This is the published version


Available from Deakin Research Online

http://hdl.handle.net/10536/DRO/DU:30051013

Reproduced with the kind permission of the copyright owner

Copyright: 2012, Taylor & Francis
43

Critical Action Research and Environmental Education

Conceptual Congruencies and Imperatives in Practice

ROBERT B. STEVENSON
James Cook University, Australia

IAN ROBOTTOM
Deakin University, Australia

In this chapter, we examine the use of action research or participatory (action) research approaches to environmental education. We begin by offering a conceptualization of our critical view of action research by identifying what we consider its key characteristics. We then use these characteristics to analyze the ways in which it can be viewed as different from other research genres and to argue the conceptual congruency between critical action research and a critical orientation to environmental education. Three case studies then follow of the use of action research in environmental education projects in Australia, Europe, and an Australia–South Africa partnership. Finally, drawing from these case studies, we identify four imperatives for action research in environmental education: those of authentic active participation (beginning with agenda setting), contextual connections, relational practice, and individual, interpersonal and institutional capacity building.

Conceptualizing Action Research

The now extensive literature on action research, or participatory (action) research, makes clear that it is not a discrete term for one particular form of inquiry. There are a diverse range of meanings and interpretations of action research, but also some commonalities and recurrent themes. Action research developed in different places and circumstances from different traditions and with different emphases. It not only has a long history in education, being relevant to all educators (e.g., teachers, administrators, nature interpreters, museum guides) and other educational stakeholders and partners, but also has an important history in many other fields, such as social work, health care, management and, more recently, natural resource management.

A significant part of this history in education is the work of the late Lawrence Stenhouse, a noted British curriculum scholar, who advocated the role of teachers as researchers in Britain. He believed that “curriculum research and development ought to belong to the teacher” (p. 142) because...

... the uniqueness of each classroom setting implies that any proposal—even at school level—needs to be tested and verified and adapted by each teacher in his own classroom. The ideal is that the curricular specification should feed a teacher’s personal research and development programme through which he is progressively increasing his understanding of his own work and hence bettering his teaching. . . . (Stenhouse, 1975, p. 143)

Stenhouse’s work was influential in shaping action research work in Australia and the teacher researcher movement in the UK and the United States. Educational action research became defined as simply as “research into practice, by practitioners, for practitioners” (Grundy & Kemmis, 1981), and more specifically as “a systematic and intentional inquiry by teachers in order to make sense of their practices and improve them” (Lomax, 1994, p. 115). These definitions make clear that there is a central positioning of practitioners or anyone working as an “insider” in an educational setting that is a common characteristic of most versions. External stakeholders or partners, such as university researchers, may be involved as collaborators or co-participants in the inquiry, because they either have an interest in the problem or bring relevant skills or resources (Anderson, Herr, & Nihlen, 1994), but action research should involve educators (and other inside stakeholders) as the primary actors, with any outsiders participating as collaborators at the invitation of the inside researcher(s). In other words, irrespective of the involvement of outsiders, an essential characteristic for us is that the research agenda and process is controlled by those individuals or
groups who are engaging an issue of their practice. Put simply, action research involves participants in researching their own practice, not researching other people’s practice.

Second, as the name implies, action research is action-oriented. Unlike other research genres which frown on intervention in the research setting and where the researcher is conducting an inquiry in order for other people to later decide what action(s)—if any—should be taken, action research involves taking immediate action to address a particular concern or situation, usually in cycles that integrate action and reflection. Neither action nor reflection, however, should be isolated or haphazard, but a systematic and deliberative form of inquiry should be followed.

Methodologically as a form of inquiry, action research is characterized by a systematic process of recursive cycles of action and reflection that is responsive to evolving understandings and circumstances. Kurt Lewin, who has been credited by many as the founder of action research, developed a theory of action research based on a spiral of planning, fact-finding, and execution which was later interpreted by Kemmis and McTaggart (1988) as recursive cycles of planning, acting, observing, and reflecting (McNiff, 2002). This process, which has become a common methodology for action research, is iterative in that plans, actions, and goals are continually changed and refined as new learning occurs as a result of completed cycles. The cycles, however, are rarely as straightforward, linear, or tidy in practice as the simple description may make them seem. Cycles frequently become intermingled and multiple cycles often take place in parallel. Yet, the benefit of the (seemingly straightforward) four phase cycles as a heuristic is that it is compatible with the rhythms of thoughtful teaching and what reflective practitioners do intuitively. At the same time, it pushes the researcher toward a more systematic process, while allowing for a questioning of the taken-for-granted and a continual revisiting of visions, issues, and practices. Thus, the methodology of action research recognizes that our understanding of educational practices and situations is always tentative or “partially correct and partially in need of revision” (Noffke, 1995, p. 5).

A fourth characteristic is that action research is concerned with the practical—"the everyday practical problems experienced by teachers, rather than the ‘theoretical problems’ defined by pure researchers within a discipline of knowledge" (Elliott, 1978, p. 356). The focus on practical problems is not intended to suggest that action research is only concerned with techniques, strategies, or "nuts and bolts," or to exclude an intellectual question about a problematic situation that may provide the starting point. Nevertheless, for most the concern is with practical issues associated with human actions and social situations. The purposes or intent of action researchers, as reflected in the scope of their endeavors, range widely and differ in relation to the kinds of issues addressed and transformations sought.

In keeping with Stenhouse’s (1981) view that research is “systematic self-critical inquiry made public,” another important characteristic is that the intentions, process, and outcomes of action research are publicly shared. First, this is necessary so that one’s knowledge claims and theories can be scrutinized by others. Issues of trust and willingness to subject one’s thoughts and practices to critical scrutiny are obviously major concerns that must be addressed for a critical dialogue to take place. Second, making inquiry public for other people concerned by and interested in the concern and practices being studied can be viewed as a professional responsibility and obviously a necessary one if the work is to contribute to a professional knowledge base.

Critical Action Research

Having described five important general features of action research, it is important to now examine some distinguishing characteristics of our preferred version which has been labeled “critical action research.” Some versions of action research focus on solving local problems by following the usual procedures of traditional positivistic or, more often, interpretive naturalistic research, but on a scale that is sufficiently small for practitioners to use. For example, a common approach in education, often termed classroom action research, typically involves the use of interpretive modes of inquiry and qualitative data collection by teachers in order to make decisions about how to improve their own classroom practices (Kemmis & McTaggart, 2000). This approach parallels traditional research in that data are collected in order to make decisions about what actions to take to try to be more effective. Unfortunately, many of these versions we have observed also focus exclusively on the technical aspect of teaching strategies without examining one’s purposes—or the broader contextual factors that shape teaching and schooling.

Such versions do not challenge the epistemological assumptions of traditional research. Stenhouse viewed curriculum as a process, rather than a product, in which teachers engage in curriculum theorizing by generating and testing their theories from their efforts to change curriculum practice. Thus, theory is constructed from practice rather than generated externally (in universities and policy bodies) and then applied by teachers in their classrooms. Teacher action researchers construct new understandings of their practice from self-critically reflecting on their experience of their contextually situated practice in relation to their espoused intentions and values, which in turn leads to new actions and further critical reflections on those actions. This process is based on the premise that knowledge arises from and for action. Such knowledge has been referred to as coming to know through experiential (Heron & Reason, 1997) or personal ways of knowing that are derived from tacit knowledge (Polanyi, 1962). In summary, in critical action research there is a dialectical relationship between knowledge and action such that understandings and actions emerge in a continuous process or cycle of action and reflection (McNiff, 2002; Noffke, 1995). Action research, therefore, we believe involves developing understanding of both one’s theory and practice from critical reflection on action.
There is also an assumption in the kinds of classroom action research just described that significant improvements in teaching can be made without the need for broader institutional and community support and social change—contradicting the literature on educational change (Kemmis & McTaggart, 2000). Stephen Kemmis added an important dimension to Stenhouse’s work by drawing attention to “the socially and politically constructed nature of educational practice” (McNiff with Whitehead, 2002, p. 45). This involves recognizing the contextual factors that influence curriculum, teaching, and educational change and therefore the need to address the broader structures and conditions in which educational practices take place. Organizational structures and cultures, power relations within both institutions and the larger society, and political and educational discourses are all treated as important influences on educational practices and situations. Besides reflecting inwardly on intentions and actions, reflection and analysis are directed outward toward the factors and situations that circumscribe practice. Given that an improved situation may be necessary for improved practice to be possible, reflection should be aimed at ways of removing, reducing, or working within and around influences that result in “unjust, irrational, unproductive or unsatisfying” ways of thinking and working (Kemmis & McTaggart, 2005, p. 567). This kind of critical reflection demands the incorporation of a concern for broader social analyses for understanding and attempting improvements. This means not only trying to be more effective, but also more just and rational. Thus, the focus is on efforts to remake and reframe one’s situation by addressing distortions, contradictions, incoherencies, and injustices that have been socially or historically constructed (Kemmis & McTaggart, 2000). Critical (action and) reflection therefore can be characterized as including the examination of the justice and rationality of one’s practices and the ways in which they are shaped by structures in the broader society (Kemmis & McTaggart, 2005).

Other lists of characteristics can be found in the critical action research literature (see Kemmis & McTaggart, 2005; Anderson, Herr, & Nihlen, 2007). However, to summarize, in our view action research involves:

- practitioner-researchers in studying their own practice;
- an action orientation;
- a systematic process of recursive cycles of action and reflection that is responsive to evolving understandings and circumstances;
- a concern for practical issues;
- developing understanding of both one’s theory and practice from critical reflection on action;
- critical reflection which includes examining the justice and rationality of practices and the ways in which they are shaped by broader social structures; and
- public sharing of the intentions, processes, and outcomes of the research.

Although, as we’ve pointed out, there are issues of contention within each of these characteristics, they help to distinguish action research from other genres of research.

**Critical Action Research and Other Research Genres**

Drawing from the seven characteristics that have been identified, action research can be summarized as differing from other research genres in at least four significant ways: (1) the role of the researcher(s) as also the subject(s) of study; (2) the inclusion of interventions or actions as part of the research process; (3) the epistemological position that understanding can emerge from action, rather than only inform action; and (4) the recognition that practitioners can generate knowledge and theory, not just specialist external researchers, usually based in universities.

The conceptualization of knowledge use and the place of actions or interventions in action research are quite different from other research genres. Academic research, particularly within an empirical-analytic tradition, is usually conducted within a knowledge creation, dissemination, and utilization model in which educators are assumed to be the end users, consumers, or implementers of the products of research. The task of inquiring into and theorizing about educational practice is viewed as the responsibility of the academic researcher and not the practitioner. The latter is expected to be involved only in the utilization phase and to instrumentally use particular propositional knowledge generated by research on the assumption that such knowledge generated in other educational settings should be “used to direct specific decisions and/or interventions” (Estabrooks, 2001, pp. 283–284).

This assumption can be questioned on at least three grounds. First, educators work in complex situations where most practices and circumstances are filled with rich sets of particulars (including conflicting information) that researchers are unable to take into account but must inform educators’ (often dilemma-ridden) decisions about their educational practices. In other words, research-generated knowledge is only one of a number of factors that educators have to consider in making pedagogical or leadership decisions. Second, research on teacher thinking indicates that “teachers develop and hold implicit theories about their students, about the subject matter they teach, and about their roles and responsibilities and how they should act” (Clark, 1986 cited in Eraut, 1994, p. 72). In other words, educators are constantly involved in interpreting their world and “theorizing,” albeit usually implicitly, about their intentions and actions. Simply stated, educational practitioners are engaged, like social scientists, in drawing inferences and making judgments based upon their interpretations of social reality (Codd, 1989). Third, as constructivist learning theory makes clear, individuals’ existing knowledge influences their understanding and interpretation of new knowledge. In this view, knowledge is treated not as static but as constantly being constructed and reconstructed by the user.
Action research builds on the propensity of many educators to continually reflect on and improve their work, but provides a more systematic, more rigorous, and more collaborative means of doing so. The process of recursive cycles of action and reflection enables educators to inquire into and be constantly constructing and reconstructing knowledge of their own practice as they try out different ways of improving their practice consistent with the unique context in which they each work.

Unlike traditional positivist research in which the goal is to prove something (or more accurately, disprove or disconfirm a hypothesis) as representing a universal law or generalization, action research seeks to directly improve practice, or some aspect of it, in a particular situation. And unlike interpretive research where the purpose is limited to understanding and interpreting a situation, the intent of action research is to produce change as well as understanding. In other words, action researchers are not trying to generate laws or just understand a situation better, but are working in a situation to improve it. They are trying to make their practice and their situation better—both more effective and, for critical action researchers, more just.

Yet, the epistemological belief underlying action research that understanding can both emerge from and inform action can challenge the privileged position of university researchers as the sole producers of knowledge, as well as that of centralized educational policymakers as the authorities on curriculum, teaching, and educational reform. Recognizing that practitioners can be engaged in knowledge generation can threaten to alter existing relations of power.

Only a relatively short time ago, the scientific method was generally regarded as the only legitimate approach to systematic inquiry or research. Since then, beginning in the 1960s, a “linguistic and cognitive turn has swept the social sciences and humanities” (Reason & Bradbury, 2001). The cognitive turn “focused on the cognitive structures (schema or mental models) which allow us to make sense of the world” while the linguistic turn “looked at the hitherto underestimated role of language in our construction of our world in which we are always seeking to make (or give) sense” (p. 5). This evolution and acceptance of other research genres has accelerated over the past decade.

New research paradigms usually emerge in response to perceived limitations of and challenges to existing ones. The postmodern/poststructuralist emphasis on the metaphor of text is seen as limiting by some because there is little concern for the relationship of discourse, narrative, or the crisis of representation to knowledge in action (Reason & Bradbury, 2001). And as Lather adds: “The question of action...remains largely under-addressed within postmodern discourse” (1994, p. 12). Now, argue Reason and Bradbury, it is time for “the action turn.” Apparently, the editors of the above mentioned handbook agree as they have added a participatory (action research) paradigm to the three paradigms that were identified in the first edition of the handbook—nearly twenty years after Lewin and Stenhouse’s work was shaped into a claim for action research as a distinct form of educational research (Carr & Kemmis, 1983). Clearly, the acceptance of new research genres does not happen overnight.

The Coherence of Action Research and Environmental Education

As already argued, action research is about learning for and from inquiry into the intentional transformation of practice—as well as the transformation of educational situations that circumscribe and constrain practice (Kemmis & McTaggart, 1988). Put simply, it is about improving a situation and/or practice of concern.

Environmental education is also concerned with transforming situations and practices—with transforming ecologically unsustainable situations and practices and the values that underlie individual and public decision making, from those which aid and abet ecological (and human) degradation to those which support a sustainable planet in which all people live with human dignity. Such transformations of environmental situations and practices are of course political in nature, but the politically (and socially) constructed nature of educational practice is also made explicit in the critical or emancipator conceptualization of action research developed by the influential Deakin University group of action research scholars in Australia. They argued that the purpose of transforming practices and situations is to create not only a better or more effective educational system, but a more just and compassionate society—to which we would add, a more ecologically sustainable society.

The correspondence in the goals of critical orientations to action research and environmental education (EE) is matched by a shared participatory or action taking dimension as well as a methodological approach grounded in critical inquiry. Action research offers a systematic process of change through critical inquiry on explicit interventions or actions. EE has been similarly conceptualized in EE/ Education for Sustainability (EEdS) discourse, at least by socially critical scholars, as a process of critical inquiry into environmental issues and concerns and the taking of actions to address those issues or concerns. For example, besides developing knowledge of and sensitivity to environmental concerns, EE is intended to offer opportunities to thoughtfully and critically appraise environmental situations, to make informed decisions about such situations and to develop the capacity and commitment to act in ways that sustain and enhance the environment (Stevenson & Stirling, 2010).

Finally, there is a shared democratic intent in both critical action research and socially critical EE of enabling people to be their own agents of change and to be responsive to changing conditions and problems rather than having change imposed on them. In other words, action research offers a methodology to assist individuals, groups, and communities to develop the capacity to bring about change in their own situations and practices (Ferreira, Ryan, Davis,
Cavanagh, & Thomas, 2009) such that they become more ecologically sustainable and morally just.

**Case Studies of Action Research Approaches in Environmental Education**

Action research has been used in many environmental education projects as an integrated approach to systematic inquiry (i.e., research) and educational change. We describe three cases to illuminate the kinds of educational situations in which action research can be productively employed. Our intention in this section is not to include full case studies as instances of action research in environmental education, but rather to draw on a number of already-published accounts of such cases to both exemplify characteristics of action research and to extend the conversation about the problematic nature of these characteristics. In doing this we are adopting an approach of reflection upon case study practice, in which “findings from case studies . . . can serve as a heuristic in the form of analytical constructs or categories that readers can use to reflect on their practice, particularly to ‘help them grasp in descriptive and explanatory ways certain aspects of their work that were previously inaccessible’ (Zeichner & Liston, 1996, p. 30)” (Stevenson, 2004, p. 46).

The cases we draw on in this section involve respectively preservice teacher education, curriculum, and professional development of primary and secondary teachers, and professional development of environmental education staff in tertiary institutions. They are:

- **ARIES mainstreaming sustainability into preservice teacher education project:**
  - the European Environment and School Initiatives (ENSI) Project (REFS); and
  - the Australia/South Africa Links (AusLinks) Project (REFS)

**Mainstreaming Sustainability into Teacher Education Programs**

Action research was selected as the methodology for a federally funded project sponsored by the former Australia Research Institute on Education for Sustainability (ARIES) to pilot a participatory system-wide model for embedding or mainstreaming sustainability into teacher education programs. The model, developed from an earlier literature and document review study, was premised on the need for broad engagement with key change agents across the wider teacher education system as well as the active participation of stakeholders within the system. An action research process was chosen because in the first instance the study was not only trying to understand how change is effected, but was also seeking to create change by intervening in and transforming a situation of concern, namely the lack of adequate attention to the preparation of future teachers in environmental sustainability education. The second stated reason for using action research was its perceived conceptual congruence with education for sustainability, as well as with systems thinking. This congruence included the shared characteristics of “critical reflection; and systemic enquiry with a focus on improving a situation of concern” (p. 6) through “an iterative approach to learning-based change” (p. 17) driven by the participants who are viewed as having “the capacity to bring about change within their own situations” (Ferreira et al., 2009, p. 17).

The pilot study was carried out from March to October 2008 (the period of funding support which meant a limitation on the number of action cycles that could be carried out) and focused on a practical and two-fold concern: how can we better connect and engage relevant stakeholders? And how can a combined action research and whole-of-system approach create organizational and systemic change for mainstreaming sustainability in preservice teacher education? In the first phase of the project, a mapping of the teacher education system at the national and state levels enabled the identification, and determination of relationships of influence, of key government (e.g., federal and state departments of education and environment, the state board of teacher registration) and nongovernment organizations (e.g., professional teacher associations and community organizations with interests and expertise in sustainability) as well as key stakeholders (principally teacher education academics and students). This resulted in key change agents and stakeholders being invited to assist in working for change within one or more of three layers of action research that were designated at national, state, and institutional levels. The intent was to engage as many relevant and influential groups as possible in an ambitious effort to bring about system-wide change.

A state level group of project leaders from each of five universities in the state of Queensland, which shared the same teacher registration and policy context for their programs, formed one community of inquiry and reflective practice. These leaders established institutional groups of participants and stakeholders with whom they shared the outcomes of mapping the broader teacher education system in order to then map their institutional subsystem. At the national level, federal government department representatives declined to participate in the action research because they “did not see themselves as ‘directly’ involved in preservice teacher education” (Ferreira et al., 2009, p. 60). However, as important stakeholders, teacher education students from across the five institutions participated as one group in the research and change process. They used social media to facilitate their conversations and deliberations and had the opportunity to present and debate, at a state Student Forum, their vision of sustainability, the role of education in creating a sustainable future and their ideas about the place of sustainability in teacher preparation. This led to the development of a charter expressing students’ concerns about the lack of education for sustainability in their teacher education programs which was presented to the Minister of Education who attended the meeting (Brevitt, 2009).
A range of strategic actions and interventions occurred at both the state and institutional levels. Besides the mapping exercise described, project leaders worked with participants to locate their institutional situation within the roles and relationships of the larger system, to identify what parts they could directly affect, and to develop and compile visions of sustainability in teacher education from which shared visions were created. The questions that guided this research group’s reflections on and analysis of the outcomes of their action cycles addressed the three goals of improving practice, improving understanding of practice, and improving the situation in which the practice occurs (Kemmis & McTaggart, 1988, 2000). These questions, which were addressed in the final report of the project, included:

- Has the situation of concern improved?
- Has the understanding (learning) by the practitioners in the situation improved?
- Has the practice of the action researchers improved?
- Has the understanding of the (action) research practice by the practitioners improved?

The major conclusions drawn in responding to these four questions are summarized here. First, the reported outcomes of the action cycles enacted during the year included improving the situation of concern with respect to engaging and connecting stakeholders, developing relationships and networks, and improving and creating new lines of communication across academic, government, and nongovernment stakeholders. Thus, the project leader group’s concern for connecting and engaging was largely addressed. The other concern of creating systemic change for mainstreaming sustainability in preservice teacher education was more complex and challenging and not surprisingly generated more limited and mixed results. One limitation was the way many stakeholders from the broader system viewed their role as either not in need of change or not directly involved in teacher education and hence more attention was needed “in establishing a shared vision and clarifying their respective role in the preservice teacher education system” (p. 60). Unfortunately, funding ended before additional participatory action research cycles could be enacted to respond more fully to this concern, highlighting the importance of ongoing support for sustaining this kind of inquiry and change process.

The Environment and School Initiatives (ENSI) Project The ENSI project was founded in 1986 under the auspices of the Organization for Economic Cooperation and Development’s Center for Educational Research and Innovation (OECD-CERI). The project has evolved over time and is now viewed as an international network which has supported educational developments, environmental understanding, and active approaches to teaching and learning, through research and the exchange of experiences internationally. The association aims at supporting educational and pedagogical developments that, via research and international exchange of experiences, promote insight into learning for sustainable development, environmental studies, active forms of learning and teaching, as well as education for citizenship (http://www.ensi.org/About_ENSI/). While the history of ENSI has seen several changes in focus, its defining characteristics were perhaps most clearly evident in the first two phases, the first of which is described as follows at the ENSI website:

**Phase 1: 1986–1988**

**ENSI as OECD/CERI Innovation exchange project**

ENSI was established in 1986... with eleven participating countries focusing on the promotion of environmental awareness and such “dynamic qualities” as initiative, independence, and the readiness to accept responsibility. At that time, these relatively new school requirements were not normally related to each other. ENSI centered on the concept of environmentally oriented project teaching, which offered potential for the development of human creativity, intelligence, and organizational skills.

It was self-evident that the experiences of the fundamental partnership (i.e. of teachers and pupils), were of decisive importance in this respect. This led to the development of a number of case studies in some countries, which were written by teachers using an action research method.


The second phase of ENSI is perhaps its most relevant to a chapter on action research in environmental education. In this phase, the project overtly adopted action research as the preferred methodology for participants active in EE “on the ground” to develop reflective accounts of their work for publication in a range of case studies for the ENSI project.

The ENSI project has been highly productive in terms of reports and publications. The following account draws on an article published by one of the present authors (Robottom) who had five years’ experience in this project as a country representative and consultant; the other author (Kyburz-Graber) has over two decades of experience, formerly as a country representative and later as project director.

The ENSI project is based on the assumption that there is a strong case for a form of environmental education premised upon active learning rather than upon the transmission of knowledge, supported by a form of professional development similarly premised upon participatory action research rather than upon instrumentalist, centrally orchestrated teacher in-services (Kyburz-Graber & Robottom, 1999).
Thus the ENSI project is seen as a marked alternative both to conventional environmental education as "education about and in the environment," and to conventional approaches to professional development (which ultimately see the problem of improving environmental education as one of central development of policy and materials, followed by their delivery to schools and teachers for implementation).

In terms of its subject matter emphasis, the ENSI project favors the promotion of activities related to the development of "dynamic qualities in environmental education" such as initiative, independence, commitment, and readiness to accept responsibility. Of more relevance to the focus of this article, the process of the ENSI project, as originally conceived and described in publications since its origination (Elliott, 1995), explores the role of participatory research-based curriculum and professional development strategies, with a specific focus on the establishment of action research as a basis for linking curriculum and professional development in the field of environmental education.

Since its origin thirteen years ago, the project has sought to support teachers to adopt a research perspective on their environmental education work and to help them prepare written accounts of this work . . . (Robottom & Kyburz-Graber, 2000).

In terms of outcomes, the ENSI project has produced reviews of policy developments in several participating countries, as well as country reports that present case studies of actual environmental education practice. One of the features of these country reports, which are essentially case studies of professional development based on action research in environmental education, is that they indicate a wide range of interpretations of action research and an equally wide range of environmental education practices in schools and other educational settings (see, e.g., Kyburz-Graber et al, 1995; Robottom, 1993). Uniformity of curriculum materials was neither an aspiration nor an achievement of the ENSI project (Kyburz-Graber & Robottom, 1999).

Australia/South Africa Institutional Links (AusLinks) Project The project entitled "Educating for Socio-Ecological Change: Capacity-building in Environmental Education, focusing on South Africa’s tertiary educators," was funded by AusAID and administered by IDP Education Australia as one of its Australia/South Africa Institutional Links projects.

The overall focus of the AusLinks project is the professional development of new and existing environmental education staff in participating tertiary institutions. The project was organized into four activities which aimed to develop curricula and materials (Activity 1), enhance existing programs by reviewing courses and planning new courses (Activity 3), and enhance research capacity through reviewing, and developing research supervision strategies and resources (Activity 4). Activity 2, which we will focus on here, sought to enhance research and professional capacity by working with colleagues in a process framed by participatory action research principles aimed at the development of original case studies of changing environmental education practice.

The process by which these principles were enacted is explained in a paper presented by Activity 2 participants at the 1999 annual conference of their national professional association:

In small groups participants shared with others a number of relevant environmental and environmental educational issues. It was decided by consensus that the activity would involve the development of case studies related to the professional contexts of participants and located in the geographical context of their respective workplaces. Guidelines and frameworks were provided by activity coordinators which provided initial structure and ideas. This process was to include development of photographic records of people, places, contexts, and activities to be shared at the next meeting. The project provided participants with cameras for this purpose.

At the second meeting held in the Northern Province, each participant tabled for discussion photographs of aspects of the issues they felt were important in conveying the meaning and significance of the case under study in their own context. Other Activity 2 participants provided feedback on these illustrated reports.

At the third meeting captions were written for the photographs by individual participants and these were shared and discussed with other participants who then made input into the further development and improvement of the text. At this meeting participants also began to develop case study commentaries for presentation at the next meeting.

At the fourth meeting the draft case studies included the commentaries (five to ten pages) and photographs with captions (five to ten lines). These draft case studies were circulated among at least two other participants who provided critical feedback verbally and in the form of annotations on the text (LeGrange et al., 1999).

Further descriptions of the AusLinks project, and an account of emerging issues associated with this approach, are presented in Lotz and Robottom (1998) and in LeGrange, Makou, Neluvhalani, Reddy, and Robottom (1999).

Characteristics of Action Research in Environmental Education As stated at the beginning of this chapter, action research has diverse interpretations. Some of these differences in the way participants interpret and enact
action research are demonstrated in the just described case studies. Even within the ENSI project, there is a range of purposes to which action research has been put. For example, a recent account of ENSI-related action research activities (Kyburz-Graber, Hart, Posch, & Robottom, 2006) reveals a range of expressions of action research reported by participants in the project including:

- Action research as quality assurance;
- Action research as curriculum evaluation;
- Action research as an approach to innovation; and
- Action research as program improvement.

Broad applications of a concept like action research may of course lead to dilution of its potency. There may be a tendency for an educational activity to be reported as an instance of action research on the basis of its dependence on practical activity of some kind, without due regard to the “political theory” (an interest in enhancement of social justice in the social settings of educational work) that drove original conceptions of action research. It is therefore important to look beyond the surface layers of purported action research projects to consider what may be learned about more specific operational aspects of projects that may preserve this political theory. We argued earlier for certain essential characteristics of action research. Our intention now is to draw on the case studies presented above to indicate some of the ways in which these characteristics may be operationalized in practice and some of the issues associated with this operationalization.

**The Imperative of Active Authentic Participation (Beginning with Agenda Setting)** Participatory research (usually in the form of action research) is central to the ARIES, ENSI, and AusLinks projects. In the ENSI project action research was used as a means for teachers to develop curriculum strategies that involve students in a dynamic learning process focused on concrete environmental problems and issues encountered in their own communities at the local level. Unsurprisingly, a fundamental characteristic of action research projects is that it is action-oriented—it entails activity of some kind. It cannot be conducted solely from the armchair of the self-satisfied meta-theorist.

The key point here is that action research entails authentic involvement by participants in all phases of the research, including conceptualization of the research problem, data collection, data analysis, report writing, and dissemination of results. In the common situation where external university-based researchers work with classroom-based practitioners in environmental education there may be a tendency for the research to involve classroom participants at the level of data collection (either actively collecting data themselves or passively as the subjects of researcher observation) in project work driven by the preexisting research questions of the university-based researcher. If action research is to have any meaning, participants ought to have an enshrined role in the setting of research questions as well. In the AusLinks project, the participatory tone of the project was set early as the university-based researchers came to the project at the invitation of participants themselves, who already had articulated a research problem in the need to reconstruct higher education in the aftermath of the dismantling of the previous apartheid dispensation of education. A key operational aspect of the ensuing research was the provision by the researchers of cameras for use by the participants in capturing images depicting specific social/educational issues that they wished to address—a means of ensuring that research agenda-setting was “owned” by participants. A period of three months was available for this issue-identification phase—a period in which the researchers were absent—for groups of participants to themselves determine and represent topics and issues to be explored in collaboration with the researchers on their return. This created the conditions for internal ownership of the project from the outset, and this prefigured all subsequent phases of the research.

In contrast, in the ARIES project, the funding agency demanded the prespecification of project outcomes prior to the formation of the groups of participants. This precluded the opportunity for all participants to be engaged in and assume ownership of developing a shared research agenda or focus of concerns. As a result levels of commitment to the action research process, and to the project’s aims, varied as people had different reasons and agendas for participating in the project. This problem highlights the importance in action research of engaging participants from the very beginning of formulating a project while revealing the dilemma of such an approach usually not fitting with the requirements of most funding agencies which violate this fundamental principle of action research.

**The Imperative of Relational Practice** As we’ve explained, learning and constructing meaning from actions and reflections is central to action research. Contemporary learning theories of social constructivism and sociocultural or situative perspectives emphasize that learning is social or collaborative in nature. In other words, communication and dialogue that occur through social interactions provide opportunities for meaningful learning. Such opportunities occur in everyday communities of practice where learning is valued (Greeno, Collins, & Resnick, 1996) and relationships of trust, openness, and transparency are established.

In the ARIES project, workshops, online discussion groups, and shared databases were employed to build shared understandings of sustainability and education for sustainability within and across each institution. The state level project leader group also shared their institutional level experiences and reflections via monthly phone conferences and several face-to-face meetings. Although some members of this group knew each other quite well
prior to this project, a couple did not know and were not
known by these members and so the first in-person meet­
ing of the group early in the project was important for
establishing trust and a mutual understanding of concep­tions of action research and EiS. Efforts were made to
maintain and build on these relationships through the
regular two hour phone conferences. As a result of this
relationship building, an open and supportive network of
researchers working collaboratively was created in which
ideas were shared and challenged and resources were
gained from each other. Similarly, the high level of trust
that was built among participants in the AusLinks proj­
ject enabled collaborative critiques to be provided of the
draft case studies that were central to producing rich and
thoughtful final texts.

In contrast, in some institutional settings in the ARIES
project, this level of relationships within the action research
group was unable to be created which resulted in tensions
that are not uncommon in collaborative action research
efforts. For example, some of the teacher educators appar­
ently believed they were already reflective practitioners and
therefore did not feel the need to engage systematically in the
action research cycles. For this and other reasons data collec­
tion was inconsistent and variable, even when participants
were prompted to respond to questions that were distributed
to facilitate their reflections on actions being taken. In other
words, the relationships were not sufficiently strong to create
a common feeling of obligation or commitment to the collec­tive
good of the group. Or, it may suggest that the lack of an
authentic, self-identified and motivating substantive issue (as
an imperative for collaborative research) resulted in differ­
cential commitment once participants realized that they had
some familiarity with the process.

These experiences and resulting insights from system­atic and coordinated but emergent and flexible research
approaches generally enabled the participants to improve
their practice by encouraging them to collaborate more
extensively and intensively. These examples illustrate that
learning and changes in practice are dependent on close
collegial relationships and meaningful social interactions
within communities of practice.

The Imperative of Contextual Connections Environmental
educational issues cannot be handled simply in terms of
planning by objectives but rather by a (re)searching
process promoted by action research. In all three proj­
ects, action research is the medium by which participants
research their own geographical, social, political, and
educational contexts in developing approaches or case
studies for use in their own curricula in environmental
education. In each project, this process has yielded valu­
able instances of home-grown contextual environmental
education. Each project demonstrates the positive role that
action research can play in the original development of
environmental education programs in particular school or
university settings—programs that are highly contextual
in nature.

These projects adopted action research as a medium or
process for critically reflecting on the meaning and signif­
ciae of practice and practical settings and sought to
recognize identity, biography, and context in their method.
We stated earlier that “praxis” is an important element
of action research—indeed, that praxis is the key opera­tional
driver of action research. In the AusLinks project’s
Activity 2 “praxis” was defined as “a reflective interaction
between personal professional theory, personal profes­
sional practice and the professional settings within which
these are intelligible.” The matching of a contextualized
methodology with what was perceived as a contextualized
subject matter was an important feature in the rationale
of this project and the ENSI project, which both empha­sized
the praxis-based process of curriculum development
of particular case studies above an interest in widely
disseminating these case studies for adoption and adapta­tion
elsewhere.

In the case of the ARIES project, the systems approach
that was adopted enabled participants to problematize the
issue of context and to uncover the relationships between
different contexts as they identified multiple layers of
contexts with their immediate setting embedded within
larger contexts. Personal professional theory and prac­
tice was embedded within a program setting of collec­tive
professional theories and practices that in turn was
circumscribed by both institutional and state policy and
accountability contexts. Not only did different groups of
participants critically reflect on the meaning of embed­
ding sustainability in preservice teacher education in their
particular state or institutional context, but the state group
of institutional project leaders was able to reflexively use
their action research experiences at both the state and insti­tutional levels to envision possibilities while improving
understanding and even working around constraints.
Dissemination of ideas and resources among this group
were not for the purpose of unreflective adoption or adap­
tation in their different local contexts but for stimulating
different understandings and interpretations of what is
being done and might be done in their own professional
setting. In this way action research was building capacity
for contextualized change.

The issue of the tension between universalism and
contextuality turns on what happens from the point of
original development. In all three projects, the main
purpose of participatory or action research concludes in
the development of localized programs. In other projects,
the purpose of the research extends to serving as a mecha­
nism for wider dissemination of such programs beyond the
context of their development. Sometimes, action research
is expanded to include the process of disseminating, for
example, a curriculum package for more universal adap­tion
or adaptation.

Consideration of the experiences of the AusLinks
and ENSI projects shows some of the tensions between
an interest in preserving the contextuality of environ­
mental education through the adoption of participatory
action research as a means of curriculum development, and an interest in universal dissemination that tends to be exhibited by international development agencies. When the status of the curriculum package exceeds that of the process of its development, contextuality can be compromised. In our view, ENSI and AusLinks are two projects that succeeded in avoiding being compromised in this way, while the ARIES project was comprised in terms of ongoing action cycles when the funding agency failed to support the next stage of the project because of its interest in expanding the participation to other sites in order to create a wider or more universal implementation of sustainability in preservice teacher education. This suggests a third imperative—the imperative of continuing support and capacity—if action research approaches to environmental education program development are to be sustained.

**The Imperative of Individual, Interpersonal and Institutional Capacity Building** It became evident in the ARIES project from a mapping exercise in an initial cycle that understandings of sustainability, systems theory, and action research differed quite substantially among the participants in the project. This illuminated the need to build capacity for change within participants by developing conceptual understandings of EFS, systems thinking, organizational change, and action research. As a result, workshops were organized on these topics. Critical reflection on data collected on subsequent actions at both institutional and state levels revealed the importance of key agents for change being able to leverage for change across the different strata of the teacher education system. These revelations included the need for individuals with the willingness, confidence, and conceptual capacity to initiate activities and galvanize others to bring about change. The extent of such capacity contributed to the degree to which action research led to more effective and extensive embedding of sustainability in teacher education. The importance of capacity building was recognized from the beginning of the AusLinks project as a key goal was to enhance (action) research and professional capacity in postapartheid South Africa, which was addressed in part by considering the principles of action research in developing the project.

Institutional support and capacity was found to both contribute to facilitating action research and to be facilitated by its practice. Participation in the ARIES project contributed to enhancing the status and support for EFS within at least one of the participating universities, while the existing and tentatively emerging institutional recognition of the importance of education for sustainability as a cross-cutting theme in teacher education contributed to creating conditions in which action research to further investigate and strategize for its mainstreaming could be supported.

The capacity for engaging in critical action research requires: individuals with an understanding of its purpose and process, and a language, analytical framework and disposition to be self-critically reflective; collaborative groups or communities of practice in which personal support is balanced with constructive critique; and institutional structures and norms for collaboration (Stevenson, 1995). Specific attention to developing each of these individual, interpersonal and institutional capacities is necessary if action research is to be a productive and sustained approach to learning and change in environmental education.

These four imperatives that emerged across the three case studies extend and deepen our understanding of the characteristics and conditions that are vitally important for sustaining action research as a viable approach to environmental/sustainability education. Reflexivity on future action research approaches to environmental/sustainability education should add to this understanding.

Notes

1. This case study has been written from a full report of the project, which can be found at: http://www.aries.mq.edu.au/projects/preservice2/index.php, and from conversations with one of the authors and one of the institutional project leaders.

References


