

# **Instrumental Use of Information in the Design of the Chilean Secondary Education Reform**

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The purpose of this study was to investigate the extent to which different types of information were instrumentally used for the formulation of policy problems and the delineation of policy solutions stated by the policymakers in charge of the Chilean secondary education reform carried out between 1995 and 2000. This is an unusual setting where the administrators responsible for the design and implementation of the reform policy had strong backgrounds in social research. This type of setting has not been explored substantively by other researchers. The data analyzed in the study were 63 pieces of information used as evidence for 53 policy claims in appropriate documents as well as feedback from participating policymakers. The study showed a high degree of instrumental use of information both for identifying problems of secondary education in Chile, as well as policies to address them. Almost every policy claim identified in the reform documents analyzed was based directly on some type of evidence. Approximately 85% of the evidence used to support claims was research based. The research implied that use of information in policymaking can be increased by planning long-term processes of policy development with a stable policymaking team, including policymakers in production of research and other information needed, strengthening national research capacity in education, and to consult a wide variety of information.

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## **DEDICATION**

This work is dedicated to my family,  
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## **1. INTRODUCTION**

The aim of this study is to describe the direct or instrumental use of policy-relevant information in the policymaking process of the Chilean secondary education reform carried out between 1995 and 2000. This is a very peculiar setting because of the strong background in social research of the policymakers who were in charge of the design and implementation of the reform policy. The result of this study provides a better understanding of the type of relationship between information and policymaking that occurs when researchers who are involved extensively with planning and carrying out underlying research also play the role of policymakers who both identify relevant problems and devise appropriate solutions.

### **1.1. BACKGROUND OF THE PROBLEM**

When the first democratic government came into power in Chile in 1990, after seventeen years of a military regime, the education sector was seen as a strategic policy area. Public authorities understood the importance that education had for economic development and social equity, and launched an array of reforms in order to overcome the lack of quality and equity in the primary and secondary level of the education system. A team of experts with a relatively extensive background in research was appointed to design and manage these reforms. They had strong political support from the two democratic governments that ruled Chile in the 1990s<sup>1</sup>, to design and undertake a reform project that would cover the three levels of the education system (primary, secondary, and tertiary). The name of this initiative was *Programa de Mejoramiento de*

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<sup>1</sup> Patricio Aylwin, 1990-1994 and Eduardo Frei (1994-2000), both from the same political coalition.

*la Calidad y Equidad de la Educación*<sup>2</sup> (MECE). The Primary education reform was called MECE-Básica (1992-1997), the reform of the secondary level was MECE-Media (1995-2000), and the tertiary education reform was called MECE-Sup (1999-to date). Even though final decisions related to education reform are made by the country's political authorities (e.g. ministries, parliament, and the president), these experts shaped to an important degree the policies implemented to improve Chilean educational system.

In the field of information utilization in policymaking processes, this strong involvement of researchers in the Chilean educational reforms is an exceptional case. Very few, if any, empirical studies have addressed this issue considering the policymakers as experts in the researcher community. There are studies (including Caplan, Morrison, & Stambaugh, 1975; and Pierce, Lovrich, Tsurutani, & Abe, 1987) where the technical level of policy makers is analyzed as a factor of information utilization, but nothing is said about their previous experience as researchers or knowledge producers. In fact, numerous studies explain the disconnection between relevant information and decision making using, directly or indirectly, the 'two communities' theory (Caplan, 1979). Others focus their attention on factors not related to policymakers' professional characteristic [e.g., position in an organization (Oh, 1996), intelligibility of information (Cousins & Leithwood, 1986), adjustability of information to personal beliefs (Caplan, 1991), and types of information produced by research (Reimers & McGinn, 1997)]. Either because there have been very few cases of policymaking construction by decision makers with important previous experience as researchers, or scholars of the information utilization field have not seen this factor as relevant to be explored, no empirical studies have been carried out to investigate the type of relationship that occurs when knowledge producers play the role of information users to delineate social policies.

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<sup>2</sup> Quality and Equity Improvement Program.

There are two aspects of the Chilean secondary education reform that show the consequences of the researchers' involvement in educational policymaking on the way policies were formulated. First, they gave an important role to social science research as the basis for the new educational policies. It was a regular activity for them to produce and gather relevant information to formulate educational reforms. This was especially the case of the secondary education reform. Only a partial diagnosis of this level was available at the beginning of the 1990s. Because of this, in order to design the *Programa de Mejoramiento de la Calidad y Equidad de la Educación Media*<sup>3</sup> (MECE-Media), several activities that were planned by the policy makers to provide relevant information on secondary education were carried out. These activities included:

- Fifteen studies were undertaken by academic institutions, research centers, or individual consultants between 1992 and 1994. These studies included themes directly related to the reform content and they produced the following types of information: empirical information about the educational level of the country, analytical categories that allow for a meaningful interpretation of this reality, and policy proposals that could be drawn from them;
- A National Conversation was carried out among 30,000 secondary education stakeholders (mainly teachers, students, and parents) in 1993 to assess their perceptions of the relevant secondary education issues as well as to register their opinion about possible solutions. A document summarizing the findings and recommendations of this national survey was published and widely disseminated in Chile.

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<sup>3</sup> Secondary Education Quality and Equity Improvement Program

- An international workshop of experts in comparative secondary education was carried out in Santiago in November of 1992. The objective of this workshop was to discuss problems and solutions related to secondary education that policymakers around the world have dealt with.
- A study tour for representatives from the Ministry of Education, the teachers union, in-service training institutions and the private sector as well as the World Bank, was undertaken in South Korea, Malaysia and Singapore during mid-1992 to observe their secondary education systems.
- Finally, a pilot program to test four project interventions was carried out in 124 high-risk secondary schools in 1994.

The implementation of these activities is a demonstration of the importance that the team in charge of the reform assigned to research and other systematic data collection and analysis as a basis for effective education reform.

The second aspect is related to the type of information use that can be expected to be observed in the MECE-Media program design. There are two types of information use in the related literature that have contributed enormously to understanding how this phenomenon occurs: “instrumental” and “conceptual”. The stakes in the instrumental use definition, Weiss (1981) says, “are small and user’s interests relatively unaffected” (p.23). Conceptual use, on the other hand, is defined as gradual shifts in terms of policy makers’ awareness and reorientation of their basic perspectives, and does not involve immediate and direct application of conclusions to decisions. Conceptual use is also commonly identified as having more long-term effects as information from a variety of sources affects a policy-makers’ conception of a program or policy setting.

It is highly likely to find an important degree of instrumental influence of the information produced in the preparation activities, as well as from other sources of information, on the formulation of the MECE-Media program. This expectation is based on the need that policymakers showed in searching specific and relevant information to address the reform project, which is characteristic of rational procedures that seek to provide stronger foundations to make better decisions (Thomas & Grindle, 1990). If the predominance of instrumental use of information is verified in the MECE-Media design process, this program would be a very rare case of this kind of policymaking, to which the conceptual use of information is more recurrent and highly significant. This uncommon use of information might be explained by the special professional profile of the policymakers in charge of the reform, or to the fact that such activities were part of the plans for developing policy. The likely high instrumental use of information does not mean that there was a low conceptual use of information, nor that the issues addressed were relatively unimportant. Conceptual use was not addressed in this study.

Thus, the policy-making and information utilization processes carried out in Chile to design the MECE-Media program was a unique opportunity to explore the characteristics of a policy-relevant information utilization process, where policymakers also belong to the research community, and where much information was produced to directly structure and inform policy problems and policy decisions. Considering these unusual characteristics, the aim of this study was to explore the nature and extent to which this pre-planned research-based and other information was used in a direct or instrumental way to structure the policy problems and to delineate policy solutions in secondary education.

This type of setting has not been explored substantively in the related literature. Hence, this study was designed to contribute to understanding the type of use that policymakers with

strong backgrounds in social sciences make of research-based information in an education policymaking process.

### **1.1.1. Summary of the MECE-Media Program**

One of the proposal documents (The World Bank, 1995) of the MECE-Media program stated that the main issues affecting the Chilean secondary education system were:

- Low external efficiency manifested by the educational system's failure to respond to the demands of individuals and to provide the higher-order thinking and problem-solving skills required by tertiary education institutions and the labor market.
- Low internal efficiency reflected in high repetition and dropout rates, resulting in waste of financial and physical resources.
- Unacceptably low levels of quality indicated by low student cognitive achievement.
- High inequality expressed by the social distribution of educational opportunities and results.
- Weak institutional capacity to induce a modernization reform process (The World Bank, 1995, p.7).

To address these problems the following objectives were stated:

- (a) To improve the internal and external efficiency, quality, and equity of the educational services provided by municipal and private subsidized secondary schools; and
- (b) To strengthen the managerial capacity in the Chile's secondary education sector (The World Bank, 1995, p.21).

MECE-Media would improve external efficiency by:

- Establishing a Curriculum Planning and Evaluation Unit (CPEU) to reformulate the subject-based curriculum, for both the scientific-humanistic (S-H) and technical-vocational (T-VOC) secondary schools, to enhance the teaching and learning of higher-order thinking and problem-solving skills.
- Developing evaluation capacity to monitor the consistency between the recommended (official) and the learned curriculum;
- Establishing alternative curricular activities for socially and educationally at-risk secondary students; and
- Providing incentives to strengthen the linkages between targeted T-VOC secondary schools and the private sector in curriculum development, skill certification, in-service teacher training, and the use of physical facilities.

MECE-Media would improve quality, equity, and internal efficiency by:

- Providing in-service teacher training to change the predominantly one-dimensional teaching format based mainly on rote learning and dictation to more interactive methods.
- Establishing a fund to promote the design and implementation of school-based educational development projects (PDEs); and
- Providing educational resources (textbooks, school libraries, teaching materials, computers, and infrastructure) in a targeted manner.

MECE-Media would strengthen sectoral managerial capacity by:

- Building upon existing institutional strengthening activities financed by the Bank-assisted Primary Education Loan within the current administrative structure of the Ministry of Education (MINEDUC) and the municipalities;
- Strengthening the managerial and leadership capacity of principals and the heads of school-curricular subject areas; and
- Establishing and maintaining a technical support network consisting of universities, professional institutes, local and international experts, the private sector, and NGOs which would provide technical assistance to participating secondary schools in training, development of learning materials and curricular needs (The World Bank, 1995, p.21).

As it can be appreciated from above, the secondary education reform was a systemic intervention, where numerous factors related to infrastructure, teaching materials, teaching-learning processes, and school management were addressed by the reform components. The program was designed and executed by a general coordination team (4 policymakers, three of them with a strong background in social research, and the fourth member with background in management). They were responsible for the general design of the program and for its conduct. Also, there were different sub-teams in charge of each program component and sub-component that were responsible for the detailed plan of the components, along with the overall coordinator team, and for their execution. A brief profile of the coordinator team members follows:

Policymaker A: Head of the MECE Program (92-97). Sociologist, Ph.D. in sociology. He was author and coauthor of some of the few studies done on secondary education in Chile during the 1980s.

Policymaker B: Coordinator of the MECE-Media program. Sociologist, Graduate studies in Education. Head of a research team on higher and secondary education in an academic

institution in the 1980s. She was in charge of the reform plan for secondary education for the government program in 1990.

Policymaker C: Vice-coordinator of MECE-Media. Professional degree in Psychology. Experience on applied research on education and mental health. In charge of the MECE preschool education program (design and execution) in 1990.

Policymaker E<sup>4</sup>: Coordination team member. Professional degree in Engineering. In charge of management aspects during the design of the MECE-Media program.

It is necessary to make clear that the preparation stage of the MECE-Media program was a component of the MECE-Básica program, carried out between 1992 and 1997. Therefore, the team in charge of the secondary education reform had the experience of how to deal with problems of quality and equity in the primary level. This experience might have contributed enormously to design a more effective information gathering process to plan the secondary education reform.

Since 16% of its total cost (\$207 million) was financed with a loan from the World Bank, the design of the MECE-Media program had to be agreed between this institution and the Chilean government. The remainder was financed by the Chilean state (Cox, 1999)

## **1.2. PROBLEM STATEMENT AND PURPOSE OF THE STUDY**

Information utilization studies have rarely, if ever, addressed the information use behavior of researchers in policymaking roles. Considering the very unusual profile of policymakers that formulated the Chilean Secondary Education Reform, and the amount of policy-relevant information collected and produced in order to support the design process of the secondary education reform, the MECE-Media program offers a unique opportunity to investigate how

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<sup>4</sup> Policy Maker D is the World Bank's officer identified in Chapter III.

policymakers with a strong background in social science research used policy-relevant information during the design process of this educational reform. The purpose of this study was to investigate the extent to which different types of information were directly used for the formulation of policy problems and the delineation of policy solutions included in the reform by the policymakers in charge of the program.

### **1.2.1. Research questions**

What kinds of information had an instrumental or direct use in the two major steps (formulation of policy problems and delineation of policy solutions) of policy development?

What kinds of information were most useful for the two major steps of policy development?

To what extent was there instrumental use of information to formulate the policy problems and delineate the policy solutions stated in the MECE-Media program?

To what extent was the instrumental type of use verified in the MECE-Media program typical of models or theories of use?

### **1.2.2. Method**

These questions were answered by analyzing the reform documents that delineated the problems and associated solutions to become Chilean policy, and requesting policy makers to identify other information used instrumentally and rate information found in the study. These procedures were used in order to identify all the pieces of information that were utilized to directly support the claims about policy-related problems or policies designed to solve them that are included in the official documents of the reform. When the policy documents did not offer the evidence for each claim, policymakers who were in charge of writing these documents were asked to provide

them. In this way, much of the explicit knowledge that allowed them to delineate the reform program was identified and its utility could be determined. These sources of information instrumentally used were then classified and analyzed according to their source and characteristics (e.g. MECE studies, Other Studies, and Study Tour) in order to answer the research questions. This analysis showed the types of information that were used most and the importance or utility of the information produced by the preparation activities as it was applied to design the MECE-Media program.

### **1.2.3. Definition of Terms**

Instrumental Information use refers to the type of use where policy makers cite and can document the specific way in which policy-relevant information was used to ground a policy claim (adapted from Rich, 1977).

Knowledge or policy claim is the conclusion of a policy argument based on some evidence<sup>5</sup>. For this study two types of knowledge claims were distinguished:

- (a) Knowledge claim about policy problems, which is a conclusion about the situation of a policy area that needs to be solved.
- (b) Knowledge claim about policy solutions, which is a conclusion about what is necessary to do in order to best address a policy problem.

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<sup>5</sup> This definition of knowledge claim is adapted from Dunn (1994).

## **2. REVIEW OF RELATED LITERATURE**

This review of literature provides theoretical elements, methods, and empirical findings that have been developed and systematized in order to get a better understanding of how, why, and to what extent decision makers use information to base their decisions, especially in the contexts of policymaking processes. This review provides a research framework to undertake a study on information utilization in the Chilean secondary education reform.

The chapter is divided into four sections. In the first section, a review of the definitions and distinctions of information, knowledge, and information use are provided. The next section presents a review of the factors that have been used to explain the relationship between information and decision making. The third section is a review of the several methods that have been used to investigate the use of information in decision-making processes. Finally, the last section of this chapter provides several theoretical models that have been developed to explain and describe how policymaking takes place, and focuses on the nature and extent of information use by policy makers.

### **2.1. DEFINING KEY CONCEPTS**

#### **2.1.1. Information**

In the field on information utilization, the concept of ‘information’ has often been defined without making a clear distinction between this term and the concept of ‘knowledge’. In fact, both terms have been used interchangeable by some scholars in the social sciences area (Oh, 1996). Even the Longman Dictionary (Procter, 1981) defines information as “knowledge in the

form of facts.” Thus, all information is knowledge, or a type of knowledge. This is what Holsapple (1995) states in contending that information is descriptive knowledge. However, there are some distinctions between these two concepts that some authors have identified.

For Zaltman (1983), information refers to the meaning of a particular set of data. For instance, the meaning of a set of scores about student learning based on achievement tests might be that students are doing better in language than in math. “If this information (meaning) is believed, it is knowledge.” Then, Zaltman concludes that “knowledge is very much a social and psychological construction of reality” (p.290), generally based on systematic data, associated theories or models, and necessary assumptions of the theories.

Machlup (1980) contends that to clarify the differences between information and knowledge, we might make a semantic distinction between “mental acts and states, on the one hand, and the contents to which these acts or states apply, on the other.” Regarding the former distinction, “there is a clear and significant difference between information and knowledge. Information is the *activity* or *process* of informing and getting informed; knowledge is the state of knowing. The act or process of informing may create (produce) a state of knowing” (p.56). In relation to the latter semantic distinction, “by getting informed about something, the recipient may reach a state of *knowing* the contents of the information” (p.57), such as indicated above with theories or models and associated assumptions.

For Davenport and Prusak (1998), more than a process or activity, information is a message that has an impact on the receiver’s judgment and behavior. According to these authors, the word “inform” originally meant “to give shape to” and information is meant to shape the person who gets it, to make some difference in his outlook or insight. “Strictly speaking, then, it follows that the receiver, not the sender, decides whether the message he gets is really

information –that is, it truly informs him” (p.3). Therefore, information is intended to change the way the receiver perceives something, to have an impact on his judgment or behavior. It must “inform”; it is data that makes a difference. Unlike data, information has a meaning for its receiver. Accordingly, Knott (1981) understands information as “data arrayed to make a difference as to whether a decision is made and what shape it takes. Information... is what changes us” (p.110). In relation to information and action, Kochen (1975) argues that there are two ways in which information prepares decision makers for appropriate actions: (1) by removing uncertainty about the matter they are addressing; and (2) when it becomes knowledge in being interpreted, processed according to the decision makers’ point of view or perspectives.

In the context of policymaking, Oh (1996) asserts that information is what policy makers require to address a policy problem or program. Information for policymaking might come from systematic and/or scientific investigation about a policy problem, or from other types of sources (e.g. media, political conversations, etc.), that may have little empirical support. In this case, information is meant to change the way policy makers perceive policy problems, and it provides them judgment criteria or conceptual maps to decide how to deal with those problems. For instance, the five preparation activities mentioned earlier, in relation to the Chilean reform, were intended to provide relevant information to determine the main variables that affected the education quality and equity of this level of the system, and to get judgment criteria design and implement efficient policies.

From the policy analysis field, Dunn (2003) distinguishes five types of policy-relevant information or policy-informational components that inform different stages of a policymaking process. These are information about: policy problem, policy performance, expected policy

outcomes, preferred policies, and observed policy outcomes. Dunn (2003) defines them as follows (pp.4-5):

*A policy problem* is an unrealized value or opportunity for improvement which, however identified, may be attained through public action. Knowledge about what problem to solve requires information about a problem's antecedent conditions (for example school dropouts as an antecedent condition of unemployment), as well as information about values to a problem's solution (e.g., safe schools or a living wage) whose achievement may lead to the problem's solution...

*An expected policy outcome* is a probable consequence of a policy designed to solve a problem. Information about the circumstances that gave rise to a problem is essential for producing information about expected policy outcomes. Such information is often insufficient, however, because the past does not repeat itself completely, and the values that shape future behavior change over time. For this reason, analysts must be concerned with expected policy outcomes that are not "given" by the existing situation. To produce such information requires creativity, insight, and the use of tacit knowledge.

*A preferred policy* is a potential solution to a problem. To select a preferred policy, it is necessary to have information about expected policy outcomes. Information about which policy to select also depends on judgments about the value or utility of expected outcomes.

*An observed policy outcome* is a past or present consequence of implementing a preferred policy. It is sometimes unclear whether an outcome is actually an effect of a policy, so that some effects are not policy outcomes, per se. The consequences of action cannot be fully stated or known in advance, and many consequences are unanticipated. In dealing with such questions, information about the consequences of action is produced *ex ante* as well as *ex post*.

*Policy performance* is the degree to which an observed policy outcome contributes to the attainment of values, goals, or objectives. In reality, policy problems are seldom “solved”; they are most often resolved, reformulated, or even “unsolved”. To know whether a problem has been solved, resolved, or unsolved not only requires information about observed policy outcomes; it is also essential to know whether these outcomes contribute to the attainment of the values, goals, or objectives that originally gave rise to a problem. Information about policy performance provides a basis for forecasting expected policy outcomes.

Dunn (2003) asserts that these five types of policy-relevant information are interdependent; the information created at any point of the policymaking process depends on the information produced on the previous stage. For instance, information about policy performance depends on the transformation of prior information about observed policy outcomes. “The reason for this dependence is that any assessment of how well a policy achieves its objectives assumes that we already have reliable information about outcomes of that policy. The other types of policy-relevant information are dependent in the same way.” (p.6)

### 2.1.2. Types of Knowledge

Numerous types of knowledge have been identified by scholars of the information/knowledge utilization field. Some of these types of knowledge are more inclined to influence actions than others. Following are several typologies that can clarify the role of knowledge in policymaking processes.

Caplan, Morrison, and Stambaugh (1975), based on a study in which they interviewed 204 upper-level officials in ten major departments of the executive branch of the United States government to see how they used social science information to inform policy formation and program planning, distinguish between “soft” knowledge (non-research based, qualitative, and couched in lay language) and “hard” knowledge (research based, usually quantitative, and couched in scientific language). They found that hard knowledge yields little impact on policy formulation, and even though the use of soft knowledge is very difficult to assess “there is widespread use of soft knowledge and its impact on policy, although often indirect, may be great or even greater than the impact of hard knowledge” (p.47).

Lindblom and Cohen (1979) distinguish between “ordinary knowledge” and knowledge acquired by professional social inquiry (PSI) in relation to social problem solving. By ordinary knowledge they mean “knowledge that does not owe its origin, testing, degree of verification, truth status, or currency to distinctive PSI professional techniques but rather to common sense, causal empiricism, or thoughtful speculation and analysis. It is highly fallible, but we shall call it knowledge even if it is false...For social problem solving, we suggest, people will always depend heavily on ordinary knowledge” (p.12). Similarly, Louis (1981) distinguishes between *research-based* knowledge, which is generated exclusively through scientific inquiry, and *craft*

knowledge, which is knowledge that is generated based on the experience of individuals who are engaged in practice.

Another major distinction between types of knowledge is identified by Machlup (1980). This author distinguishes knowing *that* from knowing *how*: “I know *that* means that I confidently believe that something is so and not otherwise; I know *how* means that I am capable of doing something” (p.31). Examples of knowing *that* are: we know that diphtheria is a highly infectious disease (empirical knowledge); and we know that the square root of 64 is 8 (formal knowledge). Examples of linguistic, historical, and other types of knowing *that* are also provided by Machlup. In the case of knowing *how*, Machlup (1980) distinguishes four types of this kind of knowledge: 1) descriptive (e.g. we may know how something looks); 2) historical (e.g., we may know how something has happened); 3) theoretical (e.g., we may know how something (an antecedent, a cause) is generally or universally connected with something else (a subsequent, an effect); and 4) procedural (e.g., we may know how to perform a certain task)” (p.32). Machlup asserts that even though commonly, the words “practice” and “practical” have been used in connection with knowing *how*, knowing *that* may be no less important for practical application than knowing *how*.

Holsapple (1995) makes a similar classification of knowledge to that previously done by Machlup. He distinguishes three major types of knowledge: descriptive, procedural, and reasoning.

- a) *Descriptive knowledge*: knowledge about the state of some world (descriptions of past, present, and future, and hypothetical situations). It is commonly referred to as data or information... As a knower comes into possession of more or better descriptive knowledge, the knower is said to be more informed.

- b) *Procedural knowledge*: knowledge about how to do something. It is concerned with a step-by-step procedure for accomplishing some task... As a knower comes into possession of more or better procedural knowledge, the knower is said to be more skilled. Examples of procedural knowledge are: the steps used to compute an economic order quantity, and the strategy that a negotiator follows in a bargaining session.
- c) *Reasoning knowledge*. It specifies what conclusion can be drawn when a certain situation exists. Whereas procedural knowledge is “know how” and descriptive knowledge is “know what”, reasoning knowledge is “know why”. By putting together pieces of reasoning knowledge (i.e., via inference), we can reach logical conclusions and justify them by citing our reasons... as a knower comes to possess more or better reasoning knowledge, the knower is said to be more of an expert. (p.16)

Holsapple (1995) argues that “when descriptive knowledge does exist, procedural knowledge may be used to analyze it in search of decision need or opportunity. In addition, reasoning knowledge may govern the use of procedural and descriptive knowledge during recognition efforts” (p.17).

Another knowledge typology is offered by Hudson (1999), who identifies six types of knowledge in a study on the process of decision making in child protection: theoretical, empirical, personal, professional, procedural, and practice wisdom. The study compares novice social workers with expert practitioners, particularly focusing on the types of knowledge that novices and experts draw on when making the decision of whether or not to remove a child from home.

Definitions of each types of knowledge follow (Hudson, 1999, p. 149):

- 1) *Theoretical knowledge*: A set of concepts, schemes or frames of reference that present an organized view of a phenomenon and enable the professional to explain, describe, predict, or control the world around him/her.
- 2) *Empirical knowledge*: Knowledge derived from research involving the systematic gathering and interpretation of data in order to document and describe experiences, explain events, predict future states, or evaluate outcomes.
- 3) *Personal knowledge*: An inherent spontaneous process where the social worker is necessarily committing him or herself to action outside of immediate consciousness, or involves action based on a personalized notion of common sense. Such knowledge includes intuition, cultural knowledge and common sense.
- 4) *Professional knowledge*: The accumulated information or understanding derived from theory, research, practice or experience considered to contribute to the profession's understanding of its work and serving as a guide to its practice.
- 5) *Procedural knowledge*: Knowledge about the organizational, legislative, and policy context within which social work operates.
- 6) *Practice wisdom*: Knowledge gained from the conduct of social work practice which is formed through the process of working with a number of cases involving the same problem, or gained through work with different problems which possess dimensions of understanding that are transferable to the problem at hand.

All of these types of knowledge might, in different degrees, influence decision makers' behavior, some through conceptualization of relevant policy problems, like theoretical and empirical knowledge, and others by providing certain procedures or guides to deal with policy or social problems, like professional and practice wisdom knowledge.

Machlup (1980) makes another classification of knowledge based on the “subjective meaning of the known to the knower”. Their meanings are subjective because what can be intellectual knowledge for a knower may be practical knowledge for another knower. (p.108)

- 1) Practical knowledge: useful in the knower’s work, his decisions and actions; can be subdivided, according to his activities, into
  - a) Professional knowledge
  - b) Business knowledge
  - c) Workman’s knowledge
  - d) Political knowledge
  - e) Household knowledge
  - f) Other practical knowledge
- 2) Intellectual knowledge: satisfying his intellectual curiosity, regarded as part of liberal education, humanistic and scientific learning, general culture, etc.
- 3) Small-talk and pastime knowledge: satisfying the nonintellectual curiosity or his desire for light entertainment and emotional stimulation....
- 4) Spiritual knowledge: related to his religious knowledge of God and of the ways to the salvation of the soul.
- 5) Unwanted knowledge: outside his interests, usually accidental acquired, aimlessly retained.

Machlup does not clarify the relationship among these five types of knowledge. For instance, there is no explanation about whether or not the practical knowledge, which can potentially impact on policymaking, owns its origin to one, some, or none of the other four types. His explanation about how this type of knowledge is acquired (by consumption, current production cost, or investment) does not consider an influence of, for instance, spiritual knowledge.

By contrast, Kennedy (1983), who also distinguishes a kind of knowledge that is used at work (working knowledge), identifies a wider group of factors that conforms a decision maker's *working knowledge*. She contends that, "it includes the entire array of beliefs, assumptions, interests, and experiences that influences the behavior of individuals at work. It also includes social science knowledge (pp.193-194).

Determining the nature and extent (degree) of information/knowledge utilization largely depends on the conceptualization of use (Rich, 1997). According to this author (1977), for purposes of conceptualization and measurement, researchers/analysts have tended to adopt a deterministic view of how information (especially research-based information) is disseminated and used. This bias pervades most of the literature on this issue (Rich, 1977), which has been very pragmatic in orientation.

This pragmatism, for some reason, has rarely produced studies making crucial distinctions in their research designs. "Even those studies that delineate the type of information being investigated (though not employing an information typology) lack precision in specifying levels and types of use and decision-making contexts" (Oh, 1996, p.79). Some authors, such as Caplan, (1979), Dunn (1983), and Weis (1981, 1991) have attempted to establish some distinctions and conceptual definitions in order to address more appropriately the study of research utilization. A description and discussion of these authors' distinctions is presented in the next section.

In summary, the terms information and knowledge denote some semantic differences whose identification can be useful to design appropriate methods and procedures to observe and measure information/knowledge utilization in decision-making processes. Information has been defined as a message or an array of data that have a meaning for the receiver. Knowledge, on the

other hand, as the “content of mental states”—using the Machlup’s definition—on which decision makers base their decisions. There are some types of knowledge that might have a more direct influence on actions, such as *procedural knowledge* (Holsapple, 1995), *professional knowledge* (Hudson, 1999), and *practical knowledge* (Machlup, 1980). There is another group of types of knowledge that also might have a direct, and in some cases, stronger influence than the previous group on acts or decisions, but they own their origin to unsystematic, spontaneous, or informal procedures. The types *ordinary*, *craft* and *working* knowledge, defined by Lindblom (1979), Louis (1981), and Kennedy (1983) respectively, are in this group. The other types of knowledge above mentioned, such as intellectual and spiritual knowledge, might also influence those that potentially are closer to affect decisions.

### **2.1.3. Information Use**

#### **2.1.3.1. Instrumental and Conceptual Use**

The distinction between instrumental and conceptual use of information was perhaps the first attempt in trying to explore the different ways in which information is likely to be used by decision makers. Caplan and colleagues (1975) and Rich (1977) carried out in 1975 different studies on information utilization by federal policy makers in which they found important to differentiate between “instrumental” and “conceptual” utilization.

The instrumental mode deals with a specific decision or action that can be clearly designated, whereas the conceptual mode refers to some change in awareness, thinking, or understanding and it is hard to designate. Caplan (1979) argues that conceptual can be described as “generally goes unrecognized or at best is referred to obliquely in empirical research on utilization (p. 464). Regarding instrumental use, this author implies that it is verified when policy

formulation is guided by “concrete, point-by-point reliance on empirically grounded information alone” (p.464). According to Caplan (1979) instrumental use is associated with “the day-to-day policy issues of limited significance” (p.462) and conceptual use with meta-level problems of high significance.

Rich (1977) differentiated clearly these two concepts in a study on information use by federal bureaucrats, in which in-depth interviews were conducted to determine uses of data generated by the Continuous National Survey (CNS). “Instrumental use refers to those cases where respondents cited and could document ... the specific way in which the CNS information was being used for decision-making or problem-solving purposes. Conceptual use refers to influencing a policymaker’s thinking about an issue without putting information to any specific, documentable use” (p.200).

The stakes in the instrumental use definition, Weiss (1981) says, “are small and user’s interests relatively unaffected” (p.23). Conceptual use, on the other hand, is defined as gradual shifts in terms of policy makers’ awareness and reorientation of their basic perspectives, and does not involve immediate and direct application of conclusions to decisions.

Weiss (1980) has argued that immediate instrumental or direct use of information that derives from systematic research and analysis does not often occur in the types of settings she has studied. “Only occasionally does it supply an “answer” that policy actors employ to solve a policy problem” (p.381). In a survey of officials in federal, state, and local mental health agencies, she reported that instances where specific social science research could be linked to specific decisions were rare.

On the other hand, in a study of social science use by medium-level decision makers in Austria, Knorr (1977) reported prevalence of instrumental use of contracted social science research in the preparatory-decision stage.

#### **2.1.3.2. Dunn's Three Dimensions to Conceptualize Information Utilization**

Dunn (1983) claims that the variability of competing conceptions and linguistic usages of knowledge use makes “it difficult or impossible to compare, contrast, and evaluate essential variations in concepts, methods, and measures” (p.121). For this reason, he offers three different dimensions that underline competing conceptions of knowledge use (pp.121-122):

- 1) *Composition*. This dimension distinguishes between individual and collective uses of knowledge. The concept of “decision-driven” use implies that knowledge use is a process of individual decision making. By contrast, the concept of knowledge use as “enlightenment” suggests that use is a collective process.
- 2) *Expected effects*. This dimension contrasts conceptual and behavioral effects of using knowledge. This distinction captures contrasts between “conceptual” and “instrumental” use, where the former refers to changes in the ways that users think about problems and the latter denotes directly observable changes in behavior.
- 3) *Scope*. This dimension contrasts process of use in terms of their generality and specificity. The concept of “ideas in good currency” (Schon, 1979), is general in scope, while the concept of using recommendations of a program evaluation instrumentally is specific.

According to Dunn, these three dimensions permit us to classify concepts found in many of the most important studies in the field. In other words, most of the studies might be classified under the categories of individual or collective (composition), conceptual or behavioral (effects), and general or specific (scope).

#### **2.1.3.3. Weiss' Conceptualization of Information Use**

According to Weiss (1981), there are several questions that need to be answered in order to get a clearer understanding about what information utilization means within a decision-making process. These topics are (pp: 24-25):

- 1) *What is used...* recommendation from one study or several studies, some part of the data, generalizations derived from a series of related studies, social science concepts used in the studies, etc.
- 2) *How direct is the derivation from the study.* Does “use” require that people read the original report, a summary written by the authors of the report, a description by some else *about* the report? Etc.
- 3) *By whom it is used.*
- 4) *By how many people it is used.* Is there some minimal penetration of the decision-making group that must be achieved?
- 5) *How immediate is the use.* Does use have to take place shortly after the study was done?
- 6) Most important of all, *how much effect is required.* To account as a “use” must every one of the evaluation recommendations be adopted?

Whether or not Weiss was guided by these questions to find out different definitions of information use, she (1991) comes up with seven meanings or models associated with the

concept of “use”: a) the Knowledge-Driven model, b) the Problem-Solving model, c) the Tactical model, d) the Enlightenment model, e) the Intellectual or Research-Oriented model, f) the Interactive model, and g) the political model. A brief description of each model follows:

- The Knowledge-Driven model implies that research evidence by itself is sufficient to change or promote policy decisions, which is hardly the case of social science research. According to Weiss (1991), “social science knowledge is not apt to be so compelling or authoritative as to drive inevitably toward implementation” (p.174).
- The Problem-Solving model is the most common concept of research utilization, which involves the direct application of the results of a specific social science study to a pending decision. As Weiss (1991) states, “the expectation is that research provides empirical evidence and conclusions that help to solve a policy problem” (p.174).
- In the Tactical model research is used for a tactical proposal, either to support or avoid a decision. This model views social science research as “used for purposes that have little relation to the substance of the research. It is not the content of the findings that is invoked but the sheer fact that research is being done” (p.178). For instance, “a government may use research as a tactic for delaying action: ‘We are waiting until the research is completed...’” (p.178).
- In the Enlightenment model the concepts and theoretical perspectives from social science research influence and permeate the policy-making process.
- In the Intellectual or Research-Oriented model research, along with other intellectual endeavors (philosophy, journalism, history, etc.) raises the quality of public debate about specific public policy issues. Under this model research and policy influence each other. For instance, policy makers interested in a social issue can allocate especial funds to

investigate it, rising so researchers interest on that issue. Similarly, researchers can help policymakers to reconceptualize that issue once it was studied. “Meanwhile, both policy and research colloquies may respond, consciously or unconsciously, to concerns sweeping through intellectual and popular thought (‘citizen participation’, ‘local control’, spiraling inflation, individual privacy). In this view, research is one part of the interconnected intellectual enterprise” (Weiss, 1991, pp.180-181).

- The Interactive model, in which decision makers seek information not only from social scientist but also from a variety of sources. The use of research “is only part of a complicated process that also uses experience, political insight, pressure, social technologies, and judgment...It describes a familiar process by which decision makers inform themselves of the range of knowledge and opinion in a policy area”. (p.177)
- The political model, in which the research is used only for justifying decisions made on the basis of other rationales.

According to Neilson (2001), the enlightenment model of research use “has gained considerable attention and agreement within the knowledge utilization literature”. The idea that the “accumulation of knowledge through the aggregation of findings that promotes a gradual shift in concepts and paradigms” is thought as being the most realistic way to understand how research-based information impacts on policy decisions.

All the definitions of information/knowledge use introduced above offer different methodological challenges to researchers interested in this field. While the instrumental or the problem-solving definitions of information use might be relatively easy to observe or verify during an investigation process, the conceptual or enlightenment use of information are difficult to observe and verify.

## 2.2. DIFFERENT METHODS AND PROCEDURES TO MEASURE INFORMATION UTILIZATION

Some authors (Dunn, 1983; Oh, 1996; Rich, 1997; Yin, 1982; among others) have made literature reviews in order to identify the different methods and procedures that scholars of the field have utilized to study information utilization in policymaking process. A summary of their findings follows.

- *Surveys or Questionnaires and Interview Schedules:* These are the most common methods to study research utilization (Oh, 1996). According to Dunn (1983), three kinds of procedures have been utilized: a) *Relatively structured procedures*, which “allow respondents little freedom in devising responses to questions”; b) *Semi-structured procedures*, which “allow respondents an intermediate degree of freedom in responding to the questions”; and c) *Relatively unstructured procedures*, which “allow respondents maximum freedom to respond to questions, while ensuring that the same procedures can be produced in diverse settings” (pp.125-127). Surveys and questionnaires generally utilize scales and indices designed to measure knowledge use. For instance, one of the indexes reported by Dunn (1986) that might be especially pertinent for studies on information utilization by policymakers is the Overall Policy Impact (OPI) Scale. This scale “is designed to assess the impact of research on organizational decision making. The OPI scale is composed of four subsets of scale items:

(1) Manifest impact: identifiable spinoffs in decision or policy measures from the research project at the following steps of policy formation:

[ ] initiating a policy

[ ] advising

[ ] co-deciding

preparing a policy

advising

co-deciding

executing a policy

advising

co-deciding

(2) Stage impact: Identifiable spinoffs in decisions or measures at the following stages of research:

formulating the problem

operationalizing the problem in terms of research procedures

sampling and collecting data

analyzing data

etc.

(3) Certainty impact: Identifiable spinoffs in decisions or measures regarding:

perception of the problem

explanation of the causes of problem

assessment of severity of problem

dissolution of problem

(4) Latent impact: Identifiable spinoffs in decisions or measures related to:

postponing a decision

[ ] enhancing rank-and-file participation

[ ] increasing awareness of problem

[ ] enhancing policymakers' status

[ ] etc.

Overall policy impact scores are calculated by summing the totals of the four component subscales" (pp.382-387). Each subscale is ranked with different scores.

- *Content Analysis*. This procedure permits longitudinal and cross-sectional studies of patterns of knowledge production in the applied social sciences, exploratory analyses of factors associated with the adoption of innovations, planned change, and knowledge use, and investigations of the cognitive structures and strategic decisions of policymakers. Content analysis may be employed with various kinds of documents, including research reports, case materials, and other records of experience (Dunn, 1983, p.124).
- *Naturalistic Observation*. Naturalistic observations in field settings permit the development of concepts and hypothesis that are grounded in the subjectively meaningful experiences of persons studied...naturalistic observation is rarely employed in knowledge use studies (Dunn, 1983, p.123).
- *Participant Observation*. The observer becomes part of the group or situation, who can manipulate own behavior to create situations in which to test hypotheses. This procedure has been identified by Weiss (1981) as one of four major approaches to the study of knowledge use (see Table 2.1).
- *Social Framework Analysis*: This approach analyzes how "schools of thought " and "frames of reference" (eg., the Chicago School of Economics) are identified as particular ways of defining and analyzing problems...This form of analysis does not always take on

precise measurement; it relies heavily on reasoning and judgment. However, it is one empirical approach that is often used to bolster findings is citation analysis and network analysis to chart influence of ideas and individuals over time (Rich, 1997, pp.21).

- *Case Studies*: According to Yin and Gwaltney (1982), case studies may be considered investigations where the following conditions prevail:

- 1) No clear boundary exists between the phenomenon being studied and its contexts—a situation that typically extends the scope of inquiry and that produces more variables than data points—making statistical analysis virtually irrelevant
- 2) There are multiple sources of information, including data from individual respondents, on-site observations, and analysis of written documents and other artifacts.
- 3) To deal in part with the preceding two conditions, data collection is based on a protocol, however formal or informal, which guides the collection of evidence. In a sense, the field investigator is the “instrument,” being responsible for translating field information into the response categories required by the protocol.

The frequent use of case studies in knowledge utilization research stems mainly from the match between these conditions and the knowledge utilization process. Because the utilization process is a complex organizational and interpersonal process, the phenomenon is not easily separable from its context. (pp.35-36).

These authors contend that one limitation of case studies is that they are “no good tools for establishing the frequency or extensiveness of a particular phenomenon” (p.47). Accordingly, Rich (1997) claims that an “obvious disadvantage of case studies is that it is difficult to generalize on the basis of a single case.” (p.22)

- *Experimental Designs*: Experimental and quasi-experimental research designs offer the potential elimination of certain threats to validity and reliability, thereby increasing the logical certainty with which one can address the kinds of questions central to knowledge utilization as a field (Rich, p.22). According to Rich and Oh (1994), in the field of research utilization only preliminary attempts have been done to utilize experimental and quasi-experimental techniques in order isolate and assess influences on knowledge use. These authors describe, as an example of experimental research, a study intended to measure outcome of a research utilization program designed:

to disseminate current research findings and facilitate organizational modifications required for sound implementation in nursing departments of a sample of Michigan hospitals'. Under stratification by size hospitals within geographical and institutional clusters, hospitals were randomly assigned to 13 "treatment" and 15 comparison groups. Type of treatment was specified as to presence or absence of an innovation team (IT) (or of an "artificial" IT for the control situations) at the hospital. Variation in situation was controlled for through the use of the stratified random sampling employed. Levels of use were specified through five direct and five indirect measures of research utilization as a result of the IT training program intervention. In addition, observations were made at three times: prior to intervention, 1 year postintervention, and, in one-half of the treatment groups, 2 years postintervention. On average, the results of the direct measures indicated that the IT intervention was more effective than either non-IT or artificial IT groups, with gains decreasing over the next year (p.84).

This study does specify type of intervention to be utilized and type and degree of utilization over time.

- *Time-Series Analyses*. These kinds of analyses focus on differences in level of utilization over time. For instance, Larsen (1985) studied information utilization in 39 local mental health agencies over an eight-month period. At two points in time, four months and eight months following the moment when staff was exposed to relevant information for their job tasks, there were follow-up interviews to detect eventual utilization of this information.

In a study that describes and analyzes various types of qualitative research designs in studying knowledge utilization, Yin and Gwaltney (1982), found that the case study was the most common research strategy used in the studies examined. “Of the 32 investigations reviewed in the present report, 16 used case studies alone and another 9 used case studies in combination with surveys” (p.35). These authors also found that surveys are a common technique to collect evidence about knowledge utilization. Even though it can seem anomalous to use surveys to investigate a topic that has no clear “boundaries, no easily specifiable unit of analysis, no relationship to a singular unit of data collection, and a need for multiple data collection strategies” (p.27), the use of surveys contributed “to an understanding of the knowledge utilization process.”

Regarding studies focused on the effects of social science research on policy decisions, Dunn (1986) argues that it is important to recognize that such decisions are made within organized collectives or systems. This is because, he states, many studies that investigate research utilization in policy decisions have been focused “on individuals or aggregates of individuals as units of analysis” (p.373). The problem with this methodological approach,

verified in some research, is that “aggregated individual responses may provide an inaccurate and misleading picture of the direct and indirect processes through which research is used” (p.372). For this reason, the identification and analysis done by Weiss (1981) of four different approaches that researchers in the evaluation/information utilization field have utilized are an important contribution to prevent “invalid inferences about collective properties based on the aggregation of non-relational data obtained from individuals” (Dunn, 1986, p.372). These approaches are (Weiss, 1981, pp.27-28):

- 1) Start with *studies* and follow the effects of the studies on subsequent decisions. This approach has been used to investigate the consequences of a single research study (e.g., Datta (1976), on the evaluation of Head Start; Boeckmann (1976), on the New Jersey negative income tax experiment; Weiss (1970), on the federal student loan program)...The basic assumption is that the investigator can ferret out the effects of the study on the people who make significant decisions.
- 2) Start with *people* who are prospective users of research and evaluation studies (e.g., Caplan, 1975)...The basic assumption is that people can remember the studies that influenced them and will be candid and accurate in their responses.
- 3) Start with an *issue* and examine the ways in which research and evaluation help to shape the resolution of the issue (e.g., Aaron, 1978)...An underlying assumption of [studies using this approach] is that the investigator can separate the studies that actually had an impact on decision makers from those that did not, and that he can reveal the special contribution that derived from research.
- 4) Start with an *organization* and investigate the impact of research and evaluation on the life history of the organization [e.g., Rowbottom et al. (1973); Brown and Jaques

(1965)]....An assumption is that investigation can track the rippling effects of research on organizational behavior.

For some reason Weiss does not include in this list of different approaches one that starts with a decision or set of decisions and follow the evidence or basis that they stem from. It seems that this approach has not been used before to investigate the impact of research-based information on policy decisions.

Weiss (1981) relates these four approaches with four different methods of studying information/evaluation, which are “largely determined by the locus of effect that is of primary concern.” As it is shown on Table 2.1, the *studies approach*, are more linked to case studies, people approach is more linked to surveys, issues approach is more linked to review of documents, and organization approach is more linked to participant observation (pp.28-29).

As Weiss (1981) argues, none of these approaches is sufficient to address questions about how to study research utilization in decision-making processes. The fifth approach I propose to include (start with decisions) might be explored using case studies (organizational records and interviews) or reviewing documents related to the program or project where the decisions were made.

In summary, several conceptualizations of information and information use have been introduced. Also, different methodological approaches and procedures to investigate information utilization in decision-making processes have been presented. Every study on information use in policymaking is done based on implicit or explicit definitions of information and use. The importance of conceptualizing these terms is that they will determine the methods and procedures to undertake a study in this field. Some types of information might be more expected to have an impact on certain stages of the policymaking process. For instance, it is expected that

sector analysis or sector assessment provides information to diagnosis an education policy problem. Another kind of research information is needed to analysis the conditions that explain the policy problem and to what extent those conditions can be changed. The formulation of a policy requires information about availability of the inputs required to implement it (Reimers, McGinn, & Wild, 1995). If researchers are interested in study the whole process of a policy decision, there are some methods that allow them to do that, like case studies and content analysis.

**Table 2.1: Methodological Strategies According to Focus of Attention**

<i>Focus of Attention</i>	<i>Methodological Strategy</i>
Studies	<i>Case studies</i> that trace the impact of the studies on decisions. While organizational records are usually reviewed, particular reliance is placed on interviews with informants.
People	<i>Surveys</i> . Interviews are conducted with a sample of potential users of research.
Issues	<i>Review of documents (...)</i> that mark the legislative and executive history of the issue. <i>Review of research studies</i> relevant to the issue. Documents that bear the impress of research findings (testimony, references) are important for attesting to linkages.
Organizations	<i>Participant-observation</i> . Since the researchers generally have long-term involvement with the organization, their notes, records, and recollections are primary sources.























































































































For 13 pieces of information cited, it was not possible to get an evaluation from policymakers, so they were dropped from this analysis.

The pieces of information were divided into four tables: (i) Very high impact with scores 3 or higher (Table 4.9), (ii) High impact, with scores 2.5 to 2.99 (Table 4.11); (iii) Moderate impact, with scores between 1.51 and 2.49 (Table in appendix F.3); and (iv) Low impact, with score between 1 and 1.5 (Table in Appendix F.4)<sup>28</sup>.

According to Table 4.9, the information with the higher impact included 5 MECE studies, 3 “other studies”, the MECE-Basica experience, the preparatory missions of the WB, and the CASEN survey. These types of information informed 7 reform areas: General Quality, External Efficiency, Curriculum & Evaluation, Pedagogical Practices, Learning Achievement, Management, and Learning Inputs. Internal Efficiency and Equity were not informed by these pieces.

The characteristics of the most useful pieces of information, in terms of their planned impact, place of origin, and policymakers’ involvement, are summarized in Table 4.10. These results show the following:

- 5 of 9 pieces of information were planned to inform the reform design process
- All the most useful information was produced in Chile, and
- Considering that in only 9 out of 63 pieces of information cited that policymakers had direct participation in their production, the impact of these pieces was very high; 5 out of the 9 were among the most useful.

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<sup>28</sup> See the four tables in Appendix F.

**Table 4.9: Information with Very High Impact**

<b>Pieces of Information</b>	<b>Kind of information</b>	<b>Area of greater impact</b>	<b>Total number of times cited</b>	<b>Rank by Policymakers</b>	<b>Final Ranking</b>
Edwards, Calvo et.al. (1993)	Research (MECE)	Quality General	10	3	4.75
Cox, C. (1992).	Research (Local)	Curriculum & Evaluation	10	3	4.75
Trufello y Pérez (1993)	Research (MECE)	Quality General	8	2	3.5
MECE-Basica Experience	Analysis of the primary educational program	General Quality	5	3	3.5
Arzola, S. et al. (1993).	Research (MECE)	External Efficiency	4	3	3.25
CASEN Survey 1987, 1990, 1992.	Socioeconomic Indicators	External Efficiency	4	3	3.25
Himmel et.al	Research (MECE)	Learning Ach.	3	3	3
Cariola, L., et al, (1993)	Research (MECE)	Curriculum & Evaluation	3	3	3
Cariola, L. & Cox, C. (1990)	Research (Local)	Pedagogical Pract.	3	3	3
Preparatory missions WB-Ministry	Aid Memoirs	Learning inputs	3	3	3
Cox, C. (1993)	Research (Local)	General Quality	3	3	3

In relation to the pieces of information with “High Impact”, Table 4.11 shows that 7 out of 16 references correspond to international studies or experiences (National Vocational Qualifications, NVQs). Three references are MECE studies, four other local studies, the National Conversation, one policy document, and the Technical Manual for supervisors. The information of moderate and low impact—whose tables are shown in Appendix E—includes various types of references, including 3 MECE studies, the Study Tour, 8 local studies, 7 international studies, and 1 “other”.

**Table 4.10: Information with Very High Impact by Information Characteristics**

<b>Pieces of Information</b>	<b>Information Characteristics</b>		
	<b>Planned</b>	<b>Chilean Production</b>	<b>Produced by Policymakers</b>
Edwards et .al. (1993)	Yes	Yes	No
Cox, C. (1992).	No	Yes	Yes
Trufello & Pérez (1993)	Yes	Yes	No
MECE-Basica Experience	No	Yes	Yes
Arzola, S. et al. (1993).	Yes	Yes	No
CASEN Survey	No	Yes	No
Himmel et.al. (1993)	Yes	Yes	No
Cariola, L., et al, (1993)	Yes	Yes	No
Cariola, L. & Cox, C. (1990)	No	Yes	Yes
Preparatory missions WB-Ministry	No	Yes	Yes
Cox, C. (1993)	No	Yes	Yes
<b>TOTAL YES</b>	<b>5</b>	<b>11</b>	<b>5</b>

In conclusion, both the frequency analysis of citations and the analysis of impact by policy makers point out the following:

- The most relevant types of information that had an instrumental use during the Chilean secondary education reform planning process were the MECE studies and research in general (85.1% of citations).
- Considering the group of most useful information, the planned pieces of information had a slightly greater impact in the reform design process than the unplanned ones. In general, the planned activities designed to produce relevant information for the MECE-Media planning—especially 5 of the 15 studies—were successful in this objective.

**Table 4.11: Information with High Impact**

Pieces of Information	Kind of information	Area of greater impact	Total number of times cited	Rank by Policymakers	Final Ranking
Errazuriz (1993).	Research (MECE)	Pedagogical Practices	2	3	2.75
Jarufe (1993)	Research (MECE)	Internal Efficiency	5	2	2.75
MINEDUC, National Conversation.	Survey (MECE)	Pedagogical Practices	2	3	2.75
Lockheed and Verspoor, (1991)	Research (International)	Pedagogical Pract.	2	3	2.75
Avalos, B., (1994).	Research (Local)	Pedagogical Practices	2	3	2.75
Schon, Donald (1983)	Research (International)	Pedagogical Practices	2	3	2.75
Schon, Donald (1987),	Research (International)	Pedagogical Practices	2	3	2.75
Adler, Susan (1991)	Research (International)	Pedagogical Practices	2	3	2.75
Adler, Susan (1993),	Research (International)	Pedagogical Practices	2	3	2.75
Weinstein, J. (1990)	Research (Local)	Curriculum Pedagogical Practices	2	3	2.75
Salas, V. Et al. (1993).	Research (MECE)	External Efficiency	1	3	2.5
Romaguera, P. & Butelman, A. (1993).	Research (Local)	External Efficiency	1	3	2.5
National Vocational Qualifications (NVQs)	NVQs are work-related, competence based qualifications	Curriculum & Evaluation	1	3	2.5
Osborne, D. & Gaebler, T. (1993)	Research (International)	Curriculum & Evaluation	1	3	2.5
ECLAC-UNESCO (1992)	Policy Document	Curriculum & Evaluation	1	3	2.5
Weinstein, J. (1991),	Research (Local)	Pedagogical Practices	1	3	2.5
Mineduc, División de Educación General (1992)	Technical Manual for supervisors	Pedagogical Processes	1	3	2.5

- Chilean production of information was a key factor that determined the shape of the reform. The most useful pieces of information were produced in Chile by Chilean researchers, except for the WB's preparatory missions in which foreign experts participated. In other words, the policy problems and policy solutions regarding secondary education were analyzed and understood primarily from a Chilean perspective.
- Some pieces of information produced directly by policymakers in charge of the reform had a very high impact on the reform design. 5 out of 9 pieces of information were among the most useful. They also had an indirect participation in all the MECE studies by designing their request for proposals.

#### **4.4. DEGREE OF INSTRUMENTAL USE OF INFORMATION IN THE POLICY CLAIMS OF MECE-MEDIA PROGRAM**

The previous sections have identified and evaluated the impact of kinds of pieces of information instrumentally used in the reform design process. This section is focused on the policy claims identified in the two reform documents. Its aim is to determine the extent to which information was instrumentally used to ground these policy claims across the reform areas. This analysis is done considering the percentage of policy claims directly grounded by pieces of information cited by policymakers, the number of these pieces utilized to support policy claims in each reform area, and the average of citations by policy claims.

##### **4.4.1. Percentage Analysis**

Table 4.12 shows the number and percentage of policy claims grounded by direct evidence. According to this information, there are only two policy claims in two different areas and different policy stages that were not informed directly by any kind of information or evidence:

Management in the policy problem stage, and Learning Inputs in the policy solution stage. These cases represent 3.1% of the claims about policy problems, and 4.0% of the knowledge claims about policy solutions. In other words, 96.9% of the knowledge claims related to policy problems were based to some degree on evidence coming from research or other type of direct information, such as the Study Tour, National Conversation, and Others. The direct foundation for knowledge claims about policy solutions with information was 96%, about the same as for the policy problems claims.

**Table 4.12: Number and Percentage of Policy Claims Supported by Direct Evidence by Policy Area**

Policy Areas	No. and Percentage of Policy Claims supported by Direct Evidence								
	No. of Policy Problem Claims (PPC)	No. of PPC grounded by direct evidence	% of PPC grounded by direct evidence	No. of Policy Solution Claims (PSC)	No. of PSC grounded by direct evidence	% of PSC grounded by direct evidence	Total		
							No. PC	No. PC G.	%
Quality General	1	1	100%	0	0	n/a	1	1	100%
Curriculum and evaluation	8	8	100%	13	13	100%	21	21	100%
Pedagogical practices	5	5	100%	6	6	100%	9	9	100%
Management	1	0	0%	2	2	100%	3	2	66.7%
Learning achievement	1	1	100%	0	0	n/a	1	1	100%
Internal efficiency	3	3	100%	0	0	n/a	3	3	100%
External efficiency	6	6	100%	0	0	n/a	7	7	100%
Equity	4	4	100%	0	0	n/a	4	4	100%
Learning Inputs	3	3	100%	4	3	75%	5	4	80%
Total	32	31	96.9%	25	24	96%	57	55	96.5%

In total, 96.5% of the policy claims were based to some degree on direct evidence. Hence, the instrumental use of information was almost total from the perspective of this analysis

using knowledge claims. Only 2 policy claims (out of 57) did not have direct evidence. These two claims were the policy claim 4.17 in Appendix A, which asserts that predominantly bureaucratic management styles affect education quality; and policy claim 3.2 in Appendix B, which states, in general terms, how teachers can better use and obtain teaching materials.

Regarding the number of citations and pieces of information used by reform areas, it is not surprising that the policy claims referred to the curriculum/evaluation and pedagogical practices areas were grounded by more citations and pieces of information than the other areas. These areas were the most complex, and perhaps the most important to achieve the goals of education quality and equity. Table 4.13 shows that curriculum/evaluation, and pedagogical practices had 45 and 44 citations, respectively, coming from 20 different pieces of information in the case of curriculum/evaluation, and 26 different pieces of information in the case of pedagogical practices.

**Table 4.13: Citations and Pieces of Information by Policy Area**

Policy Areas	Citations by Areas <sup>29</sup>			No. of pieces of information used by Area <sup>30</sup>		
	Policy Problem	Policy Solution	Total	PP	PS	Total
Quality General	7	0	7	7	0	7
Curriculum and evaluation	17	28	45	9	13	20
Pedagogical practices	14	30	44	11	25	26
Management	0	16	16	0	11	11
Learning achievement	3	0	3	3	0	3
Internal efficiency	5	0	5	3	0	3
External efficiency	20	0	20	13	0	13
Equity	6	0	6	6	0	6
Learning Inputs	5	9	14	1	9	10
Total	77	83	160	53	58	99

<sup>29</sup> This information was obtained from Table 4.5.

<sup>30</sup> This information was obtained from Table in Appendix C.

The areas with fewer citations and fewer pieces of information grounding their knowledge claims are those that did not have claims for the policy solution stage, except External Efficiency, which had 20 citations coming from 13 pieces of information. These areas are: Learning Achievement (3 citations from 3 pieces of information), Internal Efficiency (5 citations from 3 pieces of information), Equity (6 citations from 6 pieces of information), and General Quality (7 citations from 7 pieces of information). All of them were based basically on quantitative information, using standardized tests, in the case of learning achievement, and educational and socio-economic indicators for internal efficiency and equity.

An analysis of the average number of citations by policy claims (Table 4.14) shows that in the policy problem stage the reform areas General Quality (7), External Efficiency (3.3), Pedagogical Processes (2.8), and Curriculum and Evaluation (2.1) had more citations by policy claims on average. In the policy solution stage Management (8) and Pedagogical Practices (7.5) were the areas with the most citations by policy claims. Considering both policy stages, and only the areas that had more than one policy claims, Management (5.3) and Pedagogical Practices (4.9) were the areas with more citations on average. Finally, the knowledge claims about policy solutions (3.5) had slightly more citations on average than those about policy problems (2.5).

Evidently, all these direct sources of information have been interpreted, categorized, and organized, according to conceptual use of other sources of information not identified, that have informed policy makers' "working knowledge"—using Kennedy's (1983) concept—for a long time. The real impact of instrumental use of information on policymaking has to be measured considering the capacity of policymakers to incorporate new evidence into their knowledge background. That kind of analysis goes beyond the scope of this study. Even considering this

limitation, it is possible to affirm that the relative high instrumental use of information verified in the MECE-Media program is, according to many authors (Weiss, 1991, Caplan, 1975, among others), very unusual to find in policymaking initiatives.

**Table 4.14: Average of Citations by Policy Claims**

Reform Areas	Policy Problems			Policy Solutions			TOTAL Average of Cit. by PC
	No. of PCs	No. of Citations	Average of Cit. by PC	No. of PCs	No. of Citations	Average of Cit. by PC	
General Quality	1	7	7	0	0	-	7
Curriculum and evaluation	8	17	2.1	13	28	2.2	2.1
Pedagogical practices	5	14	2.8	6	30	5	4.0
Management	1	0	-	2	16	8	5.3
Learning achievement	1	3	3	0	0	-	3
Internal efficiency	3	5	1.7	0	0	-	1.7
External efficiency	6	20	3.3	0	0	-	2.9
Equity	4	6	1.5	0	0	-	1.5
Learning Inputs	3	5	1.7	4	9	2.25	2.0
Total	32	77	2.4	25	83	3.32	2.8

In summary, the analysis of number and percentage of citations by policy areas showed the following:

- Information was extensively used instrumentally during the design process of the secondary education reform, especially in more complex reform areas, such as curriculum/evaluation and pedagogical practices. The policy claims that were not supported by evidence were related to Management and Learning Inputs.
- Similar proportions of evidence were used on average to directly ground knowledge claims in the policy solution stage and in the policy problem stage. Even though there

were fewer knowledge claims formulated for the policy solution stage, it had similar citations as the policy problem stage.

Since other types of use were not measured here, it is not possible to establish the extent to which other information was related to the policy claims for either stage of the reform effort. Therefore, it is not possible to determine whether the instrumental use, in comparison with other types, was determinant for the formulation of the policy claims.

#### **4.5. INFORMATION USE MODELS IN THE MECE-MEDIA PROGRAM**

The purpose of this section is to identify the model(s) of information use described in Chapter II that best describe the instrumental type of use verified in the MECE-Media program. Seven information use models<sup>31</sup> identified by Weiss (1991) and five policymaking models<sup>32</sup> were introduced in Chapter II. In general terms, some of these models address mainly rational behavior of policymakers in using information, and others a political one. Given that the focus of the data collection for this study was the instrumental use of information for planning purposes, and not political variables, the models considered to answer research question 4 are the Rational, Incrementalism, and Problem-Solving Models.

To assess the applicability of each of these models to the instrumental information use verified in the MECE-Media program, a summary of this process is presented, using the information collected for this study. Finally, in order to determine which model(s) are more identifiable with the MECE-Media program, the main characteristics of the models identified as

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<sup>31</sup> The Knowledge-driven, Problem-solving, Tactical, Enlightenment, Intellectual or Research-oriented, Interactive, and Political models.

<sup>32</sup> The Rational, Incrementalism, Enlightenment, Interactive, and Policy Paradigm models.

more rational are applied to the instrumental information use process carried out in this program, considering also the type of data needed to do this analysis.

#### **4.5.1. The Information Use Process in the MECE-Media Program**

The reform team in Chile did an enormous and deliberate effort over several years to get their best diagnosis of the secondary education problems, and to identify the most promising policy solutions to resolve those problems, based both on international experience, theoretical and empirical knowledge, and research findings. In order to design the MECE-Media program, many financial and professional resources were invested during a two-year period to fill the knowledge gap existing on secondary education in 1990. Part of this team also had the experience of conducting the primary level education reform that started officially in 1992, and planning the many studies carried out by others.

According to the data collected for this study, most of the policy claims extracted from the two documents analyzed were to different degrees directly grounded by research evidence and other kinds of information sources. The formulation of the policy problems was based on several studies that addressed different areas of the system and used diverse methods and information sources. Similarly, the delineation of policy solutions was also based to some degree on evidence drawn from different information sources, consulted and analyzed over a relatively long period of time. In this sense, policy decisions were taking shape within a process of reflection that started even before the reform team was created, as several were doing related research in secondary education.

The team in charge of the reform was especially concerned with the opinions of interest groups about both the problems and possible solutions to secondary education in Chile.

Accordingly, the National Conversation was carried out in 1993 in order to learn the opinions of teachers, parents, students, religious groups, local communities, and other groups about a variety of issues related to secondary education. Even though this initiative integrated key actors into the reform effort, in this study it had a technical rather than a political utility. People who answered the questions for this conversation helped to clarify some problems of the system and the kinds of initiatives needed to resolve them. As indicated previously, the National Conversation was particularly relevant to problems related to pedagogical practices.

#### **4.5.2. Applicability of the Information Use and Policymaking Models**

##### **4.5.2.1. Applicability of the Problem-Solving Model**

The Problem-Solving model developed by Weiss (1991) explains to an important extent the instrumental information use process identified in the MECE-Media case. This model implies a direct application of research to a pending decision, which is exactly what is shown in the analysis of policy claims and pieces of information done in the previous sections of this Chapter for the MECE-Media program. The pieces of information cited by policymakers were directly used as foundations for the knowledge claims about policy solutions identified in the two reform documents. They were also identified as some of the most important information in the reform effort.

Weiss (1991) explains other aspects of this model that are very similar to the information use process that occurred in this program. These similarities follow:

Weiss (1991) differentiates two ways in which research evidence can affect policymaking in this model. One way “is the purposeful commissioning of social science research and analysis to fill the knowledge gap” (p.175). This was precisely what the reform team did with the 13 studies

contracted in order to get a better understanding about policy problems and solutions regarding the Chilean secondary education.

The typical sequence that the policymaking process follows in this model was also the sequence experienced by the reform team. According to Weiss, this sequence is: “definition of pending decision – identification of missing knowledge – acquisition of social science research – interpretation of the research for the decision context – policy choice” (p.175). This sequence implies a direct or instrumental applicability of information in decision making. In the case of the secondary education reform in Chile, this sequence was: a) definition of a policy problem that requires a solution (education quality and equity); b) identification of the knowledge gap regarding these problems, which was indicated by the different topics that the 13 studies addressed; c) the 13 MECE studies plus other pieces of information were collected and utilized to inform the MECE program; d) the information collected was read and interpreted according to the specific characteristics of the Chilean secondary education, so that, for instance, the information obtained during the Study Tour to Asian countries was interpreted based on the cultural differences between the Asian countries visited and Chile; and e) the MECE-Media program was launched essentially as it was planned including only some changes afterward, specifically on the curriculum component.

Another characteristic of this model is that “policy makers and researchers tend to agree on what the desired end state shall be”. This consensus cannot be verified in the MECE-Media program design process with the data collected. What can be confirmed is that there was general consensus among different interest groups (political parties, teachers, researchers, etc.) around the need to improve quality and equity of secondary education in Chile.

Even though this model does not prescribe a comprehensive rationality, it follows a rational procedure to plan decisions, characterized by relying on research and technical analyses to reduce uncertainty about policy problems and solutions. The extent to which rationality is achieved depends on the decision makers profile and resources available. The political variables involved in policy decisions are not considered in this model.

#### **4.5.2.2. Applicability of the Rational Model**

It was not intended in this study to determine how policymakers were using information during the whole decision process and what kinds of analysis they did on policy alternatives and their consequences, if any. Therefore, it is beyond the scope of this study to determine the degree of rationality or bounded rationality that policy decisions on secondary education were based. However, it is possible to affirm that there was a clear intent to identify and resolve policy problems using mainly a rational approach, that is, reducing uncertainty about the policy problems to be addressed empirically, and exploring policy alternatives to resolve them. The aim of getting an accurate diagnosis of the secondary education level, and the analysis of likely solutions derived from planned studies and experiences are clear indications of an intended rational behavior.

#### **4.5.2.3. Applicability of the Incrementalism Model**

The main difference of the Incrementalism model with the information use process verified in the MECE-Media program is that under the former policy is seen as making incremental changes, small moves on particular problems (Braybrooke & Lindblom, 1963), while the latter has been defined as using information for making comprehensive policy reform, which was

carried out as it was planned during the design period, without making important adjustments in its implementation process. The Incrementalism model also describes policymaking construction as a bargaining process, where political parties offer “only incrementally different policies in each policy area they wish to compete” (Braybrooke & Lindblom, 1963). This characteristic of the Incrementalism model cannot be confirmed with the data analyzed in this study. However, there is no indication from previous conversations with the policymakers in charge of the reform that this bargaining process was the case for the MECE-Media program, at least to an important extent. Hence, aspects of the Incrementalism model also seems applicable to the MECE-Media case. But, some central aspects of this model were not addressed in this study.

In conclusion, the information collected in this study on the instrumental use of information in the MECE-Media design process, points out that the policymakers who led this program followed to an important extent a rational, problem solving scheme to plan this program, though the specific nature and degree of rationality remains unknown. According to some literature consulted, purely rational decision making based on the “Rational Man” model, which requires each possible solution to be identified and considered for each problem, is beyond human beings capabilities (Simon, 1976), and the chance of maximizing decisions has to be replaced by selecting a solution that adequately satisfies policy goals. Given the number and variety of pieces of information directly used to design the MECE-Media program, it seems accurate to say that the policymakers in charge of the reform used information to achieve an important degree of technical and rational satisfaction, and is a good example of a problem solving model described by Weiss (1991).

According to the analysis done previously, the instrumental use of information verified in the MECE-Media program was more typical of the Problem-Solving Model, developed by Weiss

(1991). This model, which follows a rational procedure to make decisions, describes an information use process that matches very well the one observed in the MECE-Media program.

## **5. SUMMARY AND DISCUSSION**

### **5.1. PURPOSE FOR THE STUDY**

At the beginning of the 1990s, Chile started an array of reforms in order to improve education quality and equity. Several policymakers with a strong background in research and with experience in policymaking led this reform program. In the case of the secondary education reform (1995-2000), they coordinated the production of relevant information to design the MECE-Media program, which included fifteen studies and four other preparatory activities<sup>33</sup> carried out between 1992 and 1994.

The role of policymakers/researchers producing information and coordinating the reform program is an exceptional case in the field of information utilization in policymaking processes. The well-documented disconnection between research and decision making has been mostly explained using directly or indirectly the ‘two communities’ theory (Caplan, 1979). This theory claims cultural and behavioral differences between researchers and policy makers affect communication between both groups, diminishing the possibilities of decision makers to be informed by research. In the Chilean case, the policymakers were also active researchers in the policy area.

Hence, the policy-making and information utilization processes carried out in Chile to design the MECE-Media program was a unique opportunity to explore the characteristics of a policy-relevant information utilization process, where policymakers also belong to the

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<sup>33</sup> The Study Tour to Asian countries, the National Conversation, the International Workshop, and the Pilot Project.

researchers' community, and where much information produced was intended to directly structure policy problems and policy decisions.

Considering these unusual characteristics and that information utilization studies have rarely, if ever, addressed the information use results of researchers in policymaking roles, the purpose of this study was to investigate the extent and importance of different types of information instrumentally used for the formulation of policy problems and the delineation of policy solutions stated by the policymakers in charge of the secondary education reform program. The research questions formulated to achieve this goal were the following:

1. What kinds of information had an instrumental or direct use in the two major steps (formulation of policy problems and delineation of policy solutions) of policy development?
2. What kinds of information were most useful for the two major steps of policy development?
3. To what extent was there instrumental use of information to formulate the policy problems and delineate the policy solutions stated in the MECE-Media program?
4. To what extent was the instrumental type of use verified in the MECE-Media program typical of models or theories of use?

These questions were answered by accomplishing the following steps: a) identifying, through document analysis and the use of questionnaires for policymakers in charge of the reform, 53 knowledge claims about policy problems and policy solutions formulated to carry out the education reform; b) identifying 63 pieces of information used to ground those policy claims; c) analyzing the citation frequency of each piece of information; d) analyzing the characteristics of these pieces of information in terms of their different types, geographic origin, and policymakers involvement in their production, and e) comparing the instrumental information use process verified in the MECE-Media program with the information use models introduced in Chapter II.

## **5.2. SUMMARY OF RESULTS**

The analysis of the pieces of information that were directly used to ground policy claims showed the following results:

### Kinds of information used instrumentally

1. Empirical studies were the type of information instrumentally used most often and were judged to be most influential, with planned and unplanned research making similar levels of contribution. They represent 85% of the total citations to support policy claims from which 43.1% correspond to MECE studies, and 41.9% represent other studies. The information not obtained from the MECE preparation activities was taken from other studies or pieces of information.
2. The direct and indirect participation of policymakers in the production of 9 and 13, respectively, pieces of information instrumentally used meant that, besides their role of knowledge users, policymakers acted to an important extent as knowledge producers during the preparation process of the MECE-Media program.

3. Given that of 63 pieces of evidence cited, 45 were produced in Chile and 18 abroad, the effort of knowledge construction to improve Chilean secondary education was mainly undertaken by and based on Chilean researchers.

#### Kinds of Information Most Useful in the Two Policy Development Steps

1. Planned pieces of information had a greater impact in the policy problem stage, and unplanned ones more impact in the policy solution stage.
2. The information produced in Chile was most commonly used and most valuable in terms of impact on policy decisions.
3. Policymakers in charge of the reform participated in a relatively large number of cited pieces. They directly participated in the production of 9 (14.3% out of the total) pieces of information, and indirect participation in the production of 13 (20.6%) pieces instrumentally used. Several of these pieces of information were the most valuable, especially in the problem delineation stage.

#### Extent to which Information Was Used to Formulate Problems and Delineate Solutions

1. Information was used extensively for instrumental purposes during the design process of the secondary education reform, especially in more complex reform areas, such as curriculum/evaluation and pedagogical practices.
2. Similar proportions of evidence were used on average (3.5% versus 2.5%) to directly ground knowledge claims in the policy solution stage and in the policy problems stage.

#### Models of Information Use Descriptive of Results

1. The information use process verified in the MECE-Media program was fundamentally a rational process for which the Problem-Solving model (Weiss, 1991) provided a good description.

### 5.3. DISCUSSION

In this study the concept of instrumental use of information was utilized to examine the link between policymaking and research and other types of information that took place during the two-year preparation period of the Chilean secondary education reform. According to the findings of this study, instrumental use of information was extensive during the MECE-Media planning process; sixty-three references were instrumentally used to ground almost every knowledge claim about policy problems and policy solutions. As a result, the Chilean secondary education reform showed a close link between information produced and policymaking, and this link was to an important degree instrumental. Also, a high involvement of policymakers in relevant information planning and production was verified.

These findings are consistent with the relevance of the “personal factor” identified by Patton (1977) as a factor that explains information use in decision-making processes. Also, the impact of using a participatory approach (Ruskus & Alkin; 1984, Reimers & McGinn, 1997) in information production for decision-making processes is also supported by the results of this study.

In relation to the idea of “personal factor”, Patton (1997) argues that when there is a decision maker or a group of decision makers who personally care about relevant research results for decision making, information is more likely to be used. According to this author, the “personal factor” is a key variable to explain information utilization. If this is the case, the special concern of the Chilean policymakers about producing and collecting relevant information to formulate policies can be interpreted as a behavior that significantly affected the information

use verified in the MECE-Media program. They demonstrated a high interest for grounding their decisions on policy-relevant information.

According to Patton and colleagues (1977), one of the factors that can explain underutilization of information is the high instability of decision makers in high-level positions. Interestingly, this hypothesis is confirmed by the relatively long period of time that Chilean policy makers were leading the reform effort. They planned the information production and collection, and later used the several pieces of information that were gathered as evidence to formulate the MECE-Media program.

The policymakers' involvement in information production verified in this study supports also the findings of other studies [Ruskus and Alkin (1984) in the evaluation field, and Reimers and McGinn (1997) in the policymaking area] about the effect of a participatory approach on information utilization. These authors claim that the participation of decision makers in a research process from the outset enhances the possibilities of information use. Even though this study did not investigate the factors that affected information use during the policy design process of the Chilean reform, the involvement of the main policymakers in information production, and also the extensive information use verified in this research, is consistent with the participatory approach presented by the authors cited above. According to this approach, there is a direct relationship between information use and user participation in information production, which was the Chilean case.

This approach is confounded with the fact that the policy makers were initial planners of the research undertaken, and were responsible for some of the research and information gathering. It is not clear what brought about the extensive use of other pieces of information identified in this study. This approach accounts only for those pieces in which decision makers

were directly involved in their production. Hence, the personal factor identified by Patton et al. (1977) is more powerful to explain the high information utilization verified in the Chilean educational reform. It implies the existence of a decision maker's attitude and interest for research use, which can expand the group of studies potentially usable to those produced without decision makers' participation.

### **5.3.1. Communication between Researchers and Policy Makers**

The above discussion reveals to some extent the importance of communication between researchers and policy makers. Both in the participatory approach and in the personal factor, the interaction of researchers and decision makers is seen as central to producing and using relevant information for decision purposes. Oh (1996) argues that the greater the communication between these two actors, the greater the possibility of information use. The "Two-Communities" theory, which has been used extensively to explain the lack of information use in policymaking processes, is based on differences between the social scientists who produce the information and the upper-level policy makers who determine policy (Caplan, 1979), especially the different languages and values.

The presence of research and researchers during the MECE-Media design process was extensive. The reform team strengthened the link between researchers and policymakers by coordinating a group of fifteen research projects that involved the participation of more than 50 Chilean researchers. Policymakers in charge of the reform read and assessed each study in terms of its utility for policy development. In addition, the role played by policy makers as information producers linked in themselves the critical connection between producers and users of

information. This close link between the research and policymaking realms probably enhanced information use during the MECE-Media program.

Finally, the high instrumental use of information verified in the MECE-Media program contrasts enormously with the description of instrumental use found in the literature, such as Caplan (1979), and Weiss (1980). Both of these authors base their work on formal policy making in the U.S., which is quite different from that of the Ministry of Education in this project. Only the results reported by Knorr (1977), who found high instrumental use of government-sponsored research projects by medium-level decision makers in the preparatory-decision stage, are similar to those found in this study. However, in the Chilean case, not only contracted research and planned information were instrumentally used, but also unplanned information found in the literature, which is rarely documented in information use literature. Almost all the studies that have directly and indirectly reported information use in an instrumental way identified only planned information as being used (e.g., Rich, 1977; Patton, 1977; Ruskus & Alkin, 1984; Knorr, 1977; and Reimers & McGinn, 1997).

The impact of variables such as policymakers' involvement as researchers in information production, their interest in using information to identify both problems and solutions, and their ongoing communication with Chilean researchers through active participation may explain to an important extent this high information use. However, the specific weight that these variables had on the information use in the MECE-Media program was not determined by this study.

## 5.4. CONCLUSIONS

Given the results presented in Chapter IV and the discussion of findings, the following conclusions can be drawn from this study:

Although researchers rarely report extensive instrumental use of results from planned studies in policy-making processes, in the Chilean example with policy makers having extensive research experience and helping to plan needed studies, results obtained were used extensively in an instrumental way and judged as very important by the leading policy maker. In addition, unplanned studies were also extensively used instrumentally to support policy development.

The major role of policymakers in information production for policy development, along with a high instrumental use of information during the MECE-Media program design process was consistent with the participatory approach presented by Ruskus and Alkin, (1984), and Reimers and McGinn (1997). These results indicate that the likelihood of information use increased greatly when policymakers are directly involved in knowledge production for decision purposes in settings similar to the Chilean one. This likelihood of information use could be strengthened if policy makers are really interested (Patton et al., 1977) in informing their decision with research information. Researchers with much experience using such information for decision making would see the value of it and expect to use the results for policy delineation.

The long-term research and planning process carried in Chile, by a stable decision making team that was directly involved in the production of policy-relevant information, facilitated to an important degree that the policy problems and solutions identified were based extensively on the planned information that was obtained using several procedures (e.g. empirical studies, study tour, and surveys), and exploring national and international experiences and literature.

The search for policy-relevant information was not circumscribed to the planned activities to collect and produce that information. More than half of the citations for the problems and solutions came from other sources, both inside and outside Chile, which had a greater impact on the policy solution stage of the reform planning process. This high use of unplanned information is even more unusual to find in the literature, as noted in the Discussion above. Almost all the studies that have reported information use in an instrumental way identified only planned information as being used.

The Problem-Solving model (Weiss, 1991) of information use described to an important extent the results of this study. The intended rational procedures used by the policymakers in charge of the Chilean reform were a good example of the Problem-Solving model. However, the extent to which political, incremental, and bounded rationality variables occurred in this planning process were not studied. Future studies of similar situations need to investigate them to better identify how various types of variables included in the information use and policy making models tend to function in this type of setting.

## **5.5. IMPLICATIONS FOR PRACTICE**

This study examined the extent to which information was used in an instrumental way during the design process of the Chilean secondary education reform. A high degree of information use was verified in this case. Some variables related to information use that were identified should be considered in similar settings to enhance research information use in relatively long-term policymaking efforts like the Chilean one. Given that this study was only focused on instrumental use of information, other kinds of information were not identified. Distinctions between bounded rationality (Simon, 1976) and other rational models were not made. The

influence of political variables on information use were not identified either. Therefore, the implications for practice that are presented next have to be read considering these limitations.

Ways to strengthen direct impact of research-based information on policy reforms:

1. Planning long-term processes of policy development with a stable policymaking team.

The planning period of the MECE-Media program lasted formally 2 years and was coordinated by the same policymaking team. They were involved in the entire process of information gathering and production, and in the discussions held with the World Bank counterpart about the best policy strategies to be implemented in the secondary education. Some of these team members also had experience coordinating projects in the MECE-Básica program. This relatively long period of time designing the secondary education reform and also coordinating the primary education program, seemed to facilitate the acquisition of policy-relevant information and reflection to identify problems, investigate alternative solutions, and develop policy based on knowledge from the setting.

For any country that is planning an education reform, trying to identify the main policy problems and delineate policy solutions, the length of time allocated to produce the information needed for such complex policies seems critical. The amount of time needed to plan an education reform might depend on several factors. One of them is the level of knowledge that policymakers have on the educational research production in their country. The more they know, the faster will be the process of identifying information that has to be produced. Including researchers in the planning stage of the reform can help to identify what is and what is not known about the policy areas they want to

address. They can also help to design the studies and other information gathering methods needed.

The Chilean experience confirmed also the importance that a stable policymaking team carries out the process of reform planning. It is more likely to use information when the same policymakers that initiated an information production process analyze this information for decision purposes. It is very likely that high turnover rates of high-level policymakers diminish the chances of using research information that was produced under the leadership of a different policy maker.

2. Including policymakers in research production. As already indicated, policymakers in charge of the MECE-Media program produced, directly or indirectly, several pieces of information instrumentally used during the planning process of the reform. Some authors have highlighted the value of following a participatory approach in order to enhance information use. This approach can be especially relevant with policymakers with little or no experience doing social science research. Their participation in designing a study, collecting data, and analyzing results might help them to understand better the nature of policy problems and the potential policy solutions that can arise from research.
  
3. Strengthening a national research capacity. Most of the planned and unplanned information instrumentally utilized during the MECE-Media program design was produced in Chile by Chilean researchers. This information was also evaluated as the most valuable in terms of impact on the reform formulation. Even though this study did

not measure the effects of the place where information was produced on the Chilean reform design, the high use of Chilean studies is an indication of how important it might be to develop social science research capacity in a country in order to understand and address its main policy problems. Having a body of relevant research and knowledgeable researchers available to dialogue with policy makers seems an important condition to enhance information use. The more researchers doing policy-relevant studies, the more the likelihood of dialogue between producers and potential users of this information. This does not mean the opposite; a country with high research production may not necessarily achieve high levels of information use in its policymaking—there are other factors influencing this relationship—but the dialogue is more likely when researchers have something important to say about policy issues. Therefore, the results of this study show the value of strengthening local research capacity, investing in research projects and training researchers, and developing a context for meaningful dialogue in order to enhance information use in policymaking processes.

4. To consult a broad variety of types of information. Based on the findings of this study, a systematic search for information needed for policy development should include not only empirical studies, but other types of information that can complement research information. In the case of Chile, the experience of policymakers leading related policy programs (MECE-Basica), visiting other countries to learn about their education systems, surveying stakeholders on issues relevant to the reform, analyzing socio-economic and educational statistics, and consulting other types of information (organizational models, policy analysis documents, etc.), provided relevant information to formulate policy

problems and delineate policy solutions. Therefore, the reflection process that is behind reform planning should be supported by a variety of information. How the policymakers themselves can best participate in their production and use is an issue for future research.

## **5.6. IMPLICATIONS FOR FUTURE RESEARCH**

The general aim of this study was to examine the relationship between research information and policymaking that took place during the planning process of the MECE-Media program in Chile. To do this, this research circumscribed the investigation to the instrumental use of information to state knowledge claims about policy problems and policy solutions. In doing so, the study limited the definition of policy decision to a policy claim contained in official documents (planned decisions), and took out from this definition the actual decisions made once the reform started in 1995, and the decisions that were made to not include certain policies, and therefore not mentioned in the policy claims examined.

Also, the measurements of instrumental use of information did not include the degree of application that each piece of information had; some pieces of information could have been much more influencing than others in terms of the specificity in which they were considered by policymakers. Considering these limitations, future research should address more comprehensively the definitions of policy decision and instrumental use, as indicated in the following suggestions for future research.

To include an analysis of the planned and unplanned decisions made once the program started. For example, the entire section of curriculum of the MECE-Media program was modified after the program proposal was agreed between the World Bank and the Chilean government. These changes were made based on evidence found after the preparation stage of

the program was over. In order to have a better understanding of the whole process of information use, the implementation stage of the program should be included in the program in order to identify policy decisions that were modified from their original design, and new policy decisions added after the preparation stage of the reform.

2. To include the analysis of decisions made to not include certain policies as part of the improvement strategy of the Chilean secondary education. For example, one of the most important dilemmas that policymakers faced during the preparation stage of the reform was whether or not to reform the structure of the system. After a long period of reflection and data collection they made the decision to not reform the structure of secondary education level. The evidence used to make this decision should be also considered and analyzed in a study on the relationship between information and policymaking in settings like the Chilean one.
3. The analysis of policy claims and citations used in this study was suitable to only identify instrumental use of information. However, other procedures are needed to measure the degree of actual applicability of each piece of information. Some pieces of information can be taken as a general guideline and others can inform in more detail concerning policy decisions. For example, pieces that provided information about internal and external efficiency of the system helped to elaborate a detailed diagnosis in these policy areas. On the other hand, pieces used to elaborate direct actions on schools (see policy claims 2.3 and 2.3.1 in Appendix B) did not provide the specificity with which these policy claims were made. Doing a more comprehensive analysis will allow us to determine how linear or direct the information use process was, and also, for what stages

of the policy development general or specific applicability of information are more typical.

## **APPENDIX A**

### Claims about Policy Problem and Information Used

Source	Studies Findings (policy-relevant information)	KNOWLEDGE CLAIMS ABOUT POLICY PROBLEMS
<b>I. INTERNAL EFFICIENCY</b>		
<p>-Jarufe (1993) Indicators of Coverage and Quality of Chilean Sec. Educ.</p> <p>Some stats were also compared to those presented by: MINEDUC. Planning and Budget Division (1993)</p>	<p>About 24% of the 14 to 17 year-old cohort is not covered by SE. (WB, p.9)</p> <p>High Repetition and Dropout rates (between 7.9 and 11.7% annual for the 1985-1991 period). (P.36)</p> <p>The system losses almost 30% of its students between 9<sup>th</sup> and 12<sup>th</sup> grades. (p.36)</p> <p>In Public schools the drop out was 40.1% in the 1987-1992 cohort; while in private schools the same cohort had a drop out rate of 11.6%. (p.36)</p> <p>Annual repetition average between 1985 and 1991 was 12.3%. (p.37)</p>	<p><b>1.1) PC:</b> The internal efficiency of the system is dramatically affected by <u>high levels of</u> grade repetition and drop out rates (p.37)<sup>34</sup>.</p>
<p>-Jarufe (1993) Indicators of Coverage and Quality of Chilean Sec. Educ.</p>		<p><b>1.2) PC:</b> Low coverage, especially among rural and at-risk populations, high repetition and dropout rates, and an excessively long average time to complete the prescribed four-year secondary cycle, result in high wastage of human and physical resources. (WB, p.9)</p>
<p>-Lockheed and Verspoor, (1991) <i>Improving primary education in developing countries</i>, World Bank, New York, Oxford</p>		<p><b>1.3) PC:</b> The system's low internal efficiency results from: (i) the unavailability of learning inputs such as textbooks, school libraries, teaching materials, computer resources, and essential infrastructure; (ii) the lack of teachers trained in modern pedagogical techniques and the use of learning inputs; (iii) inadequately targeted special-assistance programs for low-income students; and (iv) the lack of a curricular alternatives program for at-risk students. (WB,10)</p>

<sup>34</sup> Numbers in parentheses indicate the page number where the policy claim was found. When the policy claim was obtained from the World Bank document, it is indicated by its acronyms WB, otherwise citations correspond to the Ministry of Education document.

<b>II. EXTERNAL EFFICIENCY</b>		
<p>-Arzola, S. et al. (1993). Destino educativo/laboral de los egresados de la EM. PUC- MECE</p>	<p>58.2% of SE graduates don't continue studying. In spite of the fact that less than half of students continue to study the S-C track is officially organized as preparation for tertiary studies. (p.39)</p> <p>Almost 40% of graduates who were not studying in 1990 were also not working. (p.40)</p>	<p><b>2.1) PC:</b> SE is inefficient preparing students for tertiary education institutions and the labor market. (p.39)</p>
<p>-Arzola, S. et al. (1993). -Irigoin &amp; Corvalan (1993). Irigoin, M. Corvalan, O. (1993). Educ. Tecnica Profesional. Estudio MECE USACH - Oteiza, F. et al. (1993). Modelos para la produccion y actualziacion curricular. USACH – MECE. - FIDE Tecnica (1992). Diagnostico de la Calidad de la ensenanza de las escuelas afiliadas a la FIDE Tec.</p>	<p>Almost 60% of SE graduates do not continue studying. (39)</p> <p>A very small proportion of T-Voc graduates go on to advanced studies.</p>	<p><b>2.2) PC:</b> The main SE's external inefficiency is that the larger track (S-C) offers a curriculum and a preparatory training for higher education but this option is pursued by the minority. (p.44)</p>
<p>-Errazuriz (1993). Demandas sociales...</p>	<p>This study provides opinions from different stakeholders about the relevance of SE for their graduates. (p.45)</p>	<p><b>2.3) Tacit P.C.:</b> External efficiency is affected by a broad disconnection between SE's curriculum and pedagogic practices with the external milieu where graduates have to function. (p.44)</p>

<p>-Arzola, S. et al. (1993). Destino educativo/laboral de los egresados de la EM. PUC MECE</p> <p>-Irigoin &amp; Corvalán (1993). Educ. Tecnica Profesional. Estudio MECE USACH.</p> <p>Also, international evidence and arguments in:</p> <p>-John Middleton, Adrian Zideman, Arvil van Adams, (1993), <i>Skills for productivity. Vocational education and training in developing countries</i>. The World bank, Oxford University Press.</p>		<p><b>2.4) Tacit P.C.:</b> External efficiency is affected by weak linkages between secondary schools, especially T-VOC, and the productive sector (WB, p.8)</p>
<p>- Cox, C. (1992). Sociedad y conocimiento en los 90: puntos para una agenda sobre currículo del sistema escolar, Estudios Públicos, N° 47, Santiago</p> <p>-Oteiza, F. &amp; P.Montero (1993), Modelos para la producción y la actualización curricular. Mineduc</p> <p>-Marín, R. Et al. (1993), Descripción y evaluación del proceso de desarrollo curricular.</p>	<p>The Ministry did not have units responsible for the curriculum, nor concepts for its assessment and development; reforms in this domain had been spasmodic (every other decade or so) and with no systematic capacities for evaluating pre-existing curriculum, nor the demands from society to adapt it.</p>	<p><b>2.5) Tacit P.C.:</b> External efficiency is affected by the low capacity to update and review curriculum and study plans. (WB, p.8)</p>

<p>- Arzola (1993).</p> <p>- Riveros (1994). Economic return of a quality-improving project in the SE in Chile.</p> <p>- Romaguera, P. &amp; Butelman, A. (1993). Educacion media general vs. Tecnica: Retorno económico y deserción, Colección Estudios CIEPLAN No.83.</p> <p>- Cáceres, C. et al. (1993). Determinantes del salario de los egresados de la EMTP en Chile. Cuadernos de Economía, Univ. Católica, abril 1993.</p> <p>- Salas, V. et al. (1993). Evaluación económica de la educación media.</p>	<p>These studies provide information about the economic returns of both SE tracks. Some of them differ in their results. (41-43)</p> <p>The labor market assigns minor but systematic advantages to those who graduate with specific labor skills granted by T-VOC (44)</p>	<p><b>2.6) Tacit P.C.:</b> The education provided by the S-C track is largely impertinent to labor market. (44)</p>
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### III. QUALITY – General

<p>- Trufello y Pérez (1993), Prácticas de trabajo y socialización</p> <p>-Edwards, Calvo et.al. (1993) Prácticas de trabajo y socialización.</p> <p>-Himmel et.al (1993) Determinación de la Calidad de la educación media chilena.</p> <p>Previous to the studies of MECE – the following were key papers for building the diagnosis and analysis behind PC 1:</p> <p>- Cariola, L &amp; Cox, C. (1990). La educación de los jóvenes: crisis de la relevancia y calidad de la Enseñanza Media.</p> <p>-González, L.E. (1989), La educación de la juventud, en PIIE, <i>Educación y transición democrática. Propuestas de políticas educacionales</i>, Santiago.</p> <p>- Cariola, L (1989). Alumno, familia y liceo, ¿Confabulación para un menor aprendizaje?, in,</p> <p>-Cox, C (1992) Sociedad y conocimiento en los 90: puntos para una agenda sobre currículo del sistema escolar.</p>	<p><b>3.1) PC:</b> SE quality, understood as richness and pertinence of contexts; processes; and results of its educational task, is the main problem of this educational level. (45)</p>
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#### IV. QUALITY – Curriculum

		The problem of the SE curriculum is its lack of pertinence, and poor educative meaning of its contents, which is reflected by the following: (45)
<p>- Trufello y Pérez (1993), <i>Prácticas de trabajo y socialización</i></p> <p>- Edwards, calvo et.al. (1993) <i>Prácticas de trabajo y socialización.</i></p>	<p>In terms of <i>teaching and evaluation</i>, the studies found that: typical practices often tended towards the reduction and trivialization of knowledge. They favored a passive relationship with it, whereby students were required to reproduce and memorize contents. The diagnostic studies revealed: i) generalized strategies involving dictation and evaluations that required textual repetition of contents<sup>35</sup>; ii) features of childish treatment towards students; and iii) discrimination in terms of race and gender. In addition, regardless of the type of institution, secondary education predominantly dealt with youngsters only in their status as students, homogenizing them, and failing to respond to key dimensions of their interests, culture, and identity as young people.</p> <p>The most all embracing and deepest conclusion of the diagnosis was that the secondary school experience, at the beginning of the 1990s, was marked by a style of relationship (both of the managerial staff towards teachers, as well as between teachers, and most importantly, of the teachers towards the students) that failed to create the space for, and did not teach, an active and creative involvement with the task at hand.</p>	<p><b>4.1) PC:</b> Schooling practice in SE is, to an important degree, disconnected from the students' life, the society, and the culture where it is immersed. Such a disconnection is verified in the objectives and contents of curriculum (official plans and programs) and in its implementation in classrooms (actual curriculum). (46)</p> <p><b>4.2) PC:</b> Contents provide a minimum set of higher-order general and specific skills (problem solving, knowledge integration, thinking process like to infer, deduce, compare, classify, analyze, synthesize, and evaluate). (p.46)</p>
<p>-Cox, C. (1992) <i>Sociedad y conocimiento en los 90: puntos para una agenda sobre currículo del sistema escolar.</i></p>		<p><b>4.3) PC:</b> An important cause of the lack of meaning and relevance of the current curriculum is the gap between the curriculum and its subjects with their correspondent disciplinary areas in universities and academic centers, with the experiences related to curriculums in other educational systems, with the cultural changes..., with the productive organizations context and their fast transformation, etc. (46)</p>

<sup>35</sup> One of the investigations entrusted by the MECE program revealed that in less than 3% of the Spanish test samples studied there was a question that required original work by the students. Trufello, Irene, et.al. *Prácticas de trabajo y socialización.*

<p>-Cariola, L., et al, "La Experiencia Internacional en el Diseño Curricular y en las Estructuras de los Niveles Medios de los Sistemas Educativos.</p>	<p>Lack of differentiation and rigidity of the curricular structure make it difficult to satisfy the needs of different types of students. (47)</p>	<p><b>4.4) PC:</b> Rigidity and simplicity of SE structure and curriculum are an important cause of the identity and quality crisis of SE (47).</p>
<p>- Cariola, L., et al, "La Experiencia Internacional en el Diseño Curricular y en las Estructuras de los Niveles Medios de los Sistemas Educativos. - Fuller, Bruce, Holsinger, Donald (1992) Secondary education in developing countries. Issues Review, The World Bank, Washington. - Middleton, J; Zideman, Z., &amp; Arvil van Adams, (1993), <i>Skills for productivity. Vocational education and training in developing countries.</i></p>	<p>Lack of differentiation and rigidity of the curricular structure make it difficult to satisfy the needs of different types of students. (47)</p>	<p><b>4.5) PC:</b> SE structure is rigid and outdated. (WB, p.8)</p>
<p>- C. Cox (1992) Sociedad y conocimiento en los 90: puntos para una agenda sobre currículo del sistema escolar. - Cariola, L. et al. (1993). La experiencia internacional en el diseño curricular ... - BID. (1994). Modernizar con todos. Hacia la integración de lo social y lo económico en Chile. Informe de la misión piloto del programa de reforma social del BID. - Corvalan, O. Santibáñez, E. (1993). El marco curricular. CIDE. - Marín (1993). Descripción y evaluación del proceso curricular.</p>	<p>Based on these studies, the argument is that the educational system does not have a high national-level office that monitors, evaluates, and updates curriculum. The international experience shows that a national-level office is essential to keep the curriculum updated with the changes in knowledge, production and culture (47). Previous Chilean governments have a history of erratic decision making on this issue.</p>	<p><b>4.6) Tacit P.C.:</b> Poor SE education quality is caused in part by a weak institutional capability for curriculum design, monitoring, and evaluation. (45)</p>
<p>- Marín, R. Et al. (1993), Descripción y evaluación del proceso de desarrollo curricular.</p>	<p>Abundant evidence about the precariousness of curriculum design capabilities in schools; about the relative absence of initial training of teachers for this ambit; about the effects</p>	<p><b>4.7) PC:</b> Most secondary schools in Chile do not have the technical skills and instruments required to implement the recommendations of the LOCE. (WB, p.5)</p>

- Cox, C. & Gysling, J. (1990) , <i>La formación del profesorado en Chile</i> , CIDE, Santiago.	on teachers' and schools' practices of the historically highly centralized nature of curriculum control in Chile	
- Edwards et. al. (1993) - Project-preparation missions by WB and Ministry-MECE teams.	Abundant evidence of naked classrooms, no textbooks, no libraries, no didactic materials.... (public expenditure during the 1980s in education had dropped in 27%, whilst coverage had expanded in more than 12%. No resources for endowing the schools with anything apart from teaching hours in overcrowded buildings with two shifts of students per day)	<b>4.8) Tacit PC:</b> Most schools also lack the necessary instruments to implement the intended core curriculum, something that tends to go undetected and unattended by MINEDUC, which affects education quality. (WB, 8).
- Edwards et al. (1993). <i>Prácticas de trabajo y socialización (enfoque cualitativo)</i> . PIIE/MECE	Use almost exclusively of rote memorization teaching methods (p.49). The knowledge transmitted is not connected to previous knowledge or other discipline areas.	<b>4.9) Tacit PC:</b> In general, the pedagogic practice does not promote the development of complex skills, nor comprehensive learning, which affects education quality (50)
- Truffello, I. Et al. (1993). <i>Prácticas de trabajo y socialización</i> .	Evaluation processes do not promote higher-order skills (50)	
- Jarufe, T. et al. (1993). <i>Indicadores de cobertura y calidad de la educ. Media chilena. Estudio MECE</i> - Himmel, E. (1993). <i>Determinación de la calidad de la EM. MECE</i> - MINEDUC (1994). <i>SIMCE, 1993</i> .	These studies tested a sample of students in several subjects (50-53) Low scores in math and Spanish tests in 1 <sup>st</sup> , 2 <sup>nd</sup> , and 4 <sup>th</sup> grades students. (p.50)	<b>4.10) Tacit P.C.:</b> Learning achievement in SE is low especially in public schools. (53)
- MINEDUC (1994). <i>SIMCE, 1993</i> .	This test shows even lower results for 2 <sup>nd</sup> grade students in Spanish and math. (p.53)	
- McNicoll, D. (1991). <i>Estrategia para la reforma y desarrollo de la educación escolar en Chile</i> . MINEDUC	Even though supervisors are a professional resource often more qualified than teachers, evaluators point out that their work has been oriented increasingly to bureaucratic and administrative tasks, abandoning technical-pedagogic advising. (102)	
- Morales, M., M.Astudillo, C.Avendaño, et.cl., <i>Propuestas orientadoras y operativas para un sistema de supervisión de la educación media chilena (1992)</i> , Mineduc, MECE , Santiago		<b>4.11) Tacit PC:</b> Supervisors are not playing appropriately their role of advising teachers and school managers in pedagogic issues, which affects education quality. (p.102)
- Edwards et. al. (1993) - Project-preparation missions by	<i>This source grounds this part of the claim: lack or obsolescence of materials</i>	
		<b>4.12) Tacit PC:</b> Quality of SE education is caused in part by: a lack or obsolescence of materials, which are selected

WB and Ministry-MECE teams		centrally and using standards; insufficient training of teachers to their pedagogical use; etc. (p.93)
- Edwards et.al. (1993) <i>Prácticas de trabajo y socialización.</i>	Systematic evidence of lack or poverty of libraries	<b>4.13) Tacit PC:</b> Quality of SE education is caused in part by the low availability of school libraries, under-trained staff, disconnection between the books available and pedagogical practices, and other related problems which affect the low interest in reading of both adults and youngsters. (p.92)
- Preparatory missions WB-Ministry		
- Preparatory missions WB-Ministry	Rationale argued in PC 7 (about expansion of students with restriction of resources = no investment whatsoever in material supports for learning.  Data from 1985 show that 22.5 percent of schools do not have adequate space or facilities to carry out their programs of study. When schools that combine primary and secondary school classes are considered, the above figure rises to 28.3 percent. (WB, 12)	<b>4.14)</b> Many secondary schools lack the essential infrastructure necessary to comply with MINEDUC's requirements. (WB,12)
- Edwards et.al. (1993)		<b>4.15) Tacit P.C.:</b> The habitual professional isolation of teachers (scarce opportunities for reflection, programming, learning and evaluation among peers) affects education quality. (P.84)
- Trufello et al. (1993)		
- Pascual, E. & Navarro, R. Incidencia de la formación inicial en el desempeño profesional de los profesores de educación media.		
- Pascual, E. & Navarro, N.		<b>4.16) PC:</b> In-practice training actions do not help to improve the teaching practice. (84)
- Sepúlveda, J et al. (1993), <i>Perfeccionamiento docente: la Mirada de los profesores de enseñanza media</i>		
- MINEDUC (1992), <i>Manual de supervisión técnico-pedagógica</i> , División de Educación general. Santiago		<b>4.17) Tacit PC:</b> Predominantly bureaucratic management styles, characterized by a strong emphasis in administration aspects and not in pedagogical leadership affect education quality. (p.84)
- MINEDUC, Programa MECE (1993), <i>Informe Conversación Nacional sobre Educación Media</i> , Santiago..	Multivariate and convergent evidence of no adaptation whatsoever of the high schools to the generational realities of the youth of the late-eighties early nineties. Anachronic and authoritarian styles and practices; generational distance of teachers; rigidities of the curriculum; authoritarianism of	<b>4.18) Tacit PC:</b> Current schooling culture does not incorporate the fact that the SE students constitute a particular age group, which affects education quality. (87)

- Cariola, L. & Cox, C. (1990) La educación de los jóvenes: crisis de la relevancia y calidad de la Enseñanza Media.	inspectors, etc.	
- González, L.E. (1989), La educación de la juventud, en PIIE, <i>Educación y transición democrática. Propuestas de políticas educacionales</i> , Santiago		
- Cariola, L. (1989) Alumno, familia y liceo, ¿Confabulación para un menor aprendizaje?		
- Weinstein, J. (1990), Los jóvenes pobladores y el estado. Una relación difícil, CIDE		
<b>V. EQUITY</b>		
		Inequities in the delivery and quality of secondary school services are reflected by disparities in:
- ODEPLAN. CASEN Survey 1987, 1990, 1992.	Access: There is more than a 20 percent difference between the first and fifth quintile of income regarding access to SE. (p.53)	<b>5.1) PC:</b> Participation rates.
- MINEDUC. División de Planificación y Presupuesto, (1992)	The average coverage in rural areas is much lower than the national average. (p.57) Drop-out rates are very high in rural areas. (58)	
- Jarufe (1993)	There is a direct relationship between types of school and socio-economic level...A much larger proportion of private-school students graduate from SE than public-school students. (53-54)	<b>5.2) PC:</b> Type of schools attended
- Jarufe (1993)	There is a direct relationship between learning outcome and socio-economic level. (p.54)	<b>5.3) PC:</b> Standardized academic achievement
- Himmel (1993)		
- Larrañaga (1992). Higher education financing and equity.	Youngsters from lower SES show higher rates of unemployment and inactivity than those from higher SES. (p.56) Youngsters with post-secondary studies get better job positions than those without these studies. Only 32% of 20-years-old youngsters from quintiles I and II are studying versus 92% from those in quintiles IV and V. (p.57)	<b>5.4) PC:</b> Access to higher education and employment outcomes. (WB, 12)

## **APPENDIX B**

### **Claims about Policy Solutions and information Used**

Source	Studies Findings (policy-relevant information)	KNOWLEDGE CLAIMS ABOUT POLICY SOLUTIONS
<b>I. FRAME (Regulatory Action) Curriculum and Evaluation</b>		
		Considering the problems observed regarding curriculum, the available resources, and the SE context the most appropriate mechanisms to strengthen the schools' capacities to evaluate and adjust permanently their curricular designs in order to make them socially relevant for the students they serve are:
<p><b>- MECE-BASICA experience.</b> Appraisal and supervision missions of the World Bank (from April 1990 to October 1993) Systematization and categorization by the central team of MECE-Media. of 1,282 PDEs executed in 1992 and 1993</p>	PDE is a tested instrument in (MECE-Basica) to make schools' management <i>and teachers' team work</i> more dynamic and flexible (75)	<p><b>1.1) PC:</b> School-based educational development projects (PDEs), which might stimulate the reflection, adaptation, and design capacity of curriculum (81)</p>
<p>- Cox, C. (1993) Las políticas de los noventa para el sistema escolar Ministerio de Educación / Programa MECE Santiago, Marzo de 1993</p>		
<p>- Oteiza, F. et al. (1993).</p>	Based on analyses of international evidence of schools and networks of schools and universities, of sound curriculum development, the study proposed the advantages for Chile of support networks.	<p><b>1.2) PC:</b> Technical support networks (TSN) for curricular development of schools, which schools can utilize according to certain procedures and financial resources. (81)</p>
<p>- Oteiza, F. et al. (1993).</p>	More than findings, a well argued proposal, using a lot of international evidence.	<p><b>1.3) PC:</b> Events (competitions, seminars, etc.), publications initiated or supported by specialized scientific or professional societies, and grant opportunities to enhance educational activities of disciplines, which might contribute to strengthening of the disciplinary bases of curriculum. (81)</p>
<p>- Oteiza, F. et al. (1993). - Sepúlveda, Gastón, (1992) Descripción y evaluación del proceso de desarrollo curricular (sectores rurales)</p>	It tackled the issues of the 'small High Schools'	<p><b>1.4) PC:</b> To design curricular models that satisfy appropriately the particular organizational and pedagogical characteristics of two types of high schools: (a) small and isolated; and (b) polyvalent that combine H-C/T-Voc tracks, or different T-Voc specialties. (81)</p>
<p>- Oteiza, F. et al. (1993).</p>		<p><b>1.5) PC:</b> To elaborate, on a competition basis and through</p>

		agreements with experts and institutions, validated curricular products for supporting schools in five disciplinary areas (language and communication, math, natural sciences, humanities and social sciences, and technology). These curricular products will take shape in learning materials that will be offered to schools, among other didactic resources (81).
		Given the available resources and the SE context the more appropriate mechanisms to support schools to develop their capacities to evaluate and certificate the learning outcomes (obj.2) are:
- Trufello et al. (1993)	Trufello's study provided consistent evidence on the weaknesses of teachers' evaluation practices; this pointed directly to the need for providing them with new models and categories, as any teaching with poor evaluation is weak on its goal-orientation. Precariousness of typical evaluation practices among teachers.	<b>1.6) Tacit PC:</b> To design and distribute evaluation instruments intended to develop teachers' capacities to evaluate significant learning in SE (81).
- National Vocational Qualifications (NVQ)		<b>1.7) Tacit PC:</b> To design and implement competences certification mechanisms: - General, at the end of first cycle (2 <sup>nd</sup> grade) - Terminal by occupational families for T-Voc, based on profiles previously established. (81)
- MECE-Basica Experience	The concept of 'lateral support', from networks with the potential to provide from soft –i.e., non-specialized- to hard –i.e., specialized-, support to schools, comes from general ideas on management and organizations' development, present both in MECE-design's teams, as in the WB's teams; and, crucially, <b>from the practice</b> of the <i>Enlaces</i> component of MECE-Básica (the ICT project based on a network of universities-Ministry-schools). Thus, for the MECE-designing teams, which were the same that had designed and were managing the execution of MECE-Básica, the 'network' concept, and practices and value, by 1994 was a "lived experience".	<b>1.8) Tacit PC:</b> Given the available resources and the SE context the best mechanisms to allow the connection between high schools and specialized institutions capable to advise them in curricular and evaluation matters (obj.3) are: - Technical support networks (TSN) for curricular development of schools (81). - To provide resources for hiring experts institutions, on a competition basis, in order to produce learning materials that support the curricular production. (81)

<p>- Osborne, D. &amp; Gaebler, T. (1993) <i>Reinventing Government. How the entrepreneurial spirit is transforming the public sector.</i></p> <p>- Senge P., (1990) <i>The Fifth Discipline</i>, Currency Doubleday, New York.</p> <p>-ECLAC-UNESCO (1992), <i>Education an knowledge. Basic pillars of changing production patterns with social equity</i>, Santiago, Chile.</p>	<p>International evidence –theoretical and empirical-, on organizations that are able to learn: to learn they have to link, and trespass boundaries....</p>	
<p>- Cox, (1992) <i>Sociedad y Conocimiento en los 90. Puntos para una agenda sobre currículo del sistema escolar</i></p>	<p>It provides ideas on the need to inseminate teachers' knowledge on the disciplines through <i>activating linkages between schools and universities</i></p>	
<p>- Cox, C. (1989) <i>Sistema político y educación en los 80'</i>, en J.Edo.García-Huidobro (editor), (1989) <i>Escuela, calidad y equidad. Los desafíos para educar en democracia</i>. CIDE, Santiago</p>	<p>This study points a threefold requirement to the current regulations of the scholar system: a) To improve system's coordination; b) to improve the democratic control mechanisms of the system; and c) enrichment of the production processes of knowledge to be transferred by the scholar system.</p>	<p><b>1.9) Tacit PC:</b> Given the available resources and the SE context the best mechanisms to strengthen the functions of the central system related to conduction, orientation, and support to curricular design and evaluation processes at secondary level (obj.4) is the establishment of a small, well qualified Curriculum Planning and Evaluation Unit within MINEDUC. (83)</p>
<p>- Cox, (1992) <i>Sociedad y Conocimiento en los 90</i></p>		
<p>- MINEDUC, Programa MECE-EM, <i>Sistema escolar y desarrollo: Corea, Singapur y Malasia</i>, Informe de Misión de Estudio. Julio 1992</p>	<p>All of the above was more than confirmed in the observed cases of Korea, Singapur and Malaysia in 1992. National and international 90s' evidence on the absolute need of developing central capacities for designing and developing the national curriculum.</p>	<p><b>1.10) Tacit PC:</b> Given the available resources and the SE context the most appropriate mechanisms to set up an achievement measurement system of “basic objectives” and “minimum obligatory contents” (OF/CMO) for the SE is to set up an Evaluation and Curriculum Unit; a highly technical Ministry office, which articulates and leads the necessary expert resources for the design of OF/CMO. (83)</p>
<p>- Cox, (1992) <i>Sociedad y Conocimiento en los 90</i></p>	<p>Need to break self-reference of the schooling system regarding curriculum.</p>	<p><b>1.11) Tacit PC:</b> Given the available resources and the SE context, the most appropriate mechanism to enhance the disciplinary basis of curriculum is the promotion of events (competitions, seminars, etc.) and publications supported by specialized scientific or professional societies. (p.81)</p>
<p>- Marin, R. Et al. (1993), <i>Descripción y evaluación del proceso de desarrollo curricular.</i></p>		

<p>- Cox, (1992) Sociedad y Conocimiento en los 90</p>	<p>Need to break self-reference of the schooling system regarding curriculum.</p>	<p><b>1.12) Tacit PC:</b> Given the available financial and human resources and the SE context the most appropriate mechanisms to get a closer link between schools and the labor market is the implementation of regional meetings... (81)</p> <p><b>1.13) Tacit PC:</b> Given the available financial and human resources and the SE context the most appropriate mechanism to encourage teachers to update their skills is to do internships in companies, institutions, and schools with innovative programs. (81)</p>
<p>- Marin, R. Et al. (1993), Descripción y evaluación del proceso de desarrollo curricular.</p>		
<p><b>II. DIRECT ACTIONS ON SCHOOLS – PROGRAMS</b></p>		
<p>- Truffello, I. Et al. (1993). Practicas de trabajo y socializacion</p> <p>- Edwards et al. (1993). Practicas de trabajo y socializacion (enfoque cualitativo).</p> <p>- Marin, R., et al, "Descripcion y Evaluacion del Proceso de Desarrollo Curricular".</p> <p>- Avalos, B., Creatividad versus autonomía profesional del profesor: consideraciones sobre el tema derivadas de la investigación pedagógica. <i>Revista Pensamiento Educativo</i>, Vol. 14, 1994.</p> <p>- Zeichner M. Kenneth (1993?), El maestro como profesional reflexivo, <i>Cuadernos de Pedagogía</i> N° 220-</p> <p>- Schon, Donald (1983) The reflective practitioner: how professionals think in action,</p> <p>- Schon, Donald (1987), Educating the reflective practitioner. Toward a new design for teaching and learning in the professions,</p>	<p>Need for making teaching role more reflective and critical, not only related to pedagogical practices but also to socio-political context of the teaching setting.</p>	<p><b>2.1) Tacit P.C.:</b> In order to improve education quality it is necessary to institutionalize periodic reflection and evaluation procedures of school work that guide and feed consecutive cycles of formulation and implementation of changing pedagogic processes, encouraging the shift from an eminently isolated and technical teaching function into one of professional profile and team working characteristics (85).</p> <p><b>2.2) Tacit P.C.:</b> In order to improve education quality it is necessary to support the development of a management capacity in the directive team subordinating the administrative aspect to the pedagogic one. (p.85)</p>

- Adler, Susan (1991) The reflective practitioner and the curriculum of Teacher Education.		
- Adler, Susan (1993), Teacher education: research as reflective practice.		
- Gysling, J.,et al, "Requerimientos para la Formacion de Profesores de Educacion Media: Modelos de Formacion de Profesores Aplicados en las Instituciones de Educacion Media en Chile,".		
- MINEDUC, Programa MECE (1993),	These documents emphasize the need to promote a greater participation amongst youngsters; to initiate strategies that allow modifying the relationship between them and the schools, seeking to generate a greater identity and membership sense.	<b>2.3) Tacit P.C.:</b> Given the available financial and human resources and the SE context the most appropriate mechanisms to generate choices of free-time use in order to make possible the availability of more and better formative opportunities for personal and collective development (p.89) are:
- Errazuriz (1993).		
-Cariola & Cox (1990)		
- Gonzalez, L. (1989)		
- Cariola, L. (1989)		
- Weinstein, J. (1990) .		
- Halcaltgaray, M.Alicia (ed) (1991).	Urgent need to offer to students, formative activities which authentically responded to their interests, in order to reconcile them with their schooling experience, and construct an adequate motivational basis for learning.	<b>2.3.1) Tacit PC:</b> - Workshops in art, environment, communication, and sports. - Training in leadership for student leaders in each high school. - Student network for creating an intra and inter high school communication system through video clubs and a newspaper-bulletin. - Meetings oriented to open up dialogue among the school and general community, through diffusing and exhibiting products elaborated by students. - Regional-level News Students Festival. - Open-Summer School. (p.89)
- Mena, I., S.Ritterhausen (eds) (1991).		
-Weinstein, J. (1991)		
Gysling, J.,et al, (1993)	The curriculum of teacher-training institutions did not address explicitly issues to develop an understanding and managing of contemporary youth culture. As with poverty, youngsters did not constitute a focus of the initial training process. This deficiency affected their relationships with students, who carried new realities in themselves, not sufficiently nor	<b>2.4) Tacit P.C.:</b> Given the available financial and human resources and the SE context the most appropriate mechanism to encourage teachers to reflect on the youngsters' world and how to incorporate it into the planning and practice of their teaching (Obj. 2, p.89) is to train them in youngsters' reality and methods that consider this reality into their teaching practices (90).

	professionally recognized by the <i>liceo</i>	
<b>III. SUPPORT SYSTEM</b>		
- Lockheed, M., A. Verspoor (1991), <i>Improving primary education in developing countries</i> .	The use of learning inputs (textbooks, teaching materials, teacher guides, school libraries, computers, and school infrastructure) in an appropriate manner has been shown to increase the quality of education. (WB, p.11)	<b>3.1) Tacit P.C.:</b> Incorporating into the schools specific support systems (e.g. libraries, teaching materials, computer resources, and textbooks) might facilitate and induce the modification of pedagogic practices and the organization of the educational task. (90)
	General educational assumption that a practical involvement with something with real consequences (some or high stakes) , orients interest and attention to that ‘something’ in an effective way. The notion of previous involvement in selection of materials as helping to produce a more active involvement with those materials in teaching is hence based on general social and psychological theories of action. This notion very much implicitly used by the decision-makers of MECE	<b>3.2) Tacit P.C.:</b> Given the available financial and human resources and the SE context the most appropriate mechanism to make teachers appropriately use and obtain teaching materials is to train them along with managers to formulate requests related to their pedagogic tasks, and the high school and community contexts they serve. (93)
- MECE-Basica Experience.  - Papert, S. (1993) <i>The children’s machine: rethinking school in the age of the computer</i> . Basic Books, New York.  - Papert, S. (1980), <i>Mindstorms: children, computers and powerful ideas</i> , Basic Books, New York.  - Hepp, P., E.Laval, et.al. (1992), <i>A user-friendly educational network using hypermedia technology. Concepts and experience</i> . Pacific University Conference PC’92, Kyoto, Japan.  - Epstein, K. and E.Hillegesit (1990), <i>Intelligent instructional</i>	The use of computer technologies has a positive impact on the teaching/learning processes; teachers are the key mediators and should be the focus of any attempt to introduce technology in schools (94)	<b>3.3) Tacit P.C.:</b> It is convenient and efficient for improving education quality to incorporate computer technology into classrooms along with teachers training in the use of this pedagogic tool. (94)

<p>systems: teachers and computer-based intelligent tutoring. <i>Educational technology</i> (November) : 13-19.</p> <p>- Budin, H.R. (1991) Technology and the teacher's role. <i>Computers in the school</i> 8(1/2/3).</p> <p>- Simon, T. (1987) Claims for logo – What should we believe and why? In, J.Rutkowska and C.Crook, <i>Computers, Cognition and Development</i>, John Wiley and Sons Ltd.</p>		
- Walberg, H.J., 'Improving School Science in Advanced and Developing Countries'.		<b>3.4) PC:</b> Computer software, along with the use of simple everyday equipment and materials and teaching methods, is a cost-effective alternative to laboratories in the teaching of science. (W.B. 30)
- MECE-BASICA experience ; Appraisal and supervision missions	PDE is a tested instrument in (MECE-Basica) to make schools management more dynamic and flexible (75)	<b>3.5) Tacit P.C.:</b> PDE is an efficient mechanism to get teachers and school directors involved in the change process to improve educational quality. As a consequence of this teachers' involvement, the decentralization process is enhanced, and the strategic areas of improvement are also strengthened by teachers' initiatives. (p.100-101)
- Cox, C. (1993) <i>Las políticas de los noventa para el sistema escolar.</i>		
- Morales, M. et.al (1992).		<b>3.6) Tacit PC:</b> Enhancing the supervisor role is effective in terms of providing a useful technical support to teachers and school managers. (104)
- Mineduc, División de Educación General (1992) <i>Manual de Supervisión Técnico-Pedagógica</i> , Santiago.		
- <b>MECE-BASICA experience.</b>		<b>3.7) Tacit P.C.:</b> A fund administrated by each high school is an effective alternative for taking advantage of technical assistance hired to improve those educational issues addressed by the Program. (107)
- Cox, C. (1993) <i>Las políticas de los noventa para el sistema escolar</i> Ministerio de Educación / Programa MECE Santiago, Marzo de 1993		

## **APPENDIX C**

### **Information Instrumentally Used**

<b>Pieces of Information</b>	<b>Nature</b>	<b>Areas of Impact</b>
1. Jarufe, T.; Sequeida, J.; Maturana, S.; & Legues, P. (1993). Indicators of Coverage and Quality of Chilean Sec. Educ.	Research (MECE)	- Internal Efficiency - Learning Achievement - Equity
2. Trufello, I. & Pérez, F. (1993), Prácticas de trabajo y socialización.	Research (MECE)	- Quality General - Curric./Eval. - Pedagogical Practices - Management
3. Arzola, S.; Collarte, C. Cornejo, J.; Etchegaray, F. & Franklin, J. (1993). Destino educativo/laboral de los egresados de la EM.	Research (MECE)	-External Efficiency
4. Oteiza, F. & Montero, P. (1993). Modelos para la producción y actualización curricular.	Research (MECE)	-External Efficiency - Curric./Eval.
5. Irigoín, M. & Corvalan, O. (1993). Educ. Técnica Profesional.	Study included in Oteiza research	- External Efficiency
6. Errazuriz, M.; Gonzalez, R.; Martinic, S.; Manzi, J.; Scharager, J.; Swope, J.; & Urzua, P. (1993). Demandas sociales a la Educación Media.	Research (MECE)	- External Efficiency - Pedagogical Practices
7. Marín, R.; Sanhueza, O.; Ilabaca, P.; Morales, J.; Soto, F.; Fuentes, R.; Mardones, H.; Silva, M.; Quer, S.; Valladares, J.; & Concha, H. (1993). Descripción y evaluación del proceso de desarrollo curricular.	Research (MECE)	- External Efficiency - Curric./Eval. - Pedagogical Practices - Management
8. Salas, V. (1993). Evaluación económica de la educación media.	Research (MECE)	- External Efficiency
9. Edwards, V.; Calvo, C.; Cerda, A.; Hinostroza, G.; & Gómez, V. (1993) Prácticas de trabajo y socialización en establecimientos de educación media.	Research (MECE)	- Quality General - Curric./Eval. - Pedagogical Practices - Management
10. Himmel, E.; Legues, P.; & Olivares, M. (1993). Determinación de la Calidad de la educación media chilena.	Research (MECE)	- Quality General - Learning Achievement - Equity
11. Cariola, L.; Labarca, G.; Irigoín, M.; Erazo, S.; & Fox, E. (1993). La Experiencia Internacional en el Diseño Curricular y en las Estructuras de los Niveles Medios de los Sistemas Educativos.	Research (MECE)	- Curric./Eval.
12. Pascual, E. & Navarro, R. (1993). Incidencia de la formación inicial en el desempeño profesional de los profesores de educación media.	Research (MECE)	- Pedagogical Practices
13. Gysling, J.; Salinas, A.; & Argandoña, C. (1993). Modelos de Formación de Profesores Aplicados en las Instituciones de Educación Media en Chile,".	Research (MECE)	- Pedagogical Practices - Management
14. Morales, M.; Astudillo, E.; Avendaño, C.; Ortiz, I. Servat, B.; & Vaccaro, L. (1993). Propuestas orientadoras y operativas para un	Research (MECE)	- Pedagogical Practices

Pieces of Information	Nature	Areas of Impact
sistema de supervisión de la educación media chilena.		
15. MINEDUC, Programa MECE-EM, Sistema escolar y desarrollo: Corea, Singapur y Malasia, Informe de Misión de Estudio. Julio 1992	Study Tour (MECE)	- Curric./Eval.
16. Ministerio de Educación, Programa MECE (1993), <i>Informe Conversación Nacional sobre Educación Media</i> , Santiago.	Survey (MECE)	- Pedagogical Practices
17. Sepúlveda, J et al. (1993), Perfeccionamiento docente: la Mirada de los profesores de enseñanza media	Research (Local)	- Pedagogical Practices - Curric./Eval.
18. Lockheed, M. & Verspoor, A. (1991) <i>Improving primary education in developing countries</i> . World Bank, Oxford University Press, New York.	Research (International)	- Internal Efficiency - Learning Inputs
19. Middleton, J., Zideman, A, & Arvil van Adams, (1993), <i>Skills for productivity. Vocational education and training in developing countries</i> . The World bank, Oxford University Press.	Research (International)	- External Efficiency - Curric./Evalua.
20. FIDE Técnica (1992). Diagnostico de la Calidad de la enseñanza de las escuelas afiliadas a la FIDE Tec.	Research (Local)	- External Efficiency
21. MINEDUC. Planning and Budget Division. Compendio de Información Estadística 1992.	Educational Indicators	- Equity
22. Cox, C. (1992). Sociedad y conocimiento en los 90: puntos para una agenda sobre currículo del sistema escolar	Research (Local)	- External Efficiency - Curric./Evalua. - Pedagogical Practices - Quality General
23. Riveros (1994). Economic return of a quality-improving project in the SE in Chile.	Research (Local)	- External Efficiency
24. Romaguera, P. & Butelman, A. (1993). Educación media general vs. Técnica: Retorno económico y deserción,	Research (Local)	- External Efficiency
25. Caceres, C. et al. (1993). Determinantes del salario de los egresados de la EMTP en Chile.	Research (Local)	- External Efficiency
26. Cariola, L. & Cox, C. (1990) La educación de los jóvenes: crisis de la relevancia y calidad de la Enseñanza Media.	Research (Local)	- Pedagogical Practices - Quality General
27. Gonzalez, L.E. (1989), La educación de la juventud, en PIIE, <i>Educación y transición democrática. Propuestas de políticas educacionales</i> .	Research (Local)	- Pedagogical Practices - Quality General
28. Cariola, L. (1989) Alumno, familia y liceo, ¿Confabulación para un menor aprendizaje?,	Research (Local)	- Pedagogical Practices - Quality General
29. Fuller, Bruce, Holsinger, Donald (1992) Secondary education in developing countries.	Research (International)	- Curric./Evalua.
30. BID. (1994). Modernizar con todos. Hacia la integración de lo social y lo económico en	Research (International)	- Curric./Evalua.

Pieces of Information	Nature	Areas of Impact
Chile. Informe de la misión piloto del programa de reforma social del BID.		
31. Corvalan, O. Santibáñez, E. (1993). El marco curricular. CIDE.	Research (Local)	- Curric./Evalua.
32. Cox, C. & Gysling, J. (1990) , <i>La formación del profesorado en Chile</i> , CIDE, Santiago	Research (Local)	- Curric./Evalua.
33. MINEDUC (1994). SIMCE, 1993.	Achievement Learning Test	- Learning Achievement
34. McNicoll, D. (1991). Estrategia para la reforma y desarrollo de la educación escolar en Chile. MINEDUC	Research (Local)	- Pedagogical Practices
35. Preparatory missions WB-Ministry	Aid Memoirs	- Learning Inputs
36. Weinstein, J. (1990), Los jóvenes pobladores y el estado. Una relación difícil, CIDE	Research (Local)	- Curric./Evalua. - Pedagogical Practices
37. ODEPLAN. CASEN Survey 1987, 1990, 1992.	Socioeconomic Indicators	- Internal Efficiency - External Efficiency - Equity
38. MINEDUC (1992, 1993). Compendio de Información Estadística. Santiago, Chile. Ministerio de Educación Pública.División de Planificación y Presupuesto,	Educational Indicators	- Equity
39. Larrañaga (1992). Higher education financing and equity.	Research (Local)	- Equity
40. Cox, C. (1993) Las políticas de los noventa para el sistema escolar Ministerio de Educación / Programa MECE Santiago, Marzo de 1993	Research (Local)	- Curric./Evalua. - Pedagogical Practices - Management
41. National Vocational Qualifications (NVQs)	NVQs are work-related, competence based qualifications (UK)	- Curric./Evalua.
42. MECE-Basica Experience	- Appraisal and Supervision Missions of the World Bank (from April 1990 to October 1993) - Systematization and categorization by the central team of MECE-Media of 1,282 PDEs executed in 1992 and in 1993. - ENLACES	- Curric./Evalua. - Learning Inputs
43. Osborne, D. & Gaebler, T. (1993) <i>Reinventing Government. How the entrepreneurial spirit is transforming the public sector.</i>	Research (International)	- Curric./Evalua.
44. Senge P., (1990) <i>The Fifth Discipline</i> , Currency Doubleday, New York.	Book that introduces the theory of learning organizations.	- Curric./Evalua.
45. ECLAC-UNESCO (1992), <i>Education and knowledge. Basic pillars of changing production patterns with social equity</i> , Santiago, Chile	Policy Document	- Curric./Evalua.
46. Cox, C. (1989) Sistema político y educación en los 80', in García-Huidobro, J.E. (editor), (1989) <i>Escuela, calidad y equidad. Los desafíos para educar en democracia.</i>	Research (Local)	- Curric./Evalua.

Pieces of Information	Nature	Areas of Impact
CIDE, Santiago		
47. Avalos, B., (1994). Creatividad versus autonomía profesional del profesor: consideraciones sobre el tema derivadas de la investigación pedagógica.	Research (Local)	- Pedagogical Practices - Management
48. Zeichner M. Kenneth (1993?), El maestro como profesional reflexivo, <i>Cuadernos de Pedagogía N° 220</i>	Research (Local)	- Pedagogical Practices - Management
49. Schon, Donald (1983) The reflective practitioner: how professionals think in action, Basic Books, New Cork	Research (International)	- Pedagogical Practices - Management
50. Schon, Donald (1987), Educating the reflective practitioner. Toward a new design for teaching and learning in the professions, Jossey-Bass, San Francisco.	Research (International)	- Pedagogical Practices - Management
51. Adler, Susan (1991) The reflective practitioner and the curriculum of Teacher Education. <i>Journal of Education for Teaching</i> , 17 (2), 139-150	Research (International)	- Pedagogical Practices - Management
52. Adler, Susan (1993), Teacher education: research as reflective practice. Teaching and teacher education 9 (2), 159-167	Research (International)	- Pedagogical Practices - Management
53. Halcaltegaray, M.Alicia (ed) (1991), Educación para la convivencia en el ámbito escolar, CPU, Santiago.	Research (Local)	- Pedagogical Practices
54. Mena, I., S.Ritterhausen (eds) (1991), La juventud y la enseñanza media. Una crisis por resolver, CPU, Santiago.	Research (Local)	- Pedagogical Practices
55. Weinstein, J. (1991), El liceo en la subjetividad de los jóvenes pobladores, in Mena and Ritterhausen, (eds) (1991), La juventud y la enseñanza media. Una crisis por resolver, CPU, Santiago	Research (Local)	- Pedagogical Practices
56. Papert, S. (1993) <i>The children's machine: rethinking school in the age of the computer</i> . Basic Books, New York.	Research (International)	- Learning Inputs
57. Papert, S. (1980), <i>Mindstorms: children, computers and powerful ideas</i> . Basic Books, New York.	Research (International)	- Learning Inputs
58. Hepp, P., E.Laval, et.al. (1992), <i>A user-friendly educational network using hypermedia technology. Concepts and experience</i> . Pacific University Conference PC'92, Kyoto, Japan.	Research (Local)	- Learning Inputs
59. Epstein, K. & Hillegesit, E. (1990), Intelligent instructional systems: teachers and computer-based intelligent tutoring. <i>Educational technology</i> (November): 13-19.	Research (International)	- Learning Inputs
60. Budin, H.R. (1991) Technology and the teacher's role. <i>Computers in the school</i> 8(1/2/3).	Research (International)	- Learning Inputs

<b>Pieces of Information</b>	<b>Nature</b>	<b>Areas of Impact</b>
61. Simon, T. (1987) Claims for logo –What should we believe and why? In, Rutkowska, J. & Crook, C. <i>Computers, Cognition and Development</i> , John Wiley and Sons Ltd	Research (International)	- Learning Inputs
62. Walberg, H. J. (1991). Improving school science in advanced and developing countries. <i>Review of Educational Research</i> , 61 (1), 25-29.	Research (International)	- Learning Inputs
63. Mineduc, División de Educación General (1992) <i>Manual de Supervisión Técnico-Pedagógica</i> , Santiago.	Technical Manual for supervisors	- Pedagogical Practices

## **APPENDIX D**

### **Policymakers' Articles Reviewed**

- Lemaitre, M.J. (1999). El paso desde mejoramiento a reforma. In García-Huidobro, J.E. (ed.) La reforma educacional chilena. Madrid: Editorial Popular.
- Cox, C. & González, P. (1998). Educación: De programas de mejoramiento a reforma. In Cortazar, R. & Vial, J. (eds.). Construyendo opciones. Santiago: Dolmen Ediciones.
- Cox, C. (1999). Políticas educacionales y procesos de cambio en la educación media chilena en los años noventa. Paper presented at the Seminario Internacional, Cambios en la educación secundaria: Análisis de los procesos europeos y latinoamericanos contemporáneos, IPE, Buenos Aires, 16-17 November, 1999.
- Cox, C. (n.d.). The Chilean secondary education quality and equity improvement program 1995-2000. Unpublished paper presented at the Organizations of Eastern Caribbean States Workshop organized by the World Bank on June 19-21, 2000.  
<http://www1.worldbank.org/education/secondary/documents/cox2.htm>
- Cox, C. & Lemaitre, M.J. (1999). Market and state principles of reform in Chilean education: policies and results. In Perry, G. & Leipziger, D. (eds.), Chile. Recent policy lessons and emerging challenges, World Bank Institute Development Studies, World Bank, Washington D.C.

## **APPENDIX E**

### **Preparatory Missions of the World Bank for the MECE-Media Program**

	No. of Persons and Specialty	
Month/Year	Count	Specialty
10/12/1992	4	Two education specialists, one project assistant, one economist
03/29/1993	6	Three education specialists, one organization specialist, two economists
08/02/1993	4	Two education specialists, one economist, one project assistant
11/01/1993	5	Two education specialists, one economist, one teacher training specialist, one project assistant
05/13/1994	4	Two education specialists, one teacher training specialist, one project assistant
11/09/1994	2	One education specialist, one project assistant

Source: World Bank (2001). Implementation completion report (CPL-38830; SCL-38836).

## **APPENDIX F**

### **Ranking of Most Useful Information by Impact Level**

**Table F.1: Ranking of Most Useful Information (Very High impact)**

<b>Pieces of Information</b>	<b>Kind of information</b>	<b>Area of greater impact</b>	<b>Total number of times cited</b>	<b>Rank by Policymakers</b>	<b>Final Ranking</b>
Edwards, Calvo et.al. (1993)	Research (MECE)	Quality General	10	3	4.75
Cox, C. (1992).	Research (Local)	Curriculum & Evaluation	10	3	4.75
Trufello y Pérez (1993),	Research (MECE)	Quality General	8	2	3.5
MECE-Basica Experience	Systematizations of the primary educational program	General Quality	5	3	3.5
Arzola, S. et al. (1993).	Research (MECE)	External Efficiency	4	3	3.25
CASEN Survey 1987, 1990, 1992.	Socioeconomic Indicators	External Efficiency	4	3	3.25
Himmel et.al	Research (MECE)	Learning Ach.	3	3	3
Cariola, L., et al, (1993)	Research (MECE)	Curriculum & Evaluation	3	3	3
Cariola, L. & Cox, C. (1990)	Research (Local)	Pedagogical Pract.	3	3	3
Preparatory missions WB-Ministry	Aid Memoirs	Learning inputs	3	3	3
Cox, C. (1993)	Research (Local)	General Quality	3	3	3

**Table F.2: Ranking of Most Useful Information (High impact)**

Pieces of Information	Kind of information	Area of greater impact	Total number of times cited	Rank by Policymakers	Final Ranking
Errazuriz (1993).	Research (MECE)	Pedagogical Practices	2	3	2.75
Jarufe (1993)	Research Mece	Internal Efficiency	5	2	2.75
MINEDUC, National Conversation.	Survey (MECE)	Pedagogical Practices	2	3	2.75
Lockheed and Verspoor, (1991)	Research (International)	Pedagogical Pract.	2	3	2.75
Avalos, B., (1994).	Research (Local)	Pedagogical Practices	2	3	2.75
Schon, Donald (1983)	Research (International)	Pedagogical Practices	2	3	2.75
Schon, Donald (1987),	Research (International)	Pedagogical Practices	2	3	2.75
Adler, Susan (1991)	Research (International)	Pedagogical Practices	2	3	2.75
Adler, Susan (1993),	Research (International)	Pedagogical Practices	2	3	2.75
Weinstein, J. (1990)	Research (Local)	-Curriculum -Pedagogical Practices	2	3	2.75
Salas, V. Et al. (1993).	Research (MECE)	External Efficiency	1	3	2.5
Romaguera, P. & Butelman, A. (1993).	Research (Local)	External Efficiency	1	3	2.5
National Vocational Qualifications (NVQs)	NVQs are work-related, competence based qualifications	Curriculum & Evaluation	1	3	2.5
Osborne, D. & Gaebler, T. (1993)	Research (International)	Curriculum & Evaluation	1	3	2.5
ECLAC-UNESCO (1992)	Policy Document	Curriculum & Evaluation	1	3	2.5
Weinstein, J. (1991),	Research (Local)	Pedagogical Practices	1	3	2.5
Mineduc, División de Educación General (1992)	Technical Manual for supervisors	Pedagogical Processes	1	3	2.5

**Table F.3: Ranking of Most Useful Information (Moderate impact)**

<b>Pieces of Information</b>	<b>Kind of information</b>	<b>Area of greater impact</b>	<b>Total number of times cited</b>	<b>Rank by Policymakers</b>	<b>Final Ranking</b>
Cariola, L. (1989)	Research (Local)	Pedagogical Practices	3	2	2.25
Oteiza, F. et al. (1993).	Research (MECE)	Curriculum & Evaluation	6	1	2.25
Middleton, J., Zideman, A, & Arvil van Adams, (1993)	Research (International)	External Efficiency Curric&Eval	2	2	2
Zeichner M. Kenneth (1993)	Research (Local)	Pedagogical Practices	2	2	2
Riveros (1994).	Research (Local)	External Efficiency	1	2	1.75
Caceres, C. et al. (1993).	Research (Local)	External Efficiency	1	2	1.75
Fuller, Bruce, Holsinger, Donald (1992)	Research (International)	Curriculum & Evaluation	1	2	1.75
BID. (1994).	Research (International)	Curriculum & Evaluation	1	2	1.75
Papert, S. (1993)	Research (International)	Learning inputs	1	2	1.75
Papert, S. (1980),	Research (International)	Learning inputs	1	2	1.75
Epstein, K. & Hillegesit, E. (1990)	Research (International)	Learning inputs	1	2	1.75
Budin, H.R. (1991)	Research (International)	Pedagogical Processes	1	2	1.75

**Table F.4: Ranking of Most Useful Information (Low impact)**

<b>Pieces of Information</b>	<b>Kind of information</b>	<b>Area of greater impact</b>	<b>Total number of times cited</b>	<b>Rank by Policymakers</b>	<b>Final Ranking</b>
Gysling, J., et al, (1993)	Research (MECE)	Pedagogical Practices	3	1	1.5
Gonzalez, L.E. (1989)	Research (Local)	Pedagogical Pract.	3	1	1.5
Pascual, E. y Raúl Navarro (1993)	Research (MECE)	Pedagogical Practices	2	1	1.25
MINEDUC, Study Tour	Study Tour (MECE)	Curriculum & Evaluation	2	1	1.25
FIDE Tecnica (1992).	Research (Local)	External Efficiency	1	1	1
Cox, C. & Gysling, J. (1990)	Research (Local)	Curriculum & Evaluation	1	1	1
Senge P., (1990)	Theoretical and practical book	Curriculum & Evaluation	1	1	1
Halcaltegaray, M.Alicia (Ed) (1991),	Research (Local)	Pedagogical Practices	1	1	1

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