

The Impact of Educational Research on Education Administrators and Politicians

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ABSTRACT

This article presents a very topical problem, namely the importance attached by education administrators and politicians to educational research. I present two research alternatives—meta-analysis and evaluative research—that provide the greatest reliability for education managers and that can influence their decision making.

Keywords: Importance of educational research, policy and education administrators, social dilemmas about education research, evaluation research, meta-analysis.

INTRODUCTION

A lot is said and written about the usefulness of educational research. The opinions expressed by De La Orden in papers published in 1999 and 2007 are both well known and very interesting in this regard.

The basic questions that De La Orden mentions relate, first of all, to the degree to which research has contributed to turning the educational sciences into a regular discipline—to whether or not it has contributed a conceptual framework and a way of producing knowledge—and, second, to whether pedagogical research has truly fulfilled the objective of being a source of knowledge on which a profession is based. In talking in the latter case about the profession, he includes in equal measure teachers, counsellors, executives, managers, and so on. (De la Orden, 2007).

There is undoubtedly a disappointing social perception of the effectiveness of improving or helping decision making in educational policy and practice; these efforts have focused on explaining or making justifications by attributing responsibility for the situation to very different causes that depend on the perspective of the person making the judgement. There has been frequent talk of a lack of solid theories that can be contrasted, making the construction of a discipline that can be used as a base on which educational practice is based impossible. Moreover, it has been argued that research has

not had any influence on educational practice due to an improper orientation of its design, with researchers being more concerned with their own problems than with designing tools that can translate into discernible improvements in educational activity. Whatever the case may be, in this article I intend to reflect on the possibilities offered by science and research for improving educational practice through the policy decisions that surround it.

ESSENTIAL PRELIMINARY REFLECTIONS

I would like to begin by referring to some reflections that have been provided by the sociology of science and that must always be taken into consideration when it comes to approaching this discussion:

- As with any other social world, the scientific world is undoubtedly the product of a series of institutionalized social relationships. As such, it is a field of strength and of struggle; it is a competitive market; it has a culture, ethics, rituals, socialization mechanisms, a hierarchy and a system of rewards; rivalries (and not always noble ones) clash with one another. Recognizing this reality is to accept a necessary point of departure for scientists with regards to their practice and to achieve a certain humility when faced with the difference between ideals and scientific practice.

- However, the social and human sciences, as with all areas of science, have their own specificity, which is undoubtedly that they produce knowledge, attempting to reach a part of truth, going beyond the conditions of its production. Individual and collective autonomy, debate and conflict, collective reflection: all are essential for the maintenance and development of this specificity. Therefore, it is understood that it is necessary to preserve them and protect them, and even to strengthen them.
- Moreover, we know that the social and human sciences are characterized by a diversity of paradigms, epistemologies and methodologies in tension; their perspective is quite scattered and attempts to consolidate are difficult to carry out. Their evolution appears less affected by paradigmatic revolutions than it is by the effect of shifts in accents or perspectives; and social and cultural developments have a decisive influence on these shifts.
- The social and human sciences are, by their very nature, scientific and relevant: both rigour and relevance are critical for being understood evolutionarily. Indeed, relevance is a requirement of society and the dominant powers. It is at their heart; but this demand leads to a questioning of the autonomy and heteronomy of the scientific fields.
- In addition, these types of sciences confront situations that are difficult to reconcile. For example, reducing the complexity of reality in order to study it in an empirically rigorous way and establishing links of direct causes stands in contrast to taking this complexity (multiple causality) into account. In such a case, systemic, global, interdisciplinary focuses confront more circumscribed, empirical or quantitative approaches, as is the case, for example, with econometrics or psychometrics.
- Finally, these types of sciences have several uses and stakes among social agents.

Ultimately, it could be said, without the risk of being mistaken, that there is too much history and cultural and social content in the knowledge provided by the social and human sciences—and more so in education—to be able think seriously in terms of a form of pedagogical engineering that is capable of responding to all educational challenges. These considerations may be decisive for properly understanding the

issue that I raise in the title of this work, because we must recognize that the expertise and knowledge from this type of research are not absorbed as such by the politicians in charge.

With regards to the subject that concerns us here, the reality is that the knowledge provided by research in social and human sciences is subject to translation within specialized *interfaces*. The two essential questions that arise therefore are (Lessard, 2007):

- What work is carried out within the *interface*?
- Which actors are invited to participate, with which strategies and with what means?

Clarifying a significant political question is essential, which means overcoming the contradictions of research, its (theoretical or methodological) controversies and the limitations of existing data: in short, extracting incontestable facts.

Once contradictions have been overcome, the research is to be clearly translated into elements, administrative rules and educational policy practices. This (more or less elaborate) process must be compatible with the immediate concerns of politicians and with the political agenda and its conceptions of the state and the state's role.

We might understand the process as a *formatting* of the knowledge constructed to *translate it* to a reasonable action in terms of its practical effectiveness and—let us not forget—political profitability.

Although there are opinions that consider that through the underlying process science is betrayed, in that there is a reduction of the aforementioned complexity, the reality is that it is no less legitimate than any other dimension of those carried out from the point of view of political action. Without a doubt, this reduction can be produced with more or less intelligence and subtlety, but it must be understood in the same way as any other human endeavour, which will sometimes succeed and sometimes fail.

With respect to the second question, we must mention that neither the political nor the scientific world is completely closed. They are undoubtedly related in several ways, hence foundations' and policy offices' practice of hiring graduates with a specific profile to their staff, allowing both worlds to communicate and be understood.

INTERFACE STRATEGIES OR MECHANISMS

We can consider two strategies or techniques, heavily influenced by the English-speaking world, as necessary tools for use in the *interface*; they are *evaluative research* and *meta-analysis*. From these two tools, a form of knowledge translated and formatted as evidence-based policy and with the goal of obtaining better educational practices is obtained.

With regard to *evaluative research*, the comment should be made that it is one of the most relevant areas in social sciences—and in education in particular—given that more and more scientists incorporate the principles and criteria of such research into their approaches. In essence, “evaluative research has established itself as an obligatory ally of social decision makers to optimize their actions and decisions” (Escudero, 2012. 498).

From a comprehensive and global position, we might understand evaluative research as “a type of applied research. It addresses social objects, plans, programs, participants, institutions, agents, resources, and so on. It analyses and judges their static and dynamic quality according to multiple external and internal rigorous scientific criteria, with the obligation to suggest alternative actions on them for different purposes such as planning, improvement, certification, accreditation, auditing, diagnosis, reform, penalization, incentives, and so forth.” (Escudero, 2006, 271).

For *evaluative research* to be useful and serve the various parties it involves, it is produced with suggestions and alternatives for action with regard to decision making. It consists mainly of two types of studies, namely longitudinal research and experimental or quasi-experimental studies. Although evaluative research contributes little to knowledge, it does reveal the particular mechanism that produces a given effect; it simply suffices to measure the importance of the effect.

Education regulation, then, is subjected to this approach based around quantitative methods and quasi-experimental designs, monitoring the educational protagonists who are subjected to the imperatives of the help. In addition, *science* is given an authority to settle debates among pedagogical and teaching models.

We can observe that evaluative research always arises in a real context and at the service of social policies—in short, at the service of

change and social development. We can therefore also observe that it is an intermediary support instrument for other disciplines and areas such as education, health, and so on, since it has the direct objective of offering the best options for action among all the possible alternatives. Its goal is to help to solve problems that appear in these areas: it operates, in short, in a context of problem solving.

Evaluation is a new discipline, but an ancient practice. As a discipline it rests on its scientific characteristics with subjective or nonsystematic evaluations; as a science, it rests on its being committed to the production of knowledge—and not only practical knowledge.

In evaluative research, the central questions are derived from social objectives to solve problems in a practical way, and less as a problem of knowledge. The results are used to improve programs, processes and interventions, since these tend to be carried out in scenarios of intense social change and, therefore, the results are mainly delivered in formats that are not necessarily academic.

It is to be understood, therefore, that evaluative research is done to judge the effectiveness and the merit of a program, intervention or public policy; to describe what is happening as a result of an intervention; to provide evidence; to determine cost effectiveness and parallels and objectives that do not respond to the intervention; to identify strengths and weaknesses; to ensure quality; and to assess the progress of the objectives established. These actions allow us to make potential generalizations about effectiveness, in order to construct theory and design new intervention policies, as well as to extrapolate findings for application to other social scenarios.

According to Boruch and Wortman (1979), there is no generalized model for evaluative research. We might apply three fundamental axes to it:

- Methodology used to establish the truth or a basis for confirmatory statements.
- The role assigned in the process to the advisor-evaluator in a relationship as advisors and with the system, and
- The objectives pursued or their basic orientation.

The concept of evaluation is not monolithic (Anguera, 1989). The different positions taken oscillate between the construction of a body of

knowledge that could lead to a basic disciplinary generalization and the mere collection of information that tries to account for the execution of certain activities carried out previously.

Finally, it is important to highlight the central features of evaluative research. It is a sociopolitical process; a joint process of collaboration; a process of teaching and learning; an ongoing, recursive and highly divergent process; an emergent process; a process with unpredictable results; and a process that creates reality (Armando Haro, 2009).

Meta-analysis, meanwhile, (Botella and Gambarra, 2002), is a statistical technique that combines and synthesizes the results of several individual studies to provide an overall appraisal. It attempts to answer questions that

relevant studies identify, appraising their quality and synthesizing the results using a scientific methodology. Its unique value and usefulness lies in its collecting of a number of studies, which will have been carried out independently and which sometimes reveal opposite results, and synthesizing their results. In short, it is a statistical technique that combines and synthesizes the results of several individual studies to provide an overall appraisal. To repeat, the goal is to synthesize, evaluate and update information, trying to find the best scientific evidence and, at the same time, presenting this evidence in a clear, synthetic and easy-to-understand way. However, it is worth drawing the following clear distinction between different techniques:

Table 1. Excerpts from Sackett, D et al: *Clinical Epidemiology: a basic science for clinical medicine*

Review	“the general term for any attempt that synthesize the results and conclusions of two or more publications related to a given subject”
Systematic Review	“When a review strives for exhaustive identification through all the literature on a given topic, appraising its quality and synthesizing its results”
Meta-analysis	“When a systematic review incorporates a specific statistical strategy to bring together the results of several studies in a single appraisal”

Meta-Analysis has Three Main Characteristics

Precision

Meta-analysis is more precise than narrative reviews in its statements. It concludes with statements that are clearer and more precise, in terms of the significance, the size of the effect, the variability of the results and the degree to which this variability can be explained at the time.

Objectivity

One of the rules of meta-analysis is to try to make all the rules and criteria employed throughout explicit.

Replicability

From a methodological point of view, the main advantage of a meta-analysis is that its procedures can be replicated, whereas narrative reviews cannot.

These features are simply the natural development of efforts to introduce into reviews the rigour that meta-analysis has had since its inception and throughout its development. If we invest our efforts into producing rigorous, controlled and systematic reviews, why not do the same with the necessary task of integrating

results in different research projects (Wolf, 1986)?

The fundamental rationale for conducting meta-analysis is “increased power and precision in estimating effects and risks” (Mulrow, 1995).

Meta-analysis has gained great acceptance because it is necessary to have unifying reviews of what has already been researched (that is, one needs to know the *state of the issue*). Among the contributions of meta-analytical reviews to scientific knowledge, worth highlighting are:

Substantive Contributions

Given that they allow detection of relationships that do not appear in the primary studies because they had not been put to the test directly. This is achieved by making comparisons between levels of a variable that are constant in each particular study. Another way to explore theories consists of contrasting the adjustment of data to causal models. These models are sets of inter-relationships postulated between constructs and/or variables.

Applied Contributions

Program evaluation: Reviews provide information on the conditions under which a type of intervention is more effective, with

psychosocial intervention programmes being one of the most genuine applications in the social sciences.

Review

One of the main contributions relative to traditional reviews is unquestionably the accuracy of their answers.

Not only do they say whether or not there are effects, but they are quantified with a specific effect size and confidence intervals are established.

Scientific Practice Tested

The emergence of this methodology has had some very positive effects on knowledge and the way in which scientific research itself takes place.

However, it also has certain limitations that must be taken into account to assess the level of evidence contributed (Giménez, 2012):

The first is the *quality of the studies*. The biases of different studies influence the importance of the results.

Therefore, variables and the statistical analysis of data are evaluated as well as the sample size.

The second limitation is *publication bias*, as a result of which many studies are not published, because the results are contrary to the interests of their sponsors or are not significant.

Thirdly, there is *selection bias* with regard to items to be included in the meta-analysis.

Fourthly, the variability or *heterogeneity of studies* should be taken into account, either in the characteristics of the context, the methodology, different end-point measures, differences in the magnitude of the results, and so forth.

Fifthly and finally, there are difficulties with *interpretations of the results* obtained.

Among the most relevant objectives of meta-analysis, I would highlight (Giménez, 2012; Laporte, 1993):

- The need to guide decision making through a systematic review with mathematical summaries of its findings.
- Providing a solution to uncertainty that remains unresolved due to the existence of mixed results from existing studies.

- Estimating effect size (by adding the population “n”).
- Evaluating the heterogeneity of studies.
- Evaluating subgroups, if possible.
- Providing information for performance in various scientific fields.

The authors of the meta-analysis must identify the appropriate model employed to achieve it:

- In general, there are two models that can be used to analyze these variables: fixed-effects models and random-effects models. The difference lies in the design of the initial study population.
- To assess if there is heterogeneity between two different studies that would form part of the meta-analysis, the null hypothesis that there is no difference between them must be put forward.
- Evaluation of the existence of publication bias. A graph known as a *funnel plot* is used for this purpose. A good model is one that presents a symmetrical funnel image. When this is not the case, there is a relationship between the study size and the treatment effect. It is considered that small studies are generally of a lower quality and present biases, therefore influencing the final result.
- Finally, a sensitivity study, which evaluates the robustness of the study, should be performed.

Once an opinion in relation to the study has been formulated, it is necessary to determine whether it is feasible for application to the population that is usually worked with, though there are numerous guides regarding how to read a meta-analysis that can be used.

OUR RELATIONSHIP WITH SCIENCE

Both the concept of science and the relationship we have with science are open to debate. Can the results of science be considered rules of conduct for protagonists in a particular field? Can they be considered in the form of overriding rules or practices? In other words, can and must research tell us what to do to achieve a particular goal? The answer clearly seems to be no.

Science informs us about socially constituted practice; it does not *create* or *regulate* that

practice. These latter two functions depend on values and norms, and are irreducible to scientific statements.

The proposal made by M. Kennedy (1999) in considering that the role of science can be *instrumental* or *conceptual* clarifies things here.

I believe that it has an *instrumental* role, if research is understood with the aim of obtaining and accepting a precise answer to a question posed in terms of relations between means and ends—such as, for example, if a particular intervention does or does not produce certain (desired or unexpected) effects upon a particular category of people. Medical research is undoubtedly the most evolved form of this type of research, and it is responsible for the great medical advances of recent years. Understood in terms of and extended towards teaching, it should be considered through three levels: a) description; b) small-scale verification; and c) large-scale, long-term study.

For Bissonnette, Richard and Gauthier (2005), only research at the third level can serve to justify widespread implementation decisions, understood as pedagogical innovation. However, this type of research is inappropriate (even naive) in the field of social sciences. From a positivist conception of science, behaviors, methods and models of teaching are objectivized and given essence, thereby cancelling out, and with help of elaborate quantitative methods and large sample sizes, the singular action of the issue, and acting, interpreting or translating in a given context. However, the profession (which is supposed to be reflexive) and its tools cannot be dissociated from the subject of the education or the professional in action.

Regarding the *conceptual* role, it should be pointed out that this is a type of function that has a significant advantage over the previous one in terms of its ability to understand the world, since it has more influence on modes of thinking, and less on providing policy directions or precise practices.

Researchers in the sociology of science have for many years drawn attention to the nature of scientific work and the social contributions it produces. Science is not a perfect world, and nor is it above others. It does not provide incontestable truths. Conversely, the scientific field has been bound by a paradigmatic diversity

and power stakes, similar to those of other fields.

However, scientific discourse can be compared with any other discourse; we must combine a socio constructivist perspective of science with a realist epistemology, since science is really a product of historical social relations, and it is also capable of producing objective knowledge that transcends history and the social context of its production. There is a remarkable condition to be found in the academic field, one capable of generating competition and debate among researchers, as well as collective thinking, even though it is a relative condition, since as stakes in a struggle, they vary in space and time (Bourdieu, 2001).

Gibbons et al. (1994) offer an analysis of contemporary scientific evolution and distinguish two modes of scientific activity, which they call mode 1 and mode 2.

Mode 1 is focused on fundamental research, which might be understood as knowledge for the sake of knowledge. It presents a disinterested science and takes place in a stable and autonomous institutional framework.

Mode 2 refers to research, not without some difficulty, with different names: applied research, intervention research, oriented research, contextualized research or sponsored research, for example. It is a heteronomous form of research, determined by researchers and users or sponsors. It is completed based on social priorities, sociopolitical stakes, questions raised as issues outside of the scientific field, and so on. We might think, since a double language is being spoken here, in terms of what scientists speak and what social actors speak.

Mode 2 reflects the penetration of science in the whole of social life, which seeks to transform scientific activity itself. It can be seen as the realization of a modern utopia, since scientific knowledge is used to ensure development and social regulation; manage increasingly complex and heterogeneous social categories; combat ignorance and poverty; overcome disease; predict, manage or prevent natural disasters; produce wealth and well being; ensure human longevity; develop an enlightened culture; and so forth.

This scientific activity is not the opposite of fundamental research, but, rather, an activity

parallel to or derived from it. For it should not be forgotten that the social sciences have always wanted to be relevant, contributing to the modernization of society and the construction of a more just and equitable society.

Marx (1967), Durkheim (1997) and then Bourdieu (2001) all wanted their research output to be useful and relevant, though not servile or subjected to power. This issue is resolved by Bourdieu (1999) in the work *The Weight of the World*, who expresses himself in these eloquent terms:

“Armed with this knowledge, the social world can undo what it has done. In any case, what is certain is that nothing is less innocent than knowhow. Although it is true that most of the economic and social mechanisms on which the worst kinds of suffering are based, particularly those that regulate the labour and educational markets, cannot easily be eliminated or even modified, it is also true that any political programme that does not take full advantage of the possibilities—small as they may be—for action, which science can help uncover, can be considered guilty of *the crime of neglecting to provide assistance.*”

Certainly, the science involved here is full of ambiguities and temptations, given that we express the penetration of knowledge in social life and in the management of social problems. Nevertheless, it questions the common sense and dogmatic thinking that contributes to collective reflection (which may also be required), subject to political imperatives or ones of economic profitability, both as a tool of control and of emancipation, and both as one of domination and one of empowerment.

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