be regarded as a bridge between the classic instrumental, environmental attitude and behavior approach and a more emancipatory, agency-based approach. At the same time, the model takes into account the influence of social (technological) structures on behavior (Spaargaren et al., 2006). Figure 3 presents Spaargaren's social practices model.

The Dutch government increasingly recognizes the importance of addressing social practices and lifestyles, rather than focusing on changing piecemeal attitudes and behaviors, particularly in its health education and communication programs. Van Koppen (2007) makes a case for using this integrative social practices approach, in the context of moving toward sustainability in a consumerist society (van Koppen, 2007).

From a governance perspective the social practices model suggests a strong emphasis on active citizen participation in governance. Martens and Spaargaren (2005) maintain such

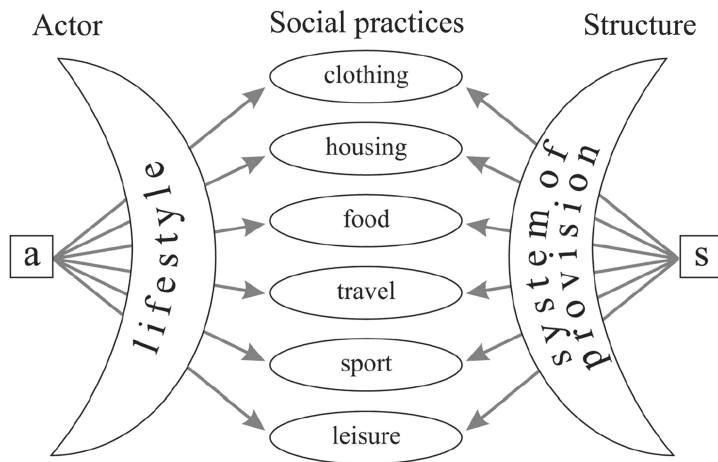


Fig. 3. A social practices mediated change model (Spaargaren, 2003; Van Koppen, 2007).

a shift in governance is the main driver behind several political changes presently under way in the Netherlands. As this approach is emerging and has up until now received little attention in environmental education circles, it would be premature to try to articulate proponents' and opponents' views to this blended approach. In this study two cases are included that can be seen as closely connected to the social practices model as described here.

METHODOLOGY AND METHODS

A case-study methodology was chosen to allow us to “reveal the multiplicity of factors [which] have interacted to produce the unique character of the entity that is the subject of study” (Yin, 1989, p. 82). Case study methodology enables learning about a complex instance through description and contextual analysis. The result is both descriptive and theoretical in the sense that questions are raised about why something happened as it did, and with regard to what may be important to explore in similar situations. A case study:

investigates a contemporary phenomenon within its real-life context; when the boundaries between the phe-

nomenon and context are not clearly evident; and in which multiple sources of evidence are used. (Yin, 1989, p. 23)

There is an imprecise understanding of case study and, according to Merriam (1998), it is often misused as a “catch-all” research category for anything that is not a survey or an experiment. When using Yin’s (1993) typology, our case study research can best be labeled “explanatory” and “descriptive” with us—the researchers—in the role of outsiders coming in, using insider practitioners and written documentation as main sources of information in an attempt to gain a holistic understanding of cultural systems of action (Feagin et al., 1991).

A number of steps were followed in generating the case studies: *orientating* (What are we looking for? What do we want to know?); *deconstructing* (What are our own assumptions? What are the assumptions of those commissioning the research? What assumptions can be found in relevant literature?); *questioning* (What are the kinds of questions that need to be asked? By whom? To whom?); *interviewing* (using open-ended questions, check-lists, creating conversations generating thick descriptions but also more causal explanations); *analyzing* (intra and inter case analysis, using transcripts, looking for patterns, commonalities and differences,

seeking to generate inter-subjective agreement about interpretations and findings among the research panel); *validating* and *soliciting feedback* (checking and presenting results to the government and the key participants in the case study research). In total twenty key-informants provided key input for the research (on average five informants per case study).

SNAPSHOTS OF THE FOUR CASES

Four case studies, mimicking the four approaches, were created to find some answers to the research questions: one case study took place on the instrumental end of the continuum, one case study took place on the emancipatory end of the continuum, whereas two additional “blended” case studies, including both emancipatory and instrumental elements, were included as well.

Case 1—“The Adopt a Chicken Campaign” (Instrumental)

The campaign entitled “Adopt a Chicken” (www.adopteerkeenkipp.nl) intends to stimulate public awareness and support for organic poultry farming, by allowing citizens to adopt a chicken. In exchange, adopters receive egg tokens, which they can trade in for eco-eggs at organic shops. They are also given access to entertaining and informative websites and can take their families on visits to organic farms. The campaign can be viewed as a part of a larger government campaign that seeks to increase the market share of organic food consumption in the Netherlands to 10% by the year 2010.

The success of this campaign—since the launch in 2003 over 75,000 Dutch citizens have adopted a chicken, many of whom have, as a result of this, entered organic food stores for the first time—has been attributed to factors like its

playful nature, the egg tokens that disconnect price and product, the highly respected status of the nongovernmental organization (NGO) Platform Biologica, which acts as an ambassador for the campaign, and the fact that it was made very easy to participate in the campaign. Another factor contributing to the campaign’s success was that its introduction took place in a time when poultry farming was going through a period of crisis and was receiving lots of media attention. Civilians felt that the campaign offered them an easy opportunity to do some good.

Case 2—“Creating Sustainable Urban Districts” (Emancipatory)

The “creating sustainable urban districts” project focused on rather general goals of achieving greater sustainability and increasing the quality of life in urban districts (Verreck and Wijffels, 2004). As the project progressed, specific activities emerged that were designed in consultation with residents and other stakeholders.

The project—rather, a number of related projects—was initiated to engage residents of certain districts in the cities of Rotterdam and The Hague in a joint effort to improve the sustainability of the districts, and to develop a method to achieve resident participation in sustainability projects. Using the term *leefbaarheid* or “live-ability” as a motto, various activities were developed, implemented, and followed up in the districts involved. An important factor contributing to the success of the campaign was that the campaign tied in with the perceptions, lifestyles, and interests of the residents, who were stimulated to take action and shared the responsibility for the campaign. Other important aspects in achieving the residents’ involvement were: the creation of trust, transparency, and the promise of (making visible) short-term results. A major factor, in terms of public support and continuity, was the network of residents and other parties involved created before and during the actual project.

Case Study 3—“Den Haneker” (Blend)

The “Den Haneker” agri-environmental association was founded with the primary aim of conserving and managing natural landscape elements in farming areas. The association uses EE to support this primary objective; it organizes courses, maintains a website, and offers brochures, a video, a magazine, booklets, and course materials. The association has over 1,000 members and has over the years managed to influence rural land-use planning decisions. Its success has been attributed to:

- A proactive rather than defensive attitude;
- Its broad appeal, which is reflected in the wide representation of civilians, farmers, and the business community among its members;
- The support it provides to its members;
- Some well-informed and highly motivated members who encourage the others and ensure that up-to-date knowledge is available within the association.

Case Study 4—The Story of the Heuvelrug Region (Blend)

The objective of the project entitled “The Story of the Heuvelrug Region” is to create eco-corridors between the various natural areas in the *Utrechtse Heuvelrug* region (the “hilly” part of the province of Utrecht in the center of the Netherlands), for instance by building green overpasses (so-called *eco-ducts*) crossing major highways. This process of interregional “de-fragmentation” can only be achieved by creating awareness, collaboration, and support among all stakeholders in the region. Four sub-projects have been implemented, each focusing on one of four specific target groups: volunteers, administrative officials, pupils/students, and recreational visitors. These projects, using courses, field trips, educational materials, a booklet with cycling routes, and a symposium, have achieved some success.

Awareness of the project has been raised by responsible local and regional government authorities. A number of volunteers have been informed to enable them to explain and defend the importance of “de-fragmentation” for nature conservation in this region. In addition, the parties involved have been able to look beyond their own municipal boundaries to obtain a wider view of the problem of fragmentation and its possible solutions. Closer collaboration has been established between volunteers and municipal authorities. The successes have been attributed to:

- The constructive collaboration between the eight organizations that develop the sub-projects;
- The high quality of the information provided;
- The efforts by the project management to approach target groups personally;
- The considerable media attention.

Each of these cases provide a rich source of information on the “modus operandi” of the different approaches, the process of interaction between citizens and policymakers, and the role of knowledge in these processes.

RESULTS

In answering the first research question (on the functioning of the various approaches) we conclude that, from an environmental policy perspective, the two extreme approaches can reinforce each other’s significance. Whereas the instrumental approach particularly improves knowledge about and awareness of, in our case, ecological problems, the emancipatory approach aims at long-term changes relating to public support, engagement, and involvement.

The study shows that the emancipatory approach is particularly suitable in ill-defined situations (i.e., there is no clear solution available or the challenge at stake is highly

multi-interpretable), which require learning processes that are grounded in the participants' immediate social and physical environment. It also became apparent that the project activities need to be easily accessible to all relevant stakeholders. The chances of long-term commitment are improved when participants develop some kind of social cohesion or "chemistry" but also when they see immediate results of their efforts. The latter can be realized by continuously creating positive feedback loops showing that change is occurring even when it *seems* that nothing is changing. In the "*Creating sustainable urban districts*" case, for instance, it took quite some time until the neighborhoods noticed "hard" tangible results, but quite soon after the projects started, there were quite a few "soft" results that proved to be crucial later on in the process (i.e., improved relationships between citizens and stakeholder groups). The fact that objectives and activities are jointly established increases the likelihood that the results or plans of action will actually be implemented.

An important precondition is that a project builds on actors' existing perceptions and knowledge with regard to the issue and/or challenge at stake. Establishing objectives while the process is underway requires a more qualitative and reflexive monitoring and evaluation system, concentrating on the achievement and continuous improvement of process objectives rather than on specific ultimate results or "hard" measurable outcomes.

Unlike the emancipatory approach, the instrumental approach is able to reach a large and varied target group and its objectives are problem-driven. The case studies show that initiating projects on topics that receive a lot of media attention increases involvement, and that timing is crucial for the impact on the target group (notice that the use of "target group" is used here whereas in the emancipatory approach the words participants, actors, and stakeholders are used). The fact that specific objectives are established beforehand allows the organizers to evaluate the project quantitatively and hence to justify the way the funds are spent (accountability). Within the more in-

strumental approaches much time is spent on describing measurable outcomes in a SMART way in that they need to be Specific, Measurable, Acceptable, Realistic, Time-specified (SMART). To have an exhaustive list of sustainability indicators seems very handy for becoming SMART in working toward a more sustainable world. Ironically perhaps, working in such a way might take the learning out of moving toward a more sustainable world, which is the key element of a more emancipatory approach.

This is not to say that having indicators within more emancipatory approaches to EE or Education for Sustainable Development (ESD), for that matter, is necessarily a bad thing, but the question then becomes: For whom are these indicators? How have they been created? By whom? Are they carved in stone or subject to change and even abolition? The process of identifying indicators can in and by itself be a very useful part of the learning process, but when indicators are then authoritatively generated and prescribed, a project becomes more instrumental and less emancipatory as the transformative learning disappears and is replaced by the kind of education and training that might lead to changes in awareness and behavior but might at the same time block the creation of a more reflexive, empowered, critical, self-determined citizenry that competently and creatively co-designs a more sustainable world.

The answer to our second research question (related to competence and effectiveness of policymakers), however, does show that instrumental and emancipatory approaches can reinforce one another from a *policy perspective*, whereas from an *education perspective* they might be contradictory. Government authorities should first and foremost try to assess the nature of the "change challenge." Only then should the most suitable change processes be selected and supported, whether instrumental or emancipatory or a combination. It is this choice that determines the most appropriate monitoring and evaluation (M&E) strategy. Instrumental approaches can tap into a wide range of more or less suitable and commonly applied M&E systems and tools, whereas the development of

Table 1
Instrumental and Emancipatory Monitoring & Evaluation juxtaposed

	Instrumental M&E focus	Emancipatory M&E focus
Main goals	<ul style="list-style-type: none"> - realising existing policy-targets/outcomes - accountability toward the funder(s) (often the government) - basic accountability from the government toward citizens 	<ul style="list-style-type: none"> - involving stakeholders - improving the quality of the process - collaborative learning
Role of external party	<ul style="list-style-type: none"> - expert role - external observation - determining indicators to be used for measurement - collecting, analyzing, and interpreting data - reporting 	<ul style="list-style-type: none"> - facilitator/coach - participatory observation - co-determining desirable monitoring and evaluation system and indicators - increasing transparency, access, and making progress visible (feedback) - challenging and enabling actors to engage in self-evaluation and monitoring
Role of actors within M&E	<ul style="list-style-type: none"> - sources of information for the external evaluator 	<ul style="list-style-type: none"> - participants in conversations about perceived needs and desired changes and their experiences with the process
For whom?	<ul style="list-style-type: none"> - funder, government, and, ultimately, society at large 	<ul style="list-style-type: none"> - for all stakeholders in the process (the funder and/or government being one of them)
Underlying worldview	<ul style="list-style-type: none"> - empirical-analytical: understanding by reducing, looking for causal explanations, striving for objectivity and neutrality 	<ul style="list-style-type: none"> - actors can have multiple (socially constructed) perspectives - holistic: looking for connections, relationships, and synergies - room for subjectivity but striving for inter-subjectivity, common meaning, and joint interpretations of what is happening and needs to happen
Risks	<ul style="list-style-type: none"> - results are snap-shots and their quality depends on the reliability and validity of instruments used. - M&E is mainly of interest to one party: the funder/commissioner of the research - results are merely used for strategic reasons 	<ul style="list-style-type: none"> - results are not considered to be scientific or trustworthy by those who have a conventional view of research (but have a lot of power) - inadequate use of methods or lack of access to the research, keeps some voices from being included - time-consuming (although time can be saved when M&E results are directly used in the process, thereby improving the quality and efficiency of the process)
Advantages	<ul style="list-style-type: none"> - easy to plan, relatively cheap, attractive for policymakers working with short policy-cycles 	<ul style="list-style-type: none"> - all participants can benefit from the M&E process (the process can contribute to their [professional] development) - allows for the emergence of a long-term perspective - M&E stimulates learning and leads to new insights that can benefit similar processes elsewhere

Based on: Proost and Wals (2005).

M&E systems and tools that befit the emancipatory remains in its infancy. Table 1 shows some differences between an M&E approach that corresponds with an instrumental approach and an M&E approach that corresponds with an emancipatory approach.

The third question of this study focused on the role of knowledge in the three change strategies. We will only present one main observation without getting into detail (for a more elaborate discussion see Hubeek et al., 2006). Clearly, in the instrumental approach, knowledge is not

the only factor influencing awareness-raising and behavioral processes but is considered an important one. We found that in the instrumental approach the focus mainly lies on the transfer of explicit, relatively uncontested, often science-based knowledge. Whereas, in the emancipatory, the emphasis lies on facilitating the exchange of implicit or tacit knowledge, the co-creation of new knowledge, and, finally, on joint meaning making.

CONCLUSION

Around the world, EE and ESD policymakers, as well as EE and ESD practitioners, are looking for ways to use education and communication strategies to create a world that is more sustainable than the one currently in prospect. They often find themselves trapped between instrumental (behavior change) and emancipatory (human development) uses of such strategies. The Dutch interdepartmental government program on Learning for Sustainable Development favors a shift away from “instrumentalism” (i.e., using education as a tool to change people’s behaviors in a pre- and expert-determined direction) toward what we might refer to as civic engagement (i.e., creating space for and supporting citizens in taking more responsibility in the quest and search for a more sustainable way of living). A focus on civic engagement suggests a greater emphasis on an emancipatory approach to environmental education and its cousin ESD. At the same time, the government, through a range of other policies, continues to work with and support instrumental behavior change approaches and, more recently, more integrative lifestyle change approaches. This research shows that, depending on the nature of the change challenge at hand and the amount of (un)certainly about desired solutions, different approaches and corresponding monitoring and evaluation methodologies and methods are indeed necessary. In the present situation,

commissioners of environmental education and learning for sustainable development may be tempted to blend change strategies and M&E approaches. However pragmatically useful or convenient this may seem, the implications of doing so need to be considered (Dillon & Wals, 2006) as the different strategies are based on different assumptions.

Therefore, EE and ESD policymakers first need to get a sense of the kind of change challenge that is at stake and need to do so in consultation with others. As a minimum, it is crucial to reflect on two key questions: “What do we wish to change?” (assessing the nature of the change challenge) and “How certain are we that this is the ‘right’ change?” (assessing the amount of certainty and level of agreement in science and society with regard to the desired change). The answers to these two questions are likely to have implications for, for instance, the desired level of participation of stakeholders in an intervention, its design, and its monitoring and evaluation. Reflection on these questions will help determine what kind of education, participation, communication, or mix thereof is most appropriate and what kinds of results can best be pursued.

REFERENCES

- Ajzen, I., & Fishbein, M. (1985). *Understanding attitudes and predicting social behaviour*. Englewood Cliffs, NJ: Prentice Hall.
- Dillon, J., & Wals, A. E. J. (2006). On the dangers of blurring methods, methodologies and ideologies in environmental education research. *Environmental Education Research*, 12(3/4), 549–558.
- Dutch Learning for Sustainability Program. (2004). *Learning for sustainable development: From the margin to the mainstream*. Utrecht: SenterNovem, available at http://www.senternovem.nl/mmfiles/learning_sustainable_development_tcm24-117459.pdf (accessed June 16, 2007)
- Dyball, R., Brown, V. A., & Keen, M. (2007). Towards sustainability: Five strands of social learning. In: A. E. J. Wals (Ed.) *Social learning towards a sustainable world* (pp. 181–194). Wageningen: Wageningen Academic Publishers.

- Feagin, J., Orum, A., & Sjoberg, G. (Eds.) (1991). *A case for case study*. Chapel Hill: University of North Carolina Press.
- Hubeek, F. B., Geerling-Eijff, F. A., Kroon, S. M. A. van der, & Wals, A. E. J. (2006). *Van adoptie tot duurzame stadswijk: natuur- en milieueducatie in de praktijk. [From 'adopt a chicken' to sustainable urban communities: EE in practice]*. WOT Rapport 18, Wageningen.
- Keen, M., Brown, V. A., & Dyball, R. (Eds.) (2005). *Social learning in environmental management: Towards a sustainable future*. London: Earthscan.
- Martens, S., & Spaargaren, G. (2005). The politics of sustainable consumption: The case of the Netherlands. *Sustainability: Science, Practice, & Policy* 1(1), 29–42. Available at <http://ejournal.nbii.org/archives/vol1iss1/0410-009.martens.html> (accessed June 16, 2007).
- Merriam, S. B. (1998). *Case study research and case study applications in education*. San Francisco: Jossey-Bass Publishers.
- Proost, M. D. C., & Wals, A. E. J. (2005). *Gidsprincipes voor monitoring en evaluatie in Telen met Toekomst. [Guiding principles for monitoring and evaluation for Growing for the Future]*. Unpublished paper. Wageningen: Wageningen University.
- Sollart, K. M. (2004). *Effectiviteit van het natuur- en milieueducatiebeleid. [Effectiveness of environmental education policy]*. Wageningen: Natuurplanbureau.
- Spaargaren, G. (2003). Sustainable consumption: A theoretical and environmental policy perspective. *Society and Natural Resources*, 16, 687–701.
- Spaargaren, G., Martens, M., & Beckers, T. (2006). Sustainable technology in everyday life. In: P. P. Verbeek & A. Slob (Eds.), *User behavior and technology development: Shaping sustainable relations between consumers and technology* (pp. 107–118). Frankfurt am Main: Springer Verlag.
- van der Hoeven, N., Wals, A. E. J., & Blanken, H. (2007). *De akoestiek van sociaal leren: handreikingen voor de inrichting van leerprocessen die bijdragen aan een duurzamere wereld. [The acoustics of social learning: Stepping stones for designing learning that contributes to a more sustainable world]*. Utrecht: SenterNovem.
- Van Koppen, K. (2007). Social learning for sustainability in a consumerist society. In: A. E. J. Wals (Ed.), *Social learning towards a sustainable world* (pp. 369–383). Wageningen: Wageningen Academic Publishers.
- Verreck, K., & Wijffels, K. (2004). *Zet een boom op in de wijk, over bewonersparticipatie en duurzaamheid. [Make a statement in the neighborhood: Citizen participation in sustainability]*. Den Haag: Dienst Stadsbeheer.
- Wals, A. E. J., & Jickling, B. (2002). "Sustainability" in higher education from doublethink and newspeak to critical thinking and meaningful learning. *Higher Education Policy*, 15, 121–131.
- Wals, A. E. J. (Ed.) (2007). *Social learning towards a sustainable world*. Wageningen: Wageningen Academic Publishers.
- Yin, R. K. (1989). *Case study research: Design and methods*. Beverly Hills, CA: Sage.
- Yin, R. K. (1993). *Applications of case study research*. Beverly Hills, CA: Sage Publishing.