Abstract

This case study of a science curriculum project in an Ontario school board is concerned with the broader question of how researchers can intervene appropriately in the policymaking activities of practicing educators. After discussing and rejecting two traditional models of involvement, the author first illustrates and then justifies two practical principles which can guide the conduct of researchers in these situations.

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Defensible Roles for Researchers in Curriculum Policymaking

The involvement of researchers with school-based educators in developing programs for use in their schools can be a mixed blessing for all concerned.[1] Not only does each usually have its own agenda which can be incompatible with that of the other, the literature of educational change is lacking an adequate conceptualization of the relationship between researchers and practitioners, one in which the prerogatives of each are recognized and honoured. This paper reports a case of a curriculum project in which two researchers, working with a school board's curriculum committee, sought to develop and conceptualize a defensible role for themselves. The paper is structured in three parts. First, the nature of the theoretical problem is outlined in more detail; second, the case report describes its resolution in practice; and finally, the practical resolution is given a general justification.

Styles of Involvement and Practical Principles

A variety of "models" or "strategies" for the involvement of researchers with practitioners have been elaborated.[2] These vary significantly in the nature and degree of involvement of the researcher in the practical situation. At one extreme, models portray researchers as occupying a dominant role; Havelock's "RD & D perspective" and Goodlad's "input-output model" are instances. Such models are described here as embodying an "imposition style[3]" because of the manner in which they reflect the tendency of some researchers to preempt key areas of practitioner's choice and to impose "solutions" for practical problems, supposedly based on theoretical knowledge. At the other extreme, researchers can occupy a merely technical role in which all responsibility is accorded to the local practitioner; here the researcher is seen as fulfilling strictly service functions such as the drafting and validation of needs assessment or evaluation instruments. This style of involvement is designated an "abandonment style[3]" because of the manner in which a researcher adopting it declines any responsibility for other than technical matters, abandoning the local practitioner to make any substantive decisions however misplaced these may be. Between these extremes, there are, of course, potentially many variations and modifications, the reviewing of which is beyond the scope of this paper. Of present interest, however, are the reasons why any one style of involvement may be preferred over any other.

The criterion described most frequently in the literature would appear to be that of *effectiveness:* Does any given style (or model or strategy) *work*?[4] And while no one can deny the necessity of the effectiveness criterion — a strategy that doesn't work is scarcely worth further argument — it is the position of this paper that this criterion is a necessary but

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not a sufficient condition for employing any given style, strategy, or model. How one chooses to act or not to act is governed as much by the practical principles one believes in as by empirical or pragmatic considerations.[5] Thus it is important, in assessing the appropriateness of any educational act, to investigate not only its effectiveness — i.e. whether it is an efficient means towards its intended end — but also the practical principles by which it can be defended — i.e. whether both ends *and* means are morally justifiable.

We are now in a position to see the kinds of practical principles on which arguments for both imposition and abandonment styles of involvement are based. These arguments typically start by characterizing researchers and practitioners in terms of the different types of knowledge each possesses. Researchers, being academically trained and university-based, are seen as possessing (primarily) knowledge of a theoretical variety. They have what Connelly and Roberts call "theoretic credibility".[6] School-based practitioners, by contrast, are seen as having (primarily) a knowledge of the context in which the action is to take place. Such contextual knowledge enables them to maintain their "practical credibility". Arguments supporting one or the other extreme style of involvement then turn on the practical principle one holds concerning the relevance of each type of knowledge for determining a course of action. The proponent of the imposition style clearly favours theoretical knowledge over contextual, while the proponent of the abandonment style favours the reverse. Now, Schwab and Roberts have argued at length that theoretical knowledge is inadequate for determining defensible action for unique circumstances (and, by implication, that the imposition style is therefore inappropriate).[7] Yet the abandonment style seems no better. Here, the researcher is left with no justifiable way in which to intervene even if he feels that practitioners are in error. The dilemma is that, cast in these terms, the problem of researchers' involvement in curriculum practice appears to be insoluble. Either one type of knowledge or the other is devalued or, in trying to discover a middle ground, there is a risk of devaluing both.

The problem of this paper can now be seen in a clearer focus. It consists of searching for some alternative practical principles which not only can serve as guides to researchers as they seek to involve themselves effectively with local curriculum development but also can be justified in terms which do not imply a devaluation of either type of knowledge. Moreover, the search for such valid practical principles is an important and worthwhile enterprise. As Gauthier notes, "were we frequently faced with totally new situations, we might well despair of being able to learn from our practical experience, but in fact we are able to bring the accumulation of our experience to bear on most of the situations in which we must act".[8] And it is through the illustration of practical principles operating in a real situation that this experience is publicly shared and accumulated.

The argument of the paper accordingly moves to a case study of a science education research and development project concerned with the implementation by one Ontario school board of new Ministry of Education curriculum policies for intermediate division (grades 7 - 10) science and with the involvement of two researchers in that process. But, beyond the specific problems of science education in Ontario, it is concerned with the broader question of how researchers can intervene ethically in the curriculum development and policymaking activities of practicing educators. In response to this question, the case study reveals two practical principles which are first shown to be effective guides for the conduct of researchers, and which a final section of the paper argues to be morally defensible.

The paper thus continues with an account of selected aspects of a research and development project conducted cooperatively between two members of the Department of Curriculum at the Ontario Institute for Studies in Education (OISE) and science educators at a school board in southern Ontario.[9]

The Intermediate Science Curriculum Project

Context of Involvement: Changes in Science Curriculum Policy

The origins of the project described here can be pinpointed with rather particular accuracy. On October 6, 1976, the Ontario Minister of Education announced that major curriculum changes were in store for the intermediate division (grades 7-10) of the province's schools. Five subjects from the curriculum were identified as being the prime focus of these changes, and science was one. Thus, science educators (both teachers and researchers) throughout Ontario were put on notice of change.

The impact of these changes in Ministry policy was most immediately felt at the level of each school board in the province. While the Ministry of Education spelled out a range of general aims for the science program and also about 50% of the science topics to be covered, it was still the responsibility of school boards to develop specific courses of study and to make whatever additional policy decisions they considered necessary. The individuals responsible for this implementation at school-board level — in Ontario, such persons are typically designated "science coordinators" or "consultants" — thus had both policymaking and curriculum materials development tasks confronting them.

In the context of these policy changes therefore, we, as curriculum researchers, began informal discussions with the science educators of one school board and particularly with their science coordinator. For our part, we were interested in studying the process of implementing curriculum change in the wake of new science curriculum policies. From the coordinator's point of view, it was anticipated that we might provide some assistance in the program writing and in-service training aspects of his work. Our informal discussions led to the setting up of the Intermediate Science Curriculum Project.

As suggested earlier, the overall task confronting the board of education comprised two related activities: the making of policy decisions and the development of instructional materials. The Ministry guideline clearly left certain policy issues — the selection of optional units (beyond the Ministry core) and the distribution of units among grades, for example — to be resolved at the local level. No less important was the development of instructional materials which could be expected both to communicate Ministry and board policies to teachers and also to assist them in their own preparation for teaching. As constraints on carrying out these activities, two factors were of particular importance. First, since grades 7/8 were typically located in elementary schools and grades 9/10 in secondary schools, the policymaking and materials development processes would have to be planned to take these differences into account. Second, since resources for implementing the processes (especially those of finances and teachers' time) were strictly limited, the task of guideline implementation had to be conceived as a process to be completed over an extended period.[10]

The Manner of Involvement: Selective Intervention

One of the objectives of the Intermediate Science Curriculum Project was the development of an improved understanding of how, in practice, school boards translate the

requirements of Ministry of Education curriculum policy into classroom realities. One aspect of our involvement, therefore, consisted of the systematic observation and recording of activities directed toward that end. We did not expect to be observers only, however. The project was intended to be of benefit to the board also, through our providing assistance and support to board personnel as they sought to implement the ministry guidelines. Thus, we expected to be both participants and observers and to keep the inevitable tension between these two roles under conscious and deliberate control.

The tension between the roles of participant and observer in such a curriculum project does not derive solely from a desire to be objective in our understanding and reporting of the processes involved. It results also from our conception of curriculum policymaking processes as being essentially *political* in nature. And, as in any policy deliberation, the participation and even, on occasion, the presence of "outsiders" can be a highly sensitive matter. The manner in which we were involved in the policymaking and developmental activities was therefore the object of considerable forethought and reflection on our part.

The principle on which we undertook to participate was stated formally in the original proposal for funds to support the project, prepared in September 1977. That proposal read as follows:

> In all this participatory work, the investigator is concerned to uphold the important principle that the board and its staff — not the investigator — are responsible for the science program (of the county). The project must therefore be seen as facilitating progress in directions chosen by the board, rather than as persuading the board to follow directions chosen by the project.

In the final section of the paper, the theoretical background and justification of this principle is elaborated in more detail. First, however, the case study shows how it operated in practice.

The primary forum for the deliberation of policy matters concerning the intermediate science program in this school board was a small coordinating committee comprising six teachers (3 secondary and 3 elementary) with the science coordinator acting as chairman and secretary. The specific policy questions addressed by this group were determined by the coordinator on the basis of his analysis of ministry policies set out in the guideline. Committee discussion therefore ranged over such matters as the units (of science content) to be taught at each of Grades 7, 8, 9, and 10, the incorporation of aims and objectives into the science courses, and the degree to which curriculum decisions should be left to individual schools and teachers.

The committee developed recommendations which were then presented to a larger, more representative group of teachers from throughout the board for discussion and informal ratification. Finally, the recommendations were submitted to the Superintendent of Program and the Program Committee of the board for final approval. In the phases of the project described here, we attended three meetings of the coordinating committee and one meeting of the larger group of teacher representatives. These meetings, which concerned the science program at grades 7 and 8, were recorded and transcribed in full. The transcriptions, covering a total of nearly six hours of discussion, form the data base from which an analysis of the manner of our involvement has been carried out.

The transcriptions are analyzed in terms of interventions by one or other of us into the discussion of the deliberating group, an "intervention" being defined as a statement or group of statements having a clear single point or purpose. It is possible, on this definition

therefore, that a single speech could include several different interventions or that one intervention could be spread over a short series of speeches. Correspondingly, interventions can also vary in length from a few seconds to several minutes. During course of the meetings analyzed, there were a total of 55 interventions of which 5 were of a relatively trivial nature. These did not contribute to the substance of the meetings (they included, for example, requests for documents and coffee) and are therefore not analyzed further. The remaining 50 have been divided into five convenient categories or types of intervention: Requests for information; Responses to questions; Clarifications and corrections; Predictions of consequences; Suggestions of alternatives. These categories are defined as follows:

(1) Requests for information: This type of intervention involved our inquiring either for contextual information about the board, its schools, its programs or policies, or for the reasons behind an individual's statement, decision, or action. In general, such an intervention was designed more to increase our own understanding of the situation than to advance the discussion of a particular policy issue at hand. For this reason, no specific examples are reproduced here.

(2) Responses to questions: From time to time, members of the group would address questions directly to one or another of us. Where these were of a theoretical nature and where we were in a position to answer (or to point to an answer) we naturally did so. For example, on one occasion, during a coordinating committee discussion of ways of getting teachers from different schools to plan their programs together, the coordinator asked us "What does the research say about it?" On this occasion, we had to say that "the research" had little to say but that the issue could perhaps be referred to the larger group of teachers. When asked to respond to a direct question, we tried to be as helpful as possible without, at the same time, prescribing a specific policy or course of action.

(3) Clarifications and corrections: Since the first two types of intervention involve relatively straightforward exchanges of information, their occurrence represents our use of relatively small degrees of discretionary judgement. The remaining three types, however, called for a progressively greater degree of sensitivity (on our part) concerning the appropriateness and timing of an intervention. Clarifying or correcting statements made by other people, by members of the group as well as by those not present, called for just such discretion. Typical of one form of this intervention was the gentle but clear correction of statements made by members of the group concerning, say, a ministry policy, that were plainly incorrect. An instance of another form of this intervention was a comment addressed to one of the teachers following his asking about the status of the ministry guideline (then in draft form). This question had received an initial response from the coordinator which one of us sensed was not exactly the answer being sought. The following interchange then took place.

Researcher A: I hear you asking two questions, though. Are you asking that this in blue [the draft guideline] is dependable now? Is that the . . .

Teacher: Yes, essentially that's what I was wondering.

Coordinator: I'm sorry.

The coordinator then went on to answer the (now clarified) question. This was one way in which we were able to act as facilitators of the policymaking process.

(4) Predictions of consequences: These interventions involved suggestions concerning the possible outcome of a particular action or decision under discussion. The following excerpt

illustrates just such an intervention. Under discussion was the subject of the aims and objectives of intermediate science programs. The new guideline specified 15 broad aims as Ministry policy for the intermediate division; the issue at hand was whether or not these should be further specified for each grade (within the division) in a board policy document to be prepared. The coordinator was concerned to get input from classroom teachers on this matter, and the following discussion ensued:

Teacher: When I look at these aims [in the Ministry guidelines], I say "How in heck am I going to get these aims into this content?"

Coordinator: Well, that's precisely what the whole job is about. That's the big end of the task, trying to mesh those aims (and any that we feel are maybe missing) with that content that's been specified.

. . . OK. Do you think, then, that if I were to draw their attention to page 4 [of the Ministry guideline] and ask them whether they [the aims] should be paid attention to, are they complete, are there any that they don't feel are appropriate . . .?

Researcher B: Remember that they [the Ministry] talk of the aims of the intermediate science program, the whole range from 7 through 10. Now, when you speak to an individual teacher who only has responsibility for maybe grade 7, he may look at some of these aims and say "Well, some of this is just fine and dandy for grade 10 but not for me."

The point of this intervention was to try to assist the group to consider possible consequences of asking teachers the questions being contemplated about aims. Specifically, we pointed out that a teacher responsible for teaching at one grade level might (quite legitimately) consider the aims solely from that perspective, whereas the Ministry guideline clearly anticipated that the aims should be viewed from the perspective of the complete division (grades 7 - 10). The coordinating committee subsequently decided not to ask these questions at all. In such a way, we were able to facilitate the process of informed decision making without intruding into the process to an unwarranted degree.

(5) Suggestions of alternatives: Of all the types of intervention, this was perhaps the one in which the potential for violating our own principle of involvement was greatest. Here, we helped broaden the base of deliberations by making substantive suggestions for possible courses of action.

One instance in which we intervened in this manner occurred after an inconclusive half-hour of discussion had taken place in the coordinating committee about possible policies concerning curriculum planning at the level of individual schools. One suggestion had been that certain program decisions be made by each "family of schools" (a group of schools comprising one secondary school and its "feeder" elementary schools). Such a policy, favoured by secondary school teachers, would facilitate coordination between the grades 7/8 programs of the elementary schools and the grades 9/10 programs of the secondary school. The consensus of the group, however, was that such a policy was unlikely to be observed in practice. The only alternative appeared to be to allow individual schools to make their own program decisions (as at present) and to put up with the present lack of coordination. Sensing an impasse, we suggested a third possibility:

Researcher B: There's also a compromise. It would seem that, although it could be left — the responsibility for determining the curriculum — at the school level, . . . you could, for example, have a situation whereby every school had to draft its own options and while they

were still in draft form, before they were finally decided upon, there had to be some sort of families-of-schools interchange of paper, so that at least everybody in the family of schools knew what everyone else in the family was thinking about, before every school made its final decisions. Something like that might be worked out, which brings a family together, if not physically, then at least in some sort of a way, and at the same time does not lock up units as having to be determined at that level.

Coordinator: What 'B' is suggesting has a lot of merit. These are some of the other kind of strategies that I think a little bit later on we want to consider.

Having made the suggestion and clarified it in later discussion, we made no further intervention to promote it. Its adoption or rejection was a matter for local decision. In fact, this particular compromise was eventually adopted both by the coordinating committee and by the larger group of teachers.

This excerpt also illustrates two essential features which characterized interventions of this type. One was that we tried only to intervene following the suggestions and discussion of one possible policy or course of action originating from the group. The other feature was that, having suggested an alternative, we absolutely declined from expressing a preferential choice among the options.

Analysis of Transcripts: The results of analyzing the 50 interventions from the three transcriptions using this system of categories is shown in Table 1. It should be noted that this analysis demonstrates not only the types of intervention that were characteristic of our involvement but also, by implication, those that were not. Certain types of intervention were carefully avoided throughout the deliberations we attended. Examples of such types include: identification of policy problems (e.g. "What you need to do first is to refine your image of an educated person"); proposal of single solutions (e.g. "Biology in grades 7 and 8 should be oriented towards ecology"); or preferential judgement among alternatives (e.g. "Textbook X is the best one to use for physical science at grades 9 and 10"). In this way, we observed the principle that board personnel and not the project staff should determine the science program for the board.

Table 1. Analysis of Interventions in Curriculum Deliberations

Type of Intervention	Number of Instances	Frequency (%)
Requests for information	9	18
Responses to questions	3	6
Clarifications and corrections	18	36
Predictions of consequences	12	24
Suggestions of alternatives	8	16

Conclusion

The paper began by raising the problem of finding defensible practical principles which could guide the involvement of researchers in local curriculum development. The case study of the Intermediate Science Curriculum Project has illustrated two such principles as they operated to guide our involvement in a specific context. These principles can now be summarized in a more general form, i.e. as they might apply to other researchers working in similar situations:

1. Researchers should facilitate progress in directions chosen (in a deliberate and informed manner) by local curriculum developers, not persuade local developers to follow directions chosen by the researchers.

2. Researchers should contribute to the informed choice of directions by suggesting a range of plausible alternatives but leaving the final selection to local practitioners.

All that remains now is that these principles be given a justification or ethical support.[11]

By way of a preliminary observation, one can note that the issue of researcher involvement in local curriculum development only becomes problematic in practice when there is disagreement. When there is unanimity concerning the problem at hand or concerning a course of action to be followed, the "involvement" issue is, at least temporarily, masked. For this reason, it is more helpful to consider situations of disagreement and potential conflict when dealing with matters of principle concerning researcher involvement.

As pointed out earlier, traditional arguments in support of one style or another (imposition, abandonment, or some in-between style) have seen conflicts as existing primarily between differing ideas, knowledge, or beliefs. The question emerging readily from such a perspective then is "whose *ideas* are right?" And, as was also pointed out earlier, a discussion of the problem in these terms seems destined to end in stalemate. Rather than viewing disagreement and conflict over curriculum from this perspective, I find it more constructive to adopt a political perspective and to see disagreements as being between individuals representing different *interests*. Such a perspective, though it has an ancient heritage, has not been popular among educational theorists (especially in North America) until relatively recently.

Questions emerging from a political perspective on curriculum development differ significantly from those suggested by other perspectives. The one having most significance for the present discussion can be stated thus: "Who is *entitled* to participate in local curriculum development, and from where is this entitlement derived?" Now the general answer one gives to this question depends upon the political beliefs one hold. As democrats, we might contend that entitlement to participate in any policymaking activity (including curriculum development) derives from one's stake in the outcome of the policymaking activity. (Clearly, in a different political system that question might be answered differently but I would claim that the nature of the curriculum enterprise demands that the question be raised and that rational and defensible involvement by researchers in curriculum requires that the question be answered.)

When the general answer is seen in the particular context of our case study, it is easy to see how all the individuals associated with the process of guideline implementation, whether trustees, supervisory staff, coordinator, or teachers, are "stakeholders" in the curriculum development process. (There are, of course, other stakeholders as well, e.g. parents, local industry, the universities, as well as the students themselves.) As researchers, however, we held no stake in the board's science program. We were not residents or taxpayers of that neighbourhood nor were we employed by the board. We, therefore, having no formal entitlement to participate in the policy process, did so by invitation only. In particular, we rejected the imposition style of involvement completely, and saw our involvement as being governed by the principles stated here.

Though we lacked political *entitlement*, we retained a *responsibility* to our institution and to our academic discipline. Therefore, in refraining from adopting an imposition style, we

did not back away from our obligations to be constructive critics and supportive participants by adopting an abandonment style. Researchers, being knowledgeable about, yet politically separated from the objects of curriculum deliberation — subject matter, learners, teachers, amongst others — are in a unique position to generate alternative proposals for action which can be debated by those who are entitled to do so. Educational situations rarely submit to only one possible course of action. Yet, it seems that practising educators seldom have the time or resources to generate a number of valid alternatives from which to choose. By doing such ground work, and by explaining the implications of each alternative to those who must choose, researchers may indeed be able to contribute to curriculum development in ways in which both their own professional integrity and practitioners' political rights are treated with respect.

Notes

[1] An earlier version of this paper was presented to the international symposium, "World Trends in Science Education" held in Halifax, Nova Scotia, in August 1979.

[2] See, for example, R.G. Havelock, *Planning for Innovation through Dissemination and Utilization of Knowledge* (Ann Arbor, Michigan: Institute for Social Research, University of Michigan, 1971), J.I. Goodlad, *The Dynamics of Educational Changer (New York: McGraw-Hill, 1975), and for a review focussed specifically on science education, Jan Harding et al.*, "The Study of Curriculum Change," *Studies in Science Education* 3 (1976): 1-30.

[3] The term is borrowed from D.A. Roberts and Dolores Silva, "Curriculum Design, Teaching Styles, and Consequences for Pupils," *Samplings* 1 (1968): 16-28, who use it in the sense of *epistemological* style of teaching rather than *political* style of involvement with curriculum practitioners.

[4] For example, K.A. Leithwood *et al., Helping Schools Change: Strategies Derived from Field Experience* (Toronto: OISE Press, 1979).

[5] Practical principles are, of course, quite different from the sort of principles encountered in science. For a detailed account of the nature and function of practical principles, see David P. Gauthier, *Practical Reasoning* (Oxford: Clarendon Press, 1963), especially chapter 11; their relevance to curriculum problems is discussed by William A. Reid, *Thinking About the Curriculum* (London: Routledge & Kegan Paul, 1978).

[6] F. Michael Connelly and Douglas A. Roberts, "What Curriculum for Graduate Studies in Curriculum?", *Curriculum Theory Network* 5 (1976): 173-189.

[7] Joseph J. Schwab, *The Practical: A Language for Curriculum* (Washington: National Education Association, 1970); Douglas A. Roberts, "Theory, Curriculum Development, and the Unique Events of Practice," in *Seeing Curriculum in a New Light*, edited by A.H. Munby, G.W.F. Orpwood, and T.L. Russell (Toronto: OISE Press, 1980).

[8] Gauthier, *op. cit.*, p. 157.

[9] This study involved two investigators, Douglas Roberts (now of the University of Calgary) and the author. All other names have been changed to preserve anonymity.

[10] Although the activities of policymaking and materials development were linked, only those involving policymaking are discussed here. The impact of the research project on materials development is the subject of another paper, Douglas A. Roberts and Graham W.F. Orpwood, "Classroom Events and Curricular Intentions: A Case Study in Science Education," *Canadian Journal of Education* 7 (1982): 1-15.

[11] Cf. Schwab (*op. cit.*) who writes of two necessary characteristics of curriculum work, "honoring of delegated powers" and "cherishing of diversity."