THE IMPACT OF RESEARCH ON EDUCATIONAL CHANGE

Jean-Pierre Vielle

Prepared for the Educational Research Review and Advisory Group

June 1981
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FOREWORD

At the beginning of 1978, the author was formally requested by the Educational Research Review and Advisory Group (RRAG) of the International Development Research Centre (IDRC) of Ottawa, Canada, to undertake a study on the theme of classification of types of educational research and the role of these in educational change.

Two versions of a subsequent paper were prepared and circulated quite widely within the above group and other interested scholars.

The present version gathers and highlights the main theoretical views of the original paper. It is still very much a work in progress, but has been found useful by a number of colleagues who have received or requested copies from the RRAG Co-ordination. It has been improved with ideas and suggestions expressed by many friends, each of whom it would be impossible to acknowledge at this moment. However, it is our wish to thank all those who in reading this study will come across some of their own ideas.

J.-P. Vielle
Mexico, D.F., 1981
1. INTRODUCTION

It is the purpose of this work to examine some of the reasons why educational research has an impact on educational change; it is also hoped that a better understanding will be achieved of what brings about educational change and of the contribution of research amongst other determinant factors to this change.

Some general assumptions need to be stated at the outset.

First, educational research does not solely determine educational change, but rather, it constitutes one of the many adopted strategies which encourage, stimulate, and bring about such change.

Second, just as education is an object of continuous change, so also is the field of educational research. Thus, it is not always possible to discriminate and isolate the effect upon educational change of the various forms of educational research.

Third, cultural and educational change is a combination of social, political, and economical processes, whose complex interactions have recently been the object of some studies; but as yet there is no satisfactory model which explains such interactions in a global and integrated way.

Within the above stated boundaries this paper will deal with those aspects of educational change (innovation) which are a direct consequence of the activities of educational research, knowing well that this only uncovers one mode of the process of change itself.

The empirical data that underlies this study has been gained from various sources:

a) A Survey of Scientific and Technological Activities in Education carried out in 1974 in Mexico under the author's supervision, supplied information on the activities of some 60 institutions and 200 projects.

b) The methodology used in the Survey, opened the way to a conceptual revision of categories traditionally used to classify activities of research and their impact. (See references in bibliography.)
c) Direct contact with several projects supplied valuable qualitative information which has served as a sort of "case study" material.

However, the largely unsystematic character of the available data does not warrant clear-cut conclusions. The assertions in this paper are thus presented as "working hypotheses" or starting points, which would require some testing before further evidence or data could be collected.

The main hypotheses to be examined in this study are the following:

a) Educational research is neither a homogeneous, simple, nor monolithic activity. There are various kinds of educational research, and several strategies through which research may influence educational change.

b) Different types of educational research, because of the very nature of their strategy, have a different impact on educational change.

c) What produces an impact on educational change is, ultimately, the innovation component present in the projects of educational research.

d) Besides this innovation component, there are other characteristics likely to influence the impact of research on change, such as the setting of research projects, the degree of participation in their realization, and their size and opportunity.

e) The impact of educational research projects, within limitations of space and time, will depend on the dissemination of their initial results.

From the point of view of the global impact of research on educational change, it may depend on:

a) The "critical mass" reached by the supporting structure of educational research (number of centres, quantity of projects, availability of funds): focus on "institutional aspects".
b) The integration of these elements within a "system of educational research" (importance of networks), the setting of priorities and planning research: focus on "structural aspects". (Pritchard and Schiefelbein: 1978).

c) The "abilities and skills" of researchers, not only to achieve research, but also to make the results of research valuable and worthwhile: focus on "skills" (Shaeffer: 1980).

d) The training of researchers in order to acquire abilities and skills and to prepare their future access to decision-making positions: focus on "training and leadership" (Myers: 1975).

e) The degree of relationship between the process of "research" and that of "decision-making": focus on "process" (Latapi: 1977).

f) The "power" represented by the "capacity" of research: focus on "capacity" (Shaeffer: 1980).

g) The "ideological" background of researchers as conditioned by the dominant culture: focus on "political environment" (Levin: 1977).

All the above elements are worth considering as the understanding of their combination may help to formulate a "theory" of the impact of research on educational change. As a result, none of the existing frameworks should be dismissed before their complementary and explanatory potential is recognized.

In all events this study will not dwell on the macrophenomena (networks, critical mass, and environment) which characterize educational research as a whole. Neither will it stress its micro-aspects such as the individual characteristics of researchers (skills, ideology). The analysis will be centred around the characteristics of "projects" which are defined as "operative and detectable units of educational research and innovation". The concepts of "research" and "innovation", in turn, are understood as follows:
a) Research: Intentional and systematic activities of search that lead to the conceptualization, expression, design, and production of something new (discovery or invention). In this sense, innovation may be a product of research which manifests itself in the ideas, prototypes, systems and procedures, schemes of action and behaviours, which are the outputs of research.

b) Innovation: Intentional activities of systematic implementation of something new that leads to an alteration of normal and routine processes. In this sense, innovative actions have to do with the introduction of change, and should not be confused with the more general processes of transformation, which may result from innovative actions, different from research itself.
2. TAXONOMY OF EDUCATIONAL RESEARCH

To assert that research always produces "knowledge" and that subsequent diffusion of its results assures their application is a fallacy or, at least, an over-simplification of reality.

Research is a social process by which human groups simultaneously transform both the knowledge they have of reality and their own ways of acting upon this reality.

This assertion defies the traditional definition of "research" which distinguishes between the production of new knowledge as carried out by specialists and its "application" as implemented by decision-makers or practioners. Nor does the assertion conceive innovation (introduction of new ways of acting) as a process which would always be a consequence of research (production of new knowledge).

The above considerations prove to be particularly obvious in the case of educational research. Projects in this field cannot easily be placed within the traditional categories of: Basic Research, Applied Research, Experimental Development and Support Activities*. The existing taxonomy of "sciences and techniques" is not flexible enough to take on the variety of educational research activities. The classification of areas often used in surveys on Research and Development (R & D) generally relies on the criteria that all research needs to be "disciplinary" and that its product (new knowledge) contributes to scientific disciplines (or inter-disciplines) and, through this channel, becomes an accurate guide for action, techniques, experimental development and decision making processes.

If what is required is to analyze the impact of educational research upon educational change, it seems a more useful path to classify the types of research in terms of their "innovative output".

It goes without saying that taxonomies are always oversimplifications of reality. Projects often bring together elements which belong to several

* Similar considerations have been made by Lord Rothschild and other specialists regarding surveys on Human and Social Scientific Activities. (Lefer, Mitchell - 1971).
kinds of research. However, the criterion for identifying a research project should be its main objective. Thus, for example, a project which seeks to produce a new textbook should be classified as Instrumental Research even though it may be based on the contribution of disciplinary research (see below).

The purpose of deciding upon categories of research which correspond to the real nature and diversity of activities in educational research and which emphasize their innovative output leads to the introduction of the following typology. (See Figure 1)

a) Disciplinary Research*: It includes projects which analyze and evaluate educational phenomena in terms of the interaction among their variables or the links between education and the rest of society.

The product of this type of research will generally lead to new knowledge of educational phenomena and to enrichment of the disciplines or inter-disciplines which study them (e.g., education and employment, or socio-economic characteristics of students).

b) Research for Planning**: This includes projects which seek to evaluate, diagnose, and forecast the course of educational systems; which design plans and educational programmes; which define the roles to be assumed and the strategies of action to be undertaken.

The output of this type of research generally results in proposed patterns of action, which provide the basis for educational policy or decision-making processes and for new actions (e.g., a development plan for higher education).

c) Instrumental Research***: Here are included projects which have as an immediate objective to introduce change in educational contents, procedures, technologies, and systems.

* Often called: "knowledge-oriented research".
** Often called: "decision-making-oriented research".
*** Also: "systems-development-oriented research".
FIGURE 1

TYPOLOGY OF EDUCATIONAL RESEARCH

KNOWLEDGE

RESEARCH ON RESEARCH

DISCIPLINARY RESEARCH

INNOVATION IN KNOWLEDGE

RESEARCH FOR PLANNING

INNOVATION IN DECISION-MAKING

INSTRUMENTAL RESEARCH

INNOVATION IN SYSTEM, MEDIA, PROCEDURES

ACTION RESEARCH

INNOVATION IN BEHAVIOUR

DOCUMENTAL BIBLIOGRAPHICAL STATISTICAL RESEARCH

ACTION
Research, in this case, is an immediate support for innovation and its results appear in the introduction of new media, strategies, and procedures. (e.g., textbooks, radio system of education, open systems).

d) Action Research: These are projects which directly undertake to alter the educational process in a new and often experimental way. Research is conceived as a change activity shared by those involved in the project and which, to a certain extent, merges research with the collective act of learning. (e.g., participatory research, participatory learning).
Its results are expressed in new behaviours of the participants and in the newly initiated educational process, which will be simultaneously known and carried out by the participants. (e.g., non-formal education; active learning systems; Freinet, Montessori systems).

Two more types of research need to be added as they act as support for those stated above.

e) Research on Research: These are projects which attempt to evaluate the orientation, priorities, conditions of production and diffusion, methodologies, procedures and strategies of educational research. The output will be knowledge about the process of educational research (e.g., survey on R. & D.; this study).

f) Documentary Bibliographical and Statistical Research: Here included are projects focused on reviewing, systematizing and analyzing information on education (which may be an output of research and other educational activities).
As such, this type of research produces information which is required by other types of research, as much as by the process of decision making itself. (e.g., directories, reviews, statistical manuals).

Besides their direct contribution to educational innovation, as revealed in their output, these types of research may have other indirect innovative effects which must not be underestimated, if one wants to evaluate the global impact of projects on educational change.
3. STRATEGIES OF RESEARCH AND INNOVATION

Educational change is the result of several kinds of actions: modifications in educational policy; social dynamics and the activity of educational groups; changes in educational legislation, development, and institutionalization of new systems; and alterations in the training system of teachers. All these changes often are sustained and orientated by social ideologies. These may call for a restructuring of educational systems within the dynamic of a social revolution such as in China, Cuba, or Tanzania; they may inspire educational reforms within the context of a more restricted cultural movement such as in Mexico or Peru after 1968. In all these cases, educational change depends on the entire combination and mutual relevance of changes within the social structure. In such a context, educational research, with its innovating potential, only contributes to some aspects of the total change achieved.

Educational change is also the result of smaller modifications which are introduced daily by teachers in their classrooms, by the administration of schools, by departments of planning, etc. All these modifications are, at a micro-level, the result of relatively less rationalized actions whose links with "research", in a traditional sense, are very hard to establish.

In other words, it would be simplistic to think that educational change is always the result of educational research. Educational research, with its potential for innovation, is only one aspect (and probably not the most important one) of the wide spectrum present in transformation.

Despite the above, it is legitimate to hope for an improved impact of research on educational change, and to wonder about the manner in which research manifests itself within the process of educational change.

The purpose of this essay is not to study strategies of educational change as such, but to consider educational research in its potential for change and to consider educational research projects as components of strategies for change.
To assert that educational research offers a "strategy" for educational change implies to postulate that research is itself innovative and is carried out either to suggest, promote, introduce or produce changes in education. However, not all research is equally innovative nor does it affect change in the same way and with the same intensity.

Ultimately, the impact of research on educational change depends on the attitude with which research is approached. In this respect, research may be undertaken with:

a) an assertion that existing educational systems are deficient and that past situations were better (retrogressive research).

b) an overall satisfaction with the existing educational system, though admitting the need for minor changes (conservative research).

c) a challenge and critique of the existing systems leading to awareness and a diagnosis of its problems (denunciative research).

d) a desire to search, design, predict and suggest new models for future educational systems (prospective oriented research).

e) an intention of creating, developing, and establishing new educational, alternative systems (creative research).

In all these cases, research may actually innovate: it may introduce some change, something new.

Innovation in itself is not good or bad, progressive or regressive; whatever character it takes on will depend on the general orientation of the desired change. Such an orientation or purpose of a research project depends on the very real game of interests, on the needs and desires of individuals and groups who play a part in research or gain some benefit from it. From this perspective the assumed "neutrality of scientific research" is a myth or, to say the least, an ideal difficult to reach.

Beside their general orientation toward change, educational research projects fulfill other more immediate as well as extremely diverse purposes of transformation. Each project has its own "micro strategy" of change, so that it is not always possible to detect the wider strategies which
may correspond to the kinds of research indicated above. However, these types of research do differ at least in two ways:

a) in the relationship between themselves and the processes of educational change; and

b) in the way they affect change.

Educational research projects can be related to the processes and wider strategies of educational change in three different ways: (See Figure 2)

a) Educational research can be taken as a first step which is necessary to unveil the need for change or to announce the desired change. This is generally the case of critical projects which evaluate and diagnose educational problems; and also, of projects which design new educational patterns, give a prospective view on education, or produce educational plans and programmes. A common feature of the above projects is that they intend their results to act as a monitor capable of generating, inducing or provoking an educational transformation. However, because of the complexity of the process of educational change and its various intervening factors, these projects are seldom able to play such an explosive or determinant role.

b) In other circumstances, research projects appear as a set of activities which are parallel and concomitant to the process of educational transformation. Such is the case of a number of projects of instrumental research undertaken in support of the launching of a new educational system. A number of disciplinary and planning-oriented research projects may also appear as a support and even as an ex post facto justification for decision-making processes (in the educational planning body and central administration of educational systems).
FIGURE 2

LINKS BETWEEN RESEARCH PROJECTS
AND THE PROCESS OF EDUCATIONAL CHANGE
c) Finally there are other projects which directly aim at producing educational change. This is the case of experimental projects of development, of pilot programs in newly reformed educational systems, of non-formal education projects in rural and urban marginal areas. In all these cases research appears as an intrinsic part of the educational, social and cultural process of change.

Thus, research projects have different impact depending on the type of relationship they have to the process of change itself, and to whether they generate support for or directly produce educational transformation. Apparently, the most successful projects are those which are more directly linked with the wider processes of educational and social transformation.

According to the above, it is possible to observe different strategies of action for educational change which roughly correspond to the various kinds of research described before: (See Figure 3)

a) "Disciplinary Research" is generally limited to formulating, expressing or advising change in the administration of education or in educational practice. The result of this strategy is, at most, a wish for change or the design of a desired pattern of change to be implemented by others or through further activities.

b) "Research for Planning" initially points to the "need for change" and tries to achieve this change through rationalizing the process of decision-making. However, its results are often limited to a sort of blue-print for change that remains at the level of a "desirable" pattern of action. Because there is no widespread participation in the process of planning, the implementation of this type of change depends once more on other agents and other activities.

c) "Instrumental Research" tries to stimulate or induce educational change through the modification of educational systems, procedures, and techniques. The chosen pattern is
FIGURE 3

IMPACT OF RESEARCH ON THE PROCESS OF EDUCATIONAL CHANGE

RESEARCH

- DISCIPLINARY RESEARCH
- RESEARCH FOR PLANNING
- INSTRUMENTAL RESEARCH
- ACTION RESEARCH

INNOVATION

- New Knowledge
- New Decision-Making Processes
- New Systems, Media, Procedures
- New Behaviour

IMPACT ON EDUCATIONAL CHANGE

- DESIRED RECOMMENDED CHANGE
- PROGRAMMED CHANGE
- INDUCED CHANGE
- CHANGE ACHIEVED
often that of technological change thereby establishing a closer link between research and innovation. However, the introduced changes to be implemented need to be assimilated and adopted by other educational agents and supported with additional mechanisms of change (laws, regulations, institutions).

d) Finally, "Action Research" seeks to produce educational change in a different way. Through means for participation of learners and community developers in the process of research itself, it hopes to bridge the gap between specialist researchers and practitioners. Such a participatory research strategy assures a direct modification of the learners' behaviour, turning them into change agents of self and environment. This strategy, however, is better adapted to small groups or communities. To be accepted and adopted in other settings such as the formal school system, it also requires of other change agents and mechanisms.

Summarizing, each kind of educational research examined generally uses a dominant strategy to produced its impact so that the nature of educational change will depend on the type of strategy adopted. Nevertheless, for some reason, a good part of the process of change always lies outside the field of action of researchers. Even when research projects indicate the kind of change actions to be undertaken, the actual mechanism of transformation will generally depend on factors which are alien to research projects.
4. **DETERMINANTS OF THE IMPACT**

Educational research projects usually include innovation attempts that can be stopped whenever they show any sign of failure. They are undertaken with limited resources and in a way such that their failure will not affect strongly the regular functioning of the educational system in which the innovation is introduced.

Likewise, these projects are often limited in their **span**, that is, the period during which the study, or pilot program, is carried out. They are also limited in the **scope** of their effect, that is the portion of the educational system (subsystem, level, grade, group, or institution) which they are expected to modify.

For these reasons, the impact of projects essentially depends on their dimensions; on the type of innovation they introduce; on their setting, and on the degree of participation they allow, both in the development of the project and in the use and impact of its results.

4.1 **Dimensions of the Projects**

Educational research projects may cover a greater or lesser part of the educational system. They may be carried out at a local, regional or national scale; they may extend to an entire educational level, or be restricted to a single institution (school) or a group of institutions. The size and reach of the project will determine its success (although this assertion should be considered with caution). If the objective of a project is to change the characteristics of an educational sub-system, such as the Primary School level, a pilot project undertaken in a single school will not be of much use. On the contrary, if the objective is to change one school in particular, a pilot project in that school can be perfectly adequate to generate the desired change.

Projects can be undertaken at the right moment and can continue for a long period. But the "opportunity" of a project is relative. Its "historical momentum" may be conditioned by the political climate, the permeability of groups such as teachers or students to the new ideas and innovations; the immediate availability of funds for research, etc. The span of a project may also modify the conditions for its opportunity.
If a greater impact on educational change is intended then it may be necessary to extend the project over a longer period. If, on the contrary, the project is intended to support a decision-making process (decisions are often taken under pressure and in an emergency) a shorter span may be the determining factor of its success.

On the whole, as seen in Figure 4, the scale and opportunity of research projects may be combined in several ways to condition their impact.

4.2 Nature of Educational Innovation

Educational research projects may be innovative in regard to:

a) Knowledge about education: patterns, theories, mental schemes, ideology.

b) Processes of decision-making: systems and administrative procedures for the management and control of educational systems.

c) Educational systems: educational practice, media, instruments, methods and procedures.

d) Behaviour of educational agents: researchers, policy makers, administrators, promotors, teachers, students, sponsors.

This study will not deal with the complex mechanisms through which changes in one area produce innovation in another. However, some relations appear to be obvious.

-- The undertaking of research which generates new knowledge, is likely to modify both the behaviour of researchers and the procedures for carrying out their research activity.

-- By associating policy makers to research activities, researchers acquire a better understanding of policy needs and may alter the focus of their own inquiries.

-- The production of a new text book may affect at the same time the research methodology in operation, the procedures for the use of the book, and the behaviour of teachers and students.
Non-formal education projects may produce changes in the social roles of and relationships between researchers and other participants such as teachers, students, promoters. These in turn affect the research method, educational strategies, and media used by such projects.

Due to the lack of a comprehensive theory of educational change, it is not possible to analyze the way in which the various innovative elements in a project interact to produce change. But, at least, it is possible to identify these innovative elements, and point out how they appear in the various types of projects. Figure 5 illustrates their characteristics. Striking and direct innovation is depicted by the continuous-line box, less direct innovation by the broken-line box, and the blanks indicate almost no innovation at all.

The consideration of Figure 5 will invite some immediate observations:

1) Innovation is most important in Action-Research and Instrumental Research.

2) Disciplinary Research produces innovation in knowledge on education, but does not have much effect on educational systems, strategies, policies and procedures.

3) Research for Planning has strong innovative effect on policies and educational administration but does not produce much new knowledge on education nor does it affect the behaviour of educational agents.

4) As a whole, it can be said that educational knowledge is most affected by disciplinary research; that research for planning has most innovative impact upon processes of decision-making; that instrumental research affects the educational media, instruments and procedures; and that action research contributes to behavioural change.

5) Action Research impacts a wider range of components of the educational activities. However, the type of innovation it embodies is often restricted to non-formal education projects.
Although these projects produce new knowledge, it is of
direct relevance only to the small number of those who
participate in them. The main thrust of its innovative
strength lies in the effect that Action Research has upon
educational practice and upon the role and relationships of its
participants.

6) From a general point of view, and as far as innovation is
concerned, the various kinds of research complement each
other precisely because they affect educational activities
in different forms and with different intensity.

Educational innovation seldom is a process that follows after
research. Innovation is a component of projects that attempt to induce
educational change. The problem is then to know how such innovation can
contribute to more wider processes of educational transformation (See
Dissemination, Section 4).

4.3 Setting of the Projects

The impact of educational innovation introduced by the research
projects greatly depends upon the "setting" of the projects. This does
not mean, however, that the projects should be carried out in such or
such an institution, nor in one or another sector of education, for
example private or public.

In every country of the world, 80% of its education is channelled
through the formal school system while the rest depends on extra-school
programmes such as on-the-job training or non-formal systems for rural
development. In this context, the impact of research depends on the
relation of the projects to the dominant formal school system. Research
projects may be carried out through any of the following channels
(as seen in Figure 6):

a) in the system of Research and Development (R & D) through
independent research centers, not directly related to the formal
school system;
FIGURE 4

DIMENSIONS OF RESEARCH PROJECTS

SPACe (Scale and reach)

Massive project undertaken to late or to soon

+ 4

Massive, timely and well scheduled project

+ 3

+ 2

+ 1

- 1

- 2

- 3

- 4

TIME (Span and timing)

Small marginal project undertaken to late or to soon

- 4

- 3

- 2

- 1

1

2

3

4

Massive, timely, well scheduled project

Modest, timely, well scheduled project

(Space and reach)
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<th>INNOVATION IN</th>
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<th>RESEARCH FOR PLANNING</th>
<th>INSTRUMENTAL RESEARCH</th>
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FIGURE 6

SETTING OF RESEARCH PROJECTS

System of RESEARCH AND DEVELOPMENT
(Independent Center)

CENTRAL ADMINISTRATIVE SYSTEM
(Ministry)

FORMAL SCHOOL SYSTEM
(Macro)

INSTITUTION (School)
(Micro)

NON-FORMAL SYSTEMS
b) in the administrative body of the formal school system: branches of ministries or sections specifically created for those purposes;

c) in the formal school system itself, at a macro level; that is to say, in a position such as to influence the whole school system or an important part of it (subsystem or level).

d) in the formal school system, at a micro level; that is, through single institutions within this system;

e) in non-formal systems, that is, educational mini-systems which are created and grow outside the formal school system, and often in opposition to it.

The impact of projects carried out in these various settings can be assessed as follows:

a) Projects which start and develop in independent Research Centers, alien to the school system, generally have little impact on educational change. These centers mainly insist on "Disciplinary Research". The knowledge produced and the recommendations formulated do not reach the decision-makers, nor do they reach many teachers and students, who are those most concerned with educational change.

b) The alternative setting of research groups within the administrative body of the school system does not completely solve the above mentioned problems. Their projects often continue to be focused on the "disciplinary research" approach; on the other hand, research results, of whatever value, tend not to be considered by the decision-makers who are more ruled by pragmatic considerations than by anything else. So the research that is produced by these bodies often ends its life in the silence of filing cabinets.

Something similar occurs with "educational plans". The distance between technocratical planners and policy-makers on the one hand and practitioners on the other simply turns the plans into exercises that have little impact on educational change.
c) Under these circumstances, the best place for carrying out change activities seems to be the school system itself, or some subsystem within it.

Research projects which try to introduce changes within the system, with the government's agreement, and support, are often successful. But their innovations tend to produce superficial changes that affect only slightly the behaviour of teachers and students.

d) Educational institutions are a more manageable level for innovation than the whole school system. Their projects have a better impact on change, although small in scale and size, and difficult to disseminate.

e) Finally, projects of Action Research born outside the formal system seem to have the greatest impact on educational change. However, because of their marginal and almost underground character, these projects generally appear suspicious to authorities, teachers, and academic researchers. Therefore the effect of their innovation does not reach the whole school system nor even other kinds of research.

4.4 Participation in the Projects

Educational research projects are undertaken in very different places. Their setting will be a determining factor of their impact on educational change. But the negative effects of an unfavourable setting may be counterbalanced by a more adequate participation of educational change agents in the making of a project or in the dissemination of its innovative output.

The discussion on the nature of participation in research projects should not be limited to an analysis of the relationships between decision-makers and researchers. There are, in fact, various groups of agents who contribute in one way or another to change, and who can be identified in projects of educational research. These are:
1) Researchers
2) Policy makers
3) Technologists and Administrators
4) Teachers
5) Promoters of community development
6) Learners
7) Sponsors (financial) of research

There are others who are less directly involved in research but whose influence may be very important. These may be teachers and parent associations, student fraternities, the mass media, etc. This study, however, will only consider the participation of groups more directly related to educational research.

Some preliminary comments are suggested by Figure 7. Assuming that each one of the groups involved in educational activities fulfills its respective function (teachers teach, politicians do politics, researchers do research), it is then possible to detect less strong links among them which relate to the functions performed. In Figure 7 the strong links are represented by continuous lines and the weak ones by dotted lines. A few general observations stand out in this respect:

a) Researchers generally are isolated from the rest of the educational and administrative body, and are distant from the educational process itself (teachers and pupils).

b) Researchers have more contact with sponsors of research who, on rare occasions, are both politicians and administrators at the same time.

c) Promoters of community development only have strong links with a few isolated communities (rural and urban marginals).

d) Contacts between policy-makers, on the one hand, and teachers and students, on the other, are made through administrators.

Generally speaking, specialization does not favour close collaboration between groups in the making of research and in the promotion of educational innovation. However, closer social and political alliances between the groups may further their contact.
Not all the above mentioned groups have the same ability and potential (in terms of power), to promote or back educational changes. The position of researchers tends to be weak in both these ways because of their isolation from other educational groups and their lack of power to influence the decision-making process. This makes it difficult for them to interest and promote the participation of other groups in the research process.

The above observations need to be looked at more closely in relation to the different kinds of research already mentioned:

a) Regarding "Disciplinary Research", participation may be established at different levels:

--The isolated "desk researcher" only has an impact on educational change through his writings, and through the level of diffusion of his results.

--Groups who carry out disciplinary research in independent centers find it more difficult to involve policy-makers and administrators in their projects, except when a "producer-customer type" of relation has been previously established. Even in this case, the interests of policy-makers and administrators are focused more closely on the operational results of the projects, while the researchers are more concerned with scientific norms of the research.

--Disciplinary research groups seldom succeed in involving in their projects teachers and students, or, in showing any interest in the projects of non-formal education carried out by promoters.

Under these circumstances "Disciplinary Research" cannot have an impact on educational change much beyond its sphere of direct influence, that is, the community of Disciplinary Researchers.

b) Research for Planning is generally undertaken by groups of researchers set in the central administrative body of the formal school system.
PARTICIPATION IN RESEARCH

FIGURE 7

(Participants?)

(Producers?)

(Practitioners?)

(Financial sources) Sponsors

(Client? Users?)

(Financial sources) Sponsors
The reduced impact of this research on educational change often can be explained by a lack of "active participation" in the projects of second-level administrators, teachers and students. The dominant mode of producing educational change that policy-makers exhibit is through their handling of "power relations" and, therefore, is not much based either on research or on the recommendations of specialists in research groups.

c) Projects of "Instrumental Research" which cover a wide sector of the school system, often succeed in bringing researchers, policy-makers, and administrators close to groups of teachers and even learners. However, the success of these types of projects still depends on the reactions of the teachers who will be involved at later stages when the project becomes a massive programme.

"Instrumental Research" projects which are undertaken in isolated institutions within the system often manage to bring together administrators, researchers, teachers, and students. But their impact on educational change is limited because of the difficulty in disseminating the results of their innovations to other institutions, or of reaching the high rank political or administrative levels that decide what is to be changed in the system.

d) Finally, "Action Research" projects succeed, because of the participatory nature of their method, in establishing on a small scale efficient mechanisms of collaboration between promoters and learners. But an increased participation of learners in the development of these "micro educational systems" is very much in contract with the lower participation of the other groups: disciplinary researchers, who do not often grasp the regenerating potential of non-formal education; teachers in formal school systems who ignore it; policy-makers and administrators who regard it as a political danger; foundations
and sponsors who do not want to put their money at risk in this kind of project. Thus, because of the restricted scope of these projects they do not manage to have a decisive effect upon change.

The presence of different styles of project "leadership" is likely to modify the conditions of participation previously outlined:

a) The prestige of the institution that patronizes or carries out the project may favour both a higher level of participation and a major impact on educational change.

b) The coordination among groups by means of a political or administrative body, generally stimulates wider participation in educational research and innovation.
5. **DISSEMINATION OF EDUCATIONAL INNOVATION**

Even when educational research projects have a greater innovative component, or are more strategically set, or have achieved a higher level of participation, they may still retain a high potential to fail in their impact on educational change.

A project is always an "attempt at change" which is limited in time and in space. It is limited in time because of the span of the project (length of the observation or experimentation in a pilot project). It is limited in space because a project in its initial stages can seldom cover the whole system, generally it needs to be restricted to a few selected institutions.

Consequently, the innovation introduced by research projects cannot be expected to provide more than a start to the process of educational change.

Beyond the innovation embodied by research projects, the importance of educational change, its extent and span, will depend on:

a) certain additional internal characteristics of the projects themselves;
b) external and additional mechanisms for disseminating an innovation; and,

c) the positive or negative attitude towards innovation of the educational environment.

Here again, it would be simplistic to think that the problem of impact on change is only one of applying knowledge produced by research; of acknowledging its recommendations; of using its results for decision-making; or, of trying-out its recommendations.

5.1. **Opening out of Projects**

To be disseminated, innovation needs to enlarge its scope and be replicated.
A project will widen its scope if, for example, a higher number of explaining variable is introduced; or a new educational instrument is used with a larger number of students; or a non-formal educational project involves a greater number of learners. In this case, the problem is one of change of the scale and dimensions of the project.

A project can be replicated, if it is carried out several times in the same way or with slight differences. For example, a pilot project in language teaching may be repeated with other groups; an educational plan developed for one area can be carried out in another; a non-formal education experiment may be tried out in a different community.

a) The widening and replication of projects depends on internal characteristics which they must have if they are to produce a further impact on education change.

The project must be:

- Repeatable: capable of being undertaken with methods and procedures slightly similar to the original ones. Given the variety of educational systems only a few projects have this characteristic.

- Generalizable: capable of being extended to a variety of situations or groups. Given the dispersion and atomization of educational research only a few projects succeed in having a massive effect.

- Flexible: capable of being modified in its aims, objectives, methods, scale, reach, etc. Given the apparent inflexibility inherent in the norms for each kind of research only few projects show this characteristic.

- Improvable: with room for improvement by the authors themselves, or by others. Open-minded researchers will always try to improve their projects; perfectionists will not, as they do not think they can ever reach the desired results; narrow-minded and secretive researchers will
stop the publication of their results, and thus, improvement by others.

b) To widen and replicate the innovations contained in the projects these should be operational and feasible.

The fact that many projects lead to a better knowledge of educational phenomena (whether through an explanatory or critical outlook) does not mean that this knowledge will be operational for a policy-maker. Disciplinary research projects usually lack policy or practical recommendations. But disciplinary research can become operational if the new concepts it produces reach other researchers and can be used by them for further analysis.

Plans may be inefficient if they do not provide feasible mechanisms of implementation. Such is the case, for example, if production of new educational media (books) does not include provision for a change in methods nor a guide for its use. It may also be the case if a new development in non-formal education is never translated into a workable system.

The necessity to make the results of any type of research more operative, is a fact that can never be overemphasized.

c) The dissemination of an innovation generated by research projects also depends on the relationship established between the strategy of the project itself and the wider strategies of educational change. The most successful projects are those which better define this relationship.

In this respect and in spite of quality of their own objectives, projects ought to be brought closer to educational policies and to the goals of educational plans and reforms, when these are relevant and acceptable.

d) Further capability of dissemination also depends on the projects having adequate dimensions from their very beginning. Many
projects are undertaken in too limited a scale to be taken seriously, or to produce any decisive impact on change. For example, scattered non-formal educational projects would have a stronger impact if they were coordinately undertaken at a regional level.

e) Finally, the dissemination of the innovation generated by a project often depends on further parallel or support actions: legal measures, creation of new structures, etc. Many projects have had a limited impact for not providing these additional mechanisms of support. Although this also may be due to the impossibility of carrying out some action expected and recommended by the projects.

5.2. External Mechanisms of Dissemination

Beside factors in the projects themselves, dissemination of innovation also depends on external mechanisms of communication among the several groups of educational agents, not only between researchers (producers of information) and policy makers (users). Unfortunately, the specialization of educational functions generates problems of participation and communication between these groups.

a) Written communication

The first problem observed comes precisely from the lack of documentation on many projects. It is particularly evident in projects of Action Research, or Instrumental Research, which often do not find their way into a written document. It is also the case of many projects of Disciplinary Research, or Research for Planning which dwell on results in their final report but do not explain the methodology used nor the circumstances in which the project was developed (description and evaluation of the process of research).

Even when projects are well documented it is still necessary to diffuse this information. Unfortunately, the selection criteria of publishers is very much governed by international
norms which are generally applicable to the case of Disciplinary Research only. So a large amount of other types of research remains which only is circulated as "working papers" and never reaches publication.

As research develops, the volume of documents and publications may turn out to be so huge that there is need for data banks and information retrieval systems, for abstracts and reviews of research. However, these services do not guarantee for other interest groups an easy access to research results. Regional information networks appear then as another mode of diffusing results, especially as the international ones tend to distribute information already existing and produced in developed countries.

b) Oral Communication

Besides the written form there is need for oral communication. However, there seems to be a scarce number of "sites" and "moments" which bring together the various interested groups.

Symposia, conferences, seminars, courses, generally reach a small community of specialists but, for various reasons, they rarely stimulate the interest of policy-makers, administrators, teachers, students, and promotors. Teachers, as the main potential agents of educational change are most affected by this situation as they seldom are directly involved in Disciplinary Research and Planning.

Another problem of communication is the lack of a "common language" which can be readily understood by all groups. In this respect to bring groups closer who are still slightly involved in research, may demand an arduous work of translation of the sophisticated technical languages of Disciplinary Research and Research for planning.
c) **Mediation**

A closer participation of the various interested groups in the diffusion of research, requires the presence of mediators or "brokers," whose task it is to increase communication between researchers and other groups. Researchers often become "good brokers" when they move to a different type of educational activity, or carry out a different type of research. This may be so, for example, when academical researchers, experts in Disciplinary Research turn to Action-Research, or join another group to carry out Research for Planning. Multi-skilled researchers with an experience in several types of research who are also teachers or decision-makers may also increase communication among the several groups or agents.

5.3 **Acceptance of Innovation**

The dissemination of innovation depends, above all, on the permeability and flexibility of the educational "environment". Unfortunately, the educational world is precisely one of the least permeable, least adaptable, and most reluctant to accept innovation. This seems mostly to be due to established groups, "frozen" in their stereotyped functional roles which obey some old-fashioned concept of "education as teaching". (Specialists do research; teachers transmit their results; and the others always listen, like good students.)

On the other hand, education remains a field plagued by ideology which often presents ideological content under the cover of scientific objectivity. The non-conscious practice of ideology by educational agents further hinders communication as it fortifies in each one their individual beliefs about Research and Innovation.

The rigidity of the educational environment increases according to:

a) The degree of "cultural dependency", which favours indiscriminate adoption of imported educational models, almost without adaptation; and,

b) The internal "power structure" and "cultural dominance" of elites over the masses of people who are deprived of the
ability to produce cultural transformation.

To summarize: The dissemination of the innovations suggested in projects of educational research is a complex problem. It certainly includes much more than what is traditionally understood by diffusion of knowledge produced through research. It cannot be taken as a simple problem of "application of the results of research to decision-making".
6. Conclusion

Educational research is not an homogeneous entity. It spreads out in a multitude of projects, all of which intend to produce educational transformation to a greater or lesser degree and in one way or another.

From the point of view of their impact on educational change, research projects belong to different types, defined in terms of their main innovative output: new knowledge; new decision-making processes; new media and procedures; new behaviours. These various kinds of research have a different impact on educational change, depending on:

a) the dominant strategy in each type of research;

b) the kind of change generated (suggested, programmed, induced or carried out);

c) the more or less tight insertion of research into wider strategies of educational change.

Projects are likely to have a greater or lesser impact on change according to which type of research they belong. However, each type has its own limits as regards its potential impact on educational change; and it may even be said that, for various reasons, no type of educational research stands much of a chance of producing significant change through their innovative output.

The limited impact of educational research in the transformation and development of educational systems ultimately is due to the conditions in which its projects are undertaken:

a) the scale and span of projects;

b) their setting in relation to the dominant formal school system;

c) the level of participation in the making and in the results of research.

Starting with the innovation introduced by the projects, the impact of educational research depends on the mechanisms of dissemination.
The rather generalized focus on knowledge as an exclusive output of research decreases once the fact is acknowledged that research can produce different innovative outputs: knowledge; decisions; instruments; and behaviours. Hence the irrelevance of the traditional taxonomy (Basic Research, Applied Research Experimental Development, and Support Activities) that assumes a hierarchical organization of research according to the level of "purity" or "application" of knowledge.

The belief in a process of Innovation, which is second to / and distinct from / Research, dwindles when innovation is seen as an intrinsic part of an educational project. On the other hand, research cannot provide more than a start for change and innovation cannot be confused with the whole process of educational transformation.

The role of research in educational transformation, appears therefore in a more realistic perspective once it has been admitted that all kinds of research are limited as change strategies, and that to be successful they must rely on strategies different from research itself.

Above all, it is necessary to set aside the belief in a linear process that moves from research through diffusion of the produced knowledge, to its "applications", "use" and "implementation" through decision-making processes or educational practice.

Finally, in stating that the impact of the various kinds of educational research depends, above all, on characteristics within the projects themselves, there has been an inaccurate minimization of the effect of conditions in the social environment and of the weight of power structures.

Subsequent analysis then, ought to stress the importance of:

a) the climate of acceptance or refusal in which educational research is carried out;

b) the real "power" of researchers to disseminate the innovative results of research;

c) the influence (potential or real) of other power groups, in disseminating innovation;
d) the determining role of policy-makers and administrators as power groups;

e) the actual mechanisms of decision-making processes in the field of education; and

f) the specific contribution of each kind of research to the decision-making processes.


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