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Bjarne Bruun Jensen

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Knowledge, Action and Pro-environmental Behaviour

BJARNE BRUUN JENSEN Danish University of Education

SUMMARY This article begins by clarifying and discussing the concept of ‘pro-environmental behaviour’, which (implicitly) constitutes the central concept—or aim—of environmental education in the article. This is followed by a discussion of the concept of knowledge per se and its position in working with environmental problems. These two concepts require further refinement if research efforts are to make a contribution to the development of environmental education. A few examples and conceptual models will be proposed to clarify the discussion. Finally, comments and suggestions are offered for an elaboration of the model proposed by Kollmuss and Agyeman. This present article primarily draws on research and insights into environmental education in schools. Furthermore, the article primarily explores work with environmental problems in Danish schools and focuses on the general pedagogical dimensions of work done in schools in order to relate these directly to issues discussed by Kollmuss and Agyeman.

Environmental Behaviour and/or Environmental Action?

First, I would like to express my gratitude to Kollmuss and Agyeman (2002) for having collected and systematised a large part of the research and surveys that shed light on the dynamic behind the development of environmental behaviour. Their work is commendable, and what follows does not so much critique their work, as contribute to the clarification of a number of their central concepts.

The debate on the educational and research related aspects of environmental education is characterised by a lack of clarity concerning the two concepts ‘action’ and ‘behaviour’. Kollmuss and Agyeman define ‘pro-environmental behaviour’ as the sort of behaviour ‘that consciously seeks to minimize the negative impact of one’s actions on the natural and built world …’ (p. 240). At first sight, it might seem that the two concepts are interchangeable according to this definition, but later on it is stated that ‘behaviour’ only refers to those personal actions that are directly related to environmental improvement, that is to say, direct environmental action. Pro-environmental behaviour thus becomes
a sub-set of environmental action. However, the authors neglect to account for the grounds for, or the advantages of, such a narrow definition of the concept of action.

Research within the Research Programme for Environmental Education at the Danish University of Education has over a period of ten years approached the subject of environmental (and health) education through what is known as ‘the action competence approach’ (Jensen & Schnack, 1997; Jensen et al., 2000). The following provides a brief outline of some of the central concepts underlying this work, and this clarification will facilitate a critical appreciation of ‘pro-environmental behaviour’ as the basis of environmental education.

In today’s teaching, the so-called action approach is extremely popular and thereby it is inevitably understood and operationalised in very different ways. Therefore, a definition of the action competence concept of action has been fundamental for our work within the research programme.

First of all, prior to any action, there must be a conscious making up of one’s mind. This is not necessarily the case with behavioural change as this concept is often viewed (although it is defined differently by Kollmuss and Agyeman), and behavioural approaches are often used to influence or even manipulate pupils to adopt pre-prescribed behaviour.

Secondly, activity-based teaching is often described as being action oriented. Such activities may consist of physical, chemical and biological investigations of a polluted lake or they may embrace social science oriented activities such as interviews or document-analysis. Such activities are obviously valuable and productive to the extent that they facilitate motivation and the acquisition of knowledge. But in order to be characterised as actions, they must be targeted at effecting real change regarding the environmental problem that is being worked on.

To sum up, an action should be directed at solving a problem and it should be decided upon by those preparing to carry out the action. In other words, an action is targeted at a change: a change in one’s own lifestyle, in the school, in the local or in global society. This approach implies that action in environmental education embraces indirect as well as direct actions; for example, demonstrating against traffic conditions is as valid an approach as cleaning up litter.

In addition to this, actions might be individual as well as collective, which themselves could be direct as well as indirect. The model in Fig. 1 illustrates the different combinations.

In a school context, actions carried out as integrated parts of teaching will often be collective. The example shown in Table 1 illustrates the actions taken by pupils in an environmental education project carried out in the Danish town Jægerspris (see Jensen et al., 1995 for a detailed description). All pupils at three schools in the community took part in an environmental education project. As an integral part of the project pupils were required to develop their own visions and then take adequate action in order to realise their visions. Table 1 lists nine of the most typical actions taken by the pupils. The figures on the right show the number of groups of pupils who initiated actions in each category (typically, five to ten pupils were in each group).

Table 1 shows that the actions taken include both direct and indirect ones. In evaluating the project, approximately one year after the project’s conclusion, the changes noted are shown in Table 2.
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FIG. 1 Four types of action.

<table>
<thead>
<tr>
<th>Direct actions</th>
<th>Indirect actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Collective</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 1. Environmental actions in the Jægerspris project

1. Applications sent to the local government’s departments 18
2. Cleaning (gathering of litter from streets, beaches, ditches, etc.) 12
3. Articles in the local newspaper 10
4. Written petitions (complaints, requests, etc.) to private companies: 6
5. Embellishments (painting lamp-posts, stones, improving playgrounds, etc.) 6
6. Written petitions (applications, etc.) to local village boards 5
7. Establishment of compost containers 5
8. Hanging up of posters regarding environmental issues (e.g. traffic safety) 5
9. Demonstration against traffic conditions (150 pupils) 1

Table 2. Environmental changes related to the Jægerspris project

- Jægerspris city council has earmarked DKK 1,000,000 for the reorganisation of traffic in the Lyngerup area (roundabout, etc.)
- Establishment of Toronto-flash and zebra crossing by one of the schools
- Reduction of speed limit to 30 mph by one of the schools
- Speed reduction measures on Jægerspris high street
- Planting of trees along the cycle paths between two neighbourhoods (Kyndby Huse and Dalby)
- Intensified local media debate on traffic between local politicians and citizens
- Extension of playground in the Gerlev area
- Establishment of basketball court in Gerlev
- A meeting and activity place for adults and children in Kulhuse
- Establishment of a children’s village board as part of the village board in the Landerslev area
- Resources have been earmarked for two teachers to maintain contacts between the schools and the technical department of the municipality
- Establishment of compost containers
- Lamp-posts painted, birdhouses put up, shrubs planted and roadsides, ditches and beaches cleaned

The overall conclusion of the evaluation is that the many changes related to the Jægerspris project suggest that the school (and the pupils) do actually have possibilities for acting as a catalyst for environmental changes in the local
community. At the same time, the project also indicates that this possibility only exists if a number of preconditions are fulfilled. The evaluation of the project sets out to specify and discuss these preconditions.

An analysis of the benefits of the various initiated actions and obtained experiences lies beyond the scope of this article. Instead, its purpose is to illustrate that the concept of pro-environmental behaviour appears to be too narrow to encompass and describe the perspectives in this environmental education project. A number of changes, for instance, were in fact direct environmental actions (e.g. reduced speed limits), which came about as a result of pupils taking direct environmental action (e.g. demonstrations against traffic conditions).

To summarise, the concept of pro-environmental behaviour—even when defined in action terms—exhibits several problematic aspects. These include: (1) marginalisation of indirect environmental action; (2) restriction of action and behaviour to individuals; and (3) an assumption that today’s complex environmental problems can be tackled through unambiguous means (through the notion of ‘pro-environmental behaviour’). This environmental education project illustrates that this theoretical framework is too narrow and out of tune with both the complexity of contemporary environmental problems and an educational tradition based on action and democracy (the aim of which is to educate students to become critical and active citizens).

Based on this and numerous other examples—drawn from both environmental and health education—a more open concept of action is needed, which covers more than the concept of pro-environmental behaviour as defined by Kollmuss and Agyeman.

The Role of Knowledge—Revisited

Following this discussion of the theoretical background to Kollmuss and Agyeman’s article, I will now focus on one of the issues that is thoroughly analysed in the article, i.e. the correlation of knowledge and pro-environmental behaviour.

Based on several studies, Kollmuss and Agyeman conclude that there is no apparent correlation between knowledge and pro-environmental behaviour: ‘... The longer the education the more extensive is the knowledge about environmental issues. Yet more education does not necessarily mean increased pro-environmental behaviour ...’ (p. 248). Studies conducted by Kempton et al. (1995) are cited to support the conclusion that ‘... environmental knowledge per se is not a prerequisite for pro-environmental behaviour ...’ (p. 250). In the discussion, Kollmuss and Agyeman argue that it might be fruitful to distinguish between different levels of knowledge, yet without specifying in any detail what these levels might involve (although it is mentioned that some studies have shown that very detailed technical knowledge does not seem to foster pro-environmental behaviour). The aim of the following section is to take this discussion a step further.

It is certainly true that knowledge does not per se lead to environmental action or the development of pro-environmental behaviour. However, this insight can have a number of consequences, one of which is that interest is often directed toward the development of other factors, such as values, motivation, teachers as role models, etc. But instead of throwing the baby out with the bath water,
knowledge should still be acknowledged as one—among many—important preconditions for the development of competence leading to action and behavioural adjustments in relation to the environment.

The fact that knowledge does not _per se_ lead to action and behavioural change is due to a number of factors. The following will now be examined here:

1. Traditional knowledge about the environment as it is taught in school is not in essence action oriented.
2. Environmental education at school has traditionally focused on passing on knowledge to pupils, who have thus not been afforded the possibility of actively appropriating and internalising that knowledge.

We are, therefore, confronted with the question of which forms of knowledge might further the development of pupils’ competence for taking action and effecting behavioural change in relation to the environment, as well as the ways in which students may actively acquire this knowledge. These two requirements are often perceived as being irreconcilable: how can one involve students in the process as active participants on the one hand, while at the same time ensuring that the knowledge they acquire is action oriented?

However, working with students as active partners engaging in dialogue with them in an action-oriented form of environmental education does not render environment ‘content’ superfluous. Instead, it has to be re-thought from an action perspective. The Danish psychologist Steen Larsen argues for the necessity of:

> [...] the professional experienced teacher, being in natural control of the substance. And what does that mean? That means that the content substance is controlled at a level such that it becomes an integral part of the teacher’s personality, so he does not need to use attention and resources on the professional side but can concentrate all his energy on choreographing the educational process. (Larsen, 1998, p. 22)

We are naturally left with the question of what this ‘substance’ should comprise. In the following, I will argue for an action-oriented approach that involves an interdisciplinary connection between environment, people, culture and society. If the main goal of environmental education is the development of the student’s ability to act and effect change, it follows that associated knowledge and insight should in essence be action oriented. This has significant consequences for the kind of knowledge that will be the focus of planning, implementing and evaluating teaching and learning in environmental education.

Four different aspects of action-oriented knowledge can be illustrated using the model in Fig. 2. The four dimensions illustrate different perspectives on the types of knowledge through which a given environmental problem can be viewed and analysed.

1st Dimension: What kind of problem is it?—knowledge about effects

The first dimension deals with knowledge about the existence and spread of environmental problems. This type of knowledge can, for example, be about the consequences of acid rain or deteriorating air quality in urban areas or in the
workplace. This knowledge is important, as it might help to rouse our concern and attention, thereby creating the starting point for a willingness to act. So this type of knowledge can be one of the prerequisites for developing pupils’ competence to take action and change behaviour. However, this form of knowledge is mainly scientific in nature and, in isolation, it might have an adverse effect by contributing to growing concern and ‘action paralysis’ among students as it affords no explanation for why we have these problems, let alone how we can contribute to solving them.

2nd Dimension: Why do we have the problems we have?—knowledge about root causes

The next aspect deals with the ‘causal’ dimension of environmental problems. Such causes include, among other things, the associated social factors influencing our behaviour, e.g. the structural conditions behind the development of industrialised agricultural production, the conditions for public transport versus private cars, etc. This knowledge belongs mainly in the sociological, cultural and economic spheres.

3rd Dimension: How do we change things?—knowledge about strategies for change

This dimension deals with both knowledge about how to control one’s own life and how to contribute to changing living conditions in society at large, and thus embraces direct as well as indirect possibilities for action. How do we change surrounding structures, for example in a school, a workplace, or a local community? Who do we turn to, and with whom could we ally ourselves? This type of knowledge also includes knowing how to encourage cooperation, how to analyse power relations, and so on. It is often found in psychological, political and sociological studies and is central to an action-oriented form of environmental education.
4th Dimension: Where do we want to go?—knowledge about alternatives and visions

The fourth dimension deals with the necessity of developing one’s own visions. Seeing real possibilities for forming and developing one’s dreams and ideas for the future in relation to one’s own life, work, family and society, and having the support and surplus energy to realise them, is an important requisite for the motivation and ability to act and change. This dimension includes knowing about how people go about things in other cultures and other places, both near and far, as knowledge about other possibilities can be a powerful source of inspiration for developing one’s own visions.

Two Landscapes of Knowledge

Traditional environmental education could be placed on the first dimension axis: the one which is concerned mostly with knowledge of the effects of environmental problems. The scientific approach is dominant in this type of information, and the focus is on students attaining/acquiring knowledge about the serious problems that might affect them, how quickly such problems are evolving, and so on.

This type of knowledge is not necessarily conducive to action, especially when taken in isolation. Indeed, as noted earlier, such knowledge can create a great sense of worry, and if it is not supported by insights into causes and strategies for change, then it may contribute to weakening commitment and result in paralysis. The reasons for this apparent lack of correlation between knowledge and action/behavioural change now become obvious, since the type of knowledge students acquire by working with environmental problems is mostly limited to a scientifically oriented perspective concerned with effects.

Many of the so-called ‘hands-on’ activities that take place in the context of environmental education are often equally scientifically oriented, which means that students get ‘hands-on experience’ of the effects of environmental problems without necessarily gaining insights into the possible solutions to—let alone the root causes of—these problems. Therefore, we need to insist on including causal analyses and ways of producing change within environmental education. This is particularly important at a time when increasing globalisation and individualisation is leading to habitual ways of thinking and action paralysis.

The left-hand model in Fig. 3 illustrates the landscape of knowledge within which traditional environmental information exists. In contrast, the right-hand model of the figure indicates the landscape of knowledge, which an action-oriented form of environmental education should strive to explore and develop.

The model has been used in evaluating and analysing environmental (and health) education and it has been used as a tool in several projects within environmental and health education in Denmark. Both students and teachers have used it to plan and analyse their work. For example, a ninth-grade student comments on how using the model influenced her thinking processes:

The material which I had collected was given more structure. Now I was able to sort the material based on the four areas in the model. And this ‘forced’ me to not only look at the effects and causes in relation to my subject concerning CO₂ pollution and the greenhouse effect. I was also forced to deal with alternatives and possibilities for change. The
model is also good when you’re ‘stuck in a rut’. The model shows other ways of getting along. (Schmidt, 1999, p. 12)

Therefore, the knowledge base should be thoroughly thought through in the light of an action- and change perspective. A participatory and action-oriented form of environmental education does not rule out basic knowledge and insight: on the contrary, it requires the development of a new ‘landscape’ of extensive and coherent knowledge and insight. This creates important/significant demands and challenges for future teachers, who should be in a position both to fulfil the role of consultant and, furthermore, draw on their own experience and talent to perceive today’s environmental conditions from an inter-subjective and action oriented point of view. Future research will show whether these concepts and demarcations will enable us to clarify the links between knowledge and change of behaviour and action in the field of environmental education.

**Some Concluding Remarks**

The basic pedagogical considerations at the heart of the approach outlined here are:

1. Environmental issues in our societies are influenced by living conditions as well as life-style choices.
2. Solutions to environmental problems must be sought at both the structural/ societal level of living conditions as well at a personal/life style level. If individuals are to contribute to the solutions, they have to be able to identify both personal and structural causes, and develop their own visions and abilities to influence and change these conditions.
3. As institutions for general education, schools have a responsibility to help equip the members of society in their charge, their students, with the knowledge and commitment to take personally meaningful decisions and action to address the challenges posed by both lifestyle and societal conditions.
4. Consequently, the overall aim of environmental education at school is to develop the abilities of students to act at the personal and societal levels, that is, to increase their action competence.

These considerations lead to a concept of action competence as the overall aim for environmental education. However, the aim of changing pupils’ behaviour in a pre-determined direction implicitly builds on some questionable assumptions. The model proposed by Kollmuss and Agyeman aims at summarising the studies and discussions reviewed in their article. And it does so in a very elegant and simple way. Nevertheless, the above discussion gives rise to a number of comments on the model:

- It should be reconsidered whether pro-environmental behaviour/direct action can profitably be put up as the ‘be-all and end-all’ of the model. If the underlying assumption is that environmental problems are structurally anchored in society, an adequate concept of action must encompass both direct and indirect action.
- Indirect action features in the model as a small arrow pointing from ‘internal factors’ to ‘external factors’. As a result, the fact that indirect environmental action too is subject to a number of constraints (e.g. external factors) is obscured.
- ‘Environmental consciousness’ is an interesting element in the model, consisting of a complex of ‘...knowledge, values, and attitudes together with emotional involvement ...’ (p. 256), which approaches the concept of ‘action competence’ developed in the Danish context. If environmental problems are fundamentally viewed as ‘open social questions’, it might be pertinent to include people’s ‘visions’ and ‘critical thinking skills’ in ‘environmental consciousness’.
- The model does not distinguish between individual and collective action, which is a fundamental distinction concerning action-oriented approaches in environmental education at school.

Notes on Contributor

BJARNE BRUUN JENSEN is Professor and Director of the Research Programme for Environmental and Health Education at the Danish University of Education. He has been conducting research within Environmental Education, Health Education and Health Promoting Schools. He is the coordinator of the Danish network of Health Promoting Schools. The following key issues have been in focus of the research: pupils’ actions and action competence, potentials and barriers for pupils’ participation, collaboration between school and community on an action-oriented health and environmental education and children as catalysts of environmental change. Correspondence: Research Programme for Environmental and Health Education, Danish University of Education, Emdrupvej 101, DK-2400 Copenhagen NV, Denmark. Tel. +45 39 69 66 33. Fax. +45 39 66 70 10. E-mail: bjb@dpu.dk
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