PARTICIPATORY EVALUATION: THE CASE OF THE NATAL PRIMARY SCIENCE PROJECT OF THE URBAN FOUNDATION.

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Introduction

The Primary Science Project (PSP) of the Urban Foundation began in Natal in 1983. Since its inception it has evolved from a project which trained primary teachers in the use of a specific science kit of equipment to a wide ranging teacher support and development project. The rapid growth of the project has generated a rich pool of ideas and strategies related to Inset (inservice education of teachers). For various reasons, however, there has been insufficient evaluation of the project and PSP staff and teachers have not been able to adequately articulate and reflect on the process of development. This has resulted in the feeling that much of the potential within the project for future educational transformation was not being realized.

The growing need within Natal PSP for evaluation was matched within Primary Science in the other provinces. Other needs, such as accountability to funders, resulted in a national evaluation being planned for Primary Science for 1990. Both regional evaluations and a national coordinating evaluation were therefore launched.

This paper was written as a submission to the evaluation steering committee of the Primary Science Project in Natal. It is presented here to provide some stimulus for debate about the design of appropriate strategies for the evaluation of environmental education projects, programmes and field centres in southern Africa.

It is suggested here that evaluation needs to be an integral part of the planning for any educational endeavour. It is further stressed that *all* the participants need to be involved in evaluation and that, when evaluation is seen in a positive cooperative light, the work of the project becomes clearer and the participants can become genuinely empowered. The central role of democratic dialogue in enabling this to occur is emphasized.

All of this does not seem problematic. However, what is crucial in participatory evaluation is the realization that such a process is diametrically opposed to technicist, external models of educational evaluation. Unfortunately these 'external' models of evaluation tend to dominate in South Africa and this makes the development of evaluation designs which provide an alternative difficult. It is for this reason that extensive debate is needed about evaluation within environmental education. Furthermore, the development of enhanced strategies for evaluation cannot occur without an underlying analysis of the paradigm that is operating within the project under consideration.

A Participatory Model for Evaluation: The case of the evaluation of the Primary Science Project in Natal.

This paper begins by outlining why a participatory model was used to evaluate the Natal Primary Science Project and continues to explore the links that exist between research paradigms and sociopolitical frameworks. It asserts that no curriculum project or environmental education evaluation initiative can be meaningfully undertaken from outside the social context in which the situation being examined is embedded.

Evaluation within a dynamically changing context

It was clear from the beginning of the evaluation reported here that, like most education initiatives, the PSP in Natal was a project in a constant, dynamic state of development. Any worthwhile evaluation strategy must accommodate this changing context. There could be no presumption that the meaning of the project could be fixed or static. Rather an evaluation process had to seek to disclose and clarify the coherence and diversity of the meanings that the people involved in the project had about the project and how these meanings were changing.

1990 was also a year of significant change in South Africa. The society was in a state of irreversible transition towards a new constitutional arrangement and new social policies. Any evaluation initiative is a form of social action in itself and must therefore be able to relate to changes in society at large.

Purpose of evaluation

There are many purposes for which an evaluation can be conducted and any large scale evaluation initiative is likely to be directed to more than one purpose. Within this evaluation there were several objectives which can be loosely grouped as follows:

* **Organizational aspects.** The evaluation was needed for forward planning with PSP at both regional and national levels. It was necessary to articulate and clarify formal roles, procedures and relationships for all PSP participants.

* **Informal networks.** There was a clear need for the strength of informal networks within PSP and between PSP and other groupings to be recognized in the evaluation alongside the formal structures.

* **Development conditions within PSP.** The procedures and problems with PSP needed to be clearly articulated.

* **Educational value.** This was of most importance. Improvements in teacher confidence and professionalism, including pupil learning, needed to be clarified and where possible gauged.

The necessity for a participatory model of evaluation

All of these purposes had to be accommodated within any evaluation strategy for PSP. It was clear that in order to fulfil the demands of, particularly the last three of the purposes listed above, all the participants in the programme had to become an integral part of the evaluation.

There was no way in which an outsider could understand the subtleties of the interactions between teachers and pupils within the classroom, between teachers who support each other, and between PSP participants (Urban Foundation staff and teachers) and other agencies. There is also no way this sort of information could be documented unless there was a high degree of trust among all of the people working on the evaluation.

It was also of vital importance for the eventual implementation of the evaluation findings that the staff involved in PSP (both implementers and teachers) were part of the evaluation processes. In the dynamics of social change, solutions cannot be found outside organizations and then somehow be magically communicated to the actors on the ground.

Change in education does not come about by acting on people or for that matter by researching them or their actions. The people concerned need to become an integral part of the research and decision making. Through being involved in evaluation with its associated decision making and choices, participants become more skilled at running their affairs and taking control of the situations that face them. These learning processes are essential to promote ongoing growth after the formal evaluation is complete.

This can be summed up by the use of the term 'democratic evaluation' (Carr and Kemmis 1984, p. 13). Democratic evaluation involves much more than just freedom of discussion; all participants must, where possible, endorse the reports as being fair, relevant and accurate. A process of co-construction of realities should be encouraged in which construction and reconstruction of ideas amongst significant actors takes place. It is only this sort of participation which engenders the trust mentioned above and brings about enhanced understanding and informed change.

A participatory and democratic style of evaluation was also congruent with the stated aims of PSP:

> *The aim of the PSP is to improve the quality of science teaching in the primary schools of disadvantaged communities. Implicit in the development is a notion of enablement, in the sense that the programme attempts to facilitate professional development and empowerment of teachers.* (Potter 1989, p. 5).

The concept of empowerment is inextricably linked to active participation in a democracy. There is no point in setting up educational development projects which do not reflect the aims of a truly democratic society. This is especially so at this point in South Africa's history. There is little to be gained in evaluating projects which purport to be democratic in anything other than a democratic manner.

Various styles of education research

In order to explore more fully what is meant by a democratic or participatory model of evaluation it may be helpful to investigate various paradigms of educational research. What are often called traditional, interpretive and critical approaches will be briefly explored. This will show that a participatory model of evaluation should be located within a critical framework and that the traditional mode of educational research is inappropriate for an evaluation of PSP.

Approaches to evaluation can be loosely tied to time periods as the social sciences have advanced from a dominance of empirical-analytical methods during the 1960s, with the associated quest for objectivity, to the more interactionist and description centred approaches of the 1980s.

The first paradigm, or ***traditional approach*** (also known as the empirical-analytical model, e.g. Popkewitz 1984) demands considerable discussion since it is often assumed as 'conventional wisdom'.

Because of the 'conventional wisdom' nature of this research paradigm much is taken for granted and underlying assumptions about research are seldom questioned. It does not occur to researchers to suspend belief and examine an ideology that holds objectivity as not only attainable, but desirable and therefore beyond question.

The classic reductionist mode of research falls into this category. It is believed that problems can be defined *a priori*, that the complexity of social situations can be reduced to a string of variables which are clearly operationalized, and that events can be explained in terms of cause and effect.

Objectivity is used as the reason for ignoring varying interpretations of questions of value or descriptions of events. There is one 'right' interpretation. Such a mode of research seems to offer techniques by which social phenomena can be controlled and managed (Deakin University 1984, p. 26).

The whole basis of determining causal relationships rests on the assumption that variables can be controlled or

held constant. It is an ironic outcome of this style of evaluation research that the more the researcher attempts to tighten the 'controls' the more trivial the findings are likely to become. One cannot control, for example, teacher motivation, community cohesion, or attitudes to science; neither can one accommodate the complexity of continually changing contexts.

Much evaluation research falls into the trap of striving for an objectivity that cannot be attained since realities are socially constructed and reconstructed continuously (Berger and Luckmann 1967).

Objective centred approaches to human inquiry find their roots in social science trying to emulate classical Newtonian science, possibly through a misguided desire to achieve ascendency and credibility. This is surprising when even theories about the nature of science have demolished the myth of objectivity (e.g. Heisenberg 1962, Capra 1983).

It is now apparent that the observer is an inextricable part of the event being observed. However, one finds that even in 1990 there is a mistrust of any research which is not overtly objective. For example, Opie (1990, p. 3) questions the validity of 'highly subjective action research models in which the researcher is a participant, and hence a variable within the evaluation process'.

People and the complexity of social interactions cannot, however, be reduced to clearly defined variables. The attempt to do so will often lead the researcher to make doubtful or trivial conclusions that, in many instances, were common knowledge prior to the formal research initiative.

Another dominant assumption that underlies the traditional research paradigm is the notion that attitudes are reliable indicators of behaviour. Within this paradigm researchers believe that if only they could somehow map or measure people's attitudes they would be able to predict behaviour and so either enhance or objectively capture the success of educational programmes. Unfortunately this simplistic notion is untenable and decades of research have been unable to reliably demonstrate a causal link between attitudes and behaviour. The desire to offer technicist solutions to educational problems needs to be confronted - one cannot bring about change in people's fundamental attitudes by some sort of Pavlovian conditioning. Buckland (1984) explores technicism and its predominance in educational planning in South Africa. This is a still major issue for future educational research and planning in this country.

As the untenable assumptions and weaknesses inherent in the traditional research paradigm became apparent during the 1960s and early 1970s, educational research began to focus on exploring the dynamics of the interactions which occur during teaching and learning. The emphasis was on the world as a 'socially constructed reality' (Berger & Luckman 1967).

The perceptions of all the people concerned with a project are important and must be researched and, where possible, articulated. The interpretations of situations too, are important even though these are more likely to be dictated by the context than by underlying attitudes. This methodology came to be known as the ***interpretive approach*** and borrowed extensively from anthropology and sociology. In particular, case studies were conducted so that the richness of situations could be explored and recorded.

Evidence of researchers grappling with new perspectives in evaluation is apparent in strategies such as responsive evaluation (Stake 1975) and illuminative evaluation (Parlett and Hamilton 1976). There is no doubt that these studies have done much to focus attention on the actions and motivations of individuals (both teachers and pupils) within an educational situation, rather than just on summative academic performance. These styles of research have enriched our understanding of educational situations a great deal. They do, however, neglect the research process as an integral part of development and change. One cannot simply record and illuminate since this in itself will lead to change.

Within this paradigm researchers still attempt to remain removed and untainted, thereby missing many opportunities and decisions that could enable productive growth. Descriptions are often made without any form of critical or engaged interaction with participants taking place. However, one of the purposes of doing evaluation is to find appropriate ways in which to change and improve education and no opportunities to do so should be lost.

Whether evaluation can in fact lead to worthwhile change is the central question in evaluation research, although the question is seldom asked.

The growing awareness that understanding social situations is not enough has led to what is often termed the ***critical approach.*** As Lakomski (1988, p. 54) points out, critical theory aims to transcend the positivism of the traditional approach by placing the process of critical reflection at the centre of the research process. The research embodiment of critical theory is ***action research.***

> *a form of self-reflective enquiry undertaken by participants in social (including educational) situations in order to improve the rationality and justice of (a) their own social or educational practices, (b) their understanding of these practices, and (c) the situations in which the practices are carried out. It is most rationally empowering when taken by participants collaboratively.* (Kemmis 1988, p. 42)

Action research

What distinguishes action research from more interpretive strategies is the concept of ***praxis.*** Praxis is action which is informed by theoretical ideas (for

example, about how children learn science) and by the process of reflection on existing practice. Theory and reflection feed into the formulation of new practice. This does sound very neat. However, it is more of a change in direction than an arrival at the destination.

In terms of method, cycles of planning, acting, observing and reflecting are all part of action research. These are explained in detail within a South African context in Davidoff & Van den Berg (1990). This small booklet is proving valuable for teachers who are attempting to transform their teaching in an innovative and collaborative way by involving colleagues and even pupils in evaluating research in daily teaching practices.

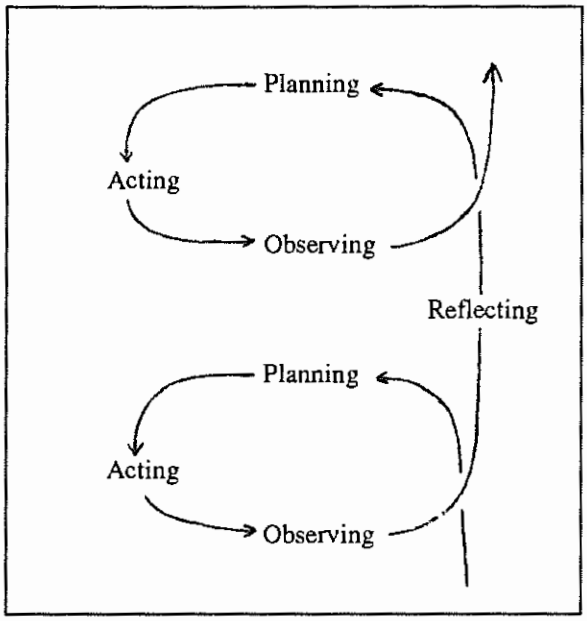

Figure 1. Cycles of planning, acting, observing and reflecting.

Provided one does not see action research as a recipe that one can simply apply in order to transform the teaching environment, it does provide many possibilities for evaluation and change. If there is anything we can learn from research into curriculum and change in education it is that technicist solutions are unlikely to solve anything.

It is important to note that the skill in evaluation research is to ensure that the language of participation and democracy is not a misdirected rhetoric within an interpretive or even traditional perspective. Within PSP this means that the PSP participants themselves had to play an integral role in the evaluation research.

There is a danger that well intentioned articulate researchers can simply coopt teachers as data gathering instruments and thus subvert the possibility of their being self-reflective action researchers within the classroom. Because of the constraints under which many black teachers in South Africa work, the need for the building up of collaborative trust relationships is essential to the development of action research. Otherwise, as Walker (1990, p. 62) puts it, 'action research may well gild gutter education'.

Action research fitted the stated needs and context of the PSP evaluation. PSP was trying to improve science teaching in primary schools through the professional empowerment of teachers. Science teaching in schools can steadily improve as teachers become reflective practitioners, as they discuss ideas, plan together and increasingly take control of the decisions in their working lives - in short as they participate in the evaluation of their own action.

Of course this idyllic scenario will not take place of its own accord. Considerable energy and support is required to foster and facilitate growth. Outside expertise is essential if this is to come about. Not the expertise of an outside expert clinically distant from the 'subjects' but a supportive co-researcher assisting teachers as they jointly grapple with the problems inherent in the educational crisis. This approach to research may, however, degenerate into a mutual 'back-patting' exercise without much critical enquiry or re-searching taking place. To avoid this scenario an 'external moderating mechanism' (O'Donoghue 1990) is essential. This involves the sharing and invitation of criticism from significant others who have expertise in the social sciences. The notion of 'intersubjective objectivity' (Carr and Kemmis 1986, p. 122) becomes important. Rigour is achieved, not by distance, but when participants become willing to share and debate their opinions. In this way they become an integral part of the research process and grow through dialogue with others who are able to provide checks and balances.

People function as social beings, both as 'actors' and at the same time 'victims' in any given situation (Giddens 1984). Traditionally, evaluation inadvertently emphasized the powerlessness of teachers by portraying them as lacking the potential or skills to conduct research and hence relying on the research that academics do for solutions to educational problems.

This technicist scenario (Nel 1987) is particularly harmful when the outside expert sets out to play the role of helpful psychologist who is able to 'find out what is in the people's heads' and thereby guide evaluation research as processes of social engineering and critique. The researcher gains status and insights but the teachers may be left with less confidence and without the ability to act to resolve the ongoing tensions and ambiguities that confront them on a daily basis. Evaluation research is desperately needed, therefore, particularly in South Africa at present, that emphasises people's sense of worth and reduces their feeling of inferiority in the face of difficult circumstances.

In summary therefore,the following crucial ingredients of sound evaluation research must be observed:

* That participants form an integral part of the research initiative.

* That an early descriptive phase is crucial if the evaluation is to be successful. This assists participants to clarify what they're on about and gives them a 'capital' of rich ideas from which to draw as the discussion and evaluation proceeds.

* That the supportive nature of the 'outsiders' is emphasized at the expense of outside judgement or even well intentioned monitoring and social engineering.

* That dialogue should be emphasized.

* That the context of the research is very important. The research endeavour should not create a totally different context that is only partially related to the ongoing teaching situation.

* That the collaborative critical nature of the research initiative should be emphasized and promoted.

* And finally, that the ongoing nature of the evaluation research, as opposed to 'one off' evaluation initiatives alone, is emphasized.

In setting out to support the Urban Foundation management team to implement a participatory approach to evaluation it was found that there was a need to:

ENHANCE:	prevailing action research critical processes and structures; by
ENABLING:	shared experience and existing intuitive critical processes and structures to give direction to the evaluation process; before
CO-DEFINING:	further evaluation structures and processes within historical and contextual constraints; taking care to support the group to do so where necessary.
RECONCILE:	INSTITUTIONAL and COMMUNITY / PROJECT needs, problems, constraints and expectations within an ongoing
CRITIQUE:	of social processes, their ideological orientations and philosophical positions.

These guiding principles served to facilitate a participatory model for evaluation, not because there were other options for research design but, given the nature, goals and realities of PSP, there was no other choice.

This paper is reported here to encourage debate on evaluation. Readers who may be interested in how the PSP evaluation was conducted, as well as the processes involved and research findings are referred to the Urban Foundation evaluation report (McNaught, C. and Raubenheimer, D. 1991).

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