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,
Victoria, Joaquin, and Marti.

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[1], 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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[1] Patricio Aylwin, 1990-1994 and Eduardo Frei (1994-2000), both from the same political coalition.

la Calidad y Equidad de la Educación[2] (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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[2] 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*[3] (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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[3] 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[4]: 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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[4] 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[5]. 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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[5] 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

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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 that 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 considerer an influence of, for instance, spiritual knowledge.

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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 o*rdinary*, *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. <u>Dunn's Three Dimensions to Conceptualize Information Utilization</u>

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. <u>Weiss' Conceptualization of Information Use</u>

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 <u>Knowledge-Driven model</u> 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 <u>Problem-Solving model</u> 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 <u>Tactical model</u> 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 <u>Enlightenment model</u> the concepts and theoretical perspectives from social science research influence and permeate the policy-making process.

- In the <u>Intellectual or Research-Oriented model</u> 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) <u>Manifest impact</u>: 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) <u>Stage impact</u>: 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) <u>Certainty impact</u>: 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) <u>Latent impact</u>: 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) <u>No clear boundary</u> 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 <u>multiple sources of information</u>, 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

      <u>protocol</u>, 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

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

2.3.   VARIABLES THAT AFFECT INFORMATION UTILIZATION

Although precedents can be found in the use of social research in policymaking during the eighteenth and nineteenth Centuries[6], it was just after World War II, with the promotion of social welfare by governments in the capitalist democracies, when the role of research-based information in policymaking processes began to be massively considered as relevant (Gagnon, 1990). Since then, public policy, as a governmental tool to raise the quality of life of citizens, acquired a technocratic aspect in trying to make rational decisions based on scientific research. However, the goal of informing public policy decisions with knowledge constructed by experts has been difficult to accomplish.

Several hypotheses have been developed to explain the under/non-utilization of research-based information in policymaking processes. One of the first ones in catching the attention of scholars of this area was the "two-communities" theory developed in part by Caplan (1979), who attributed the non-use of research to cultural and behavioral differences between researchers and policy makers. According to Caplan (1979), some authors who hold this theory argue that "social scientists and policy makers live in separate worlds with different and often conflicting values, different reward systems, and different languages" (p.459). This theory explains many cases of disconnection between research and decision making, but it does not explain those cases where individuals belong to each cultural group (Ginsburg & Gorostiaga, 2001), as it appears to be the case of the education reform in Chile.

Subsequent to Caplan's theory, studies have revealed the complexity of policymaking construction by showing the variety of factors shaping a policymaking process, and the large

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[6] The work of John Howard with English prisoners contributed to the reform of the prison system in England in the eighteenth Century (Auriat, n.d). This author also asserts that the poverty survey and poverty map made by Charles Booth in London, which showed the social condition of every street in London in 1889, had a decisive impact on the security social system for the poor in England. Gagnon (1991) contends that in mid-Victorian Britain and Second Empire France health and sanitation knowledge was applied to the problem of urban planning reforms.

quantity of variables that determine the extent to which information is used in this process. According to some scholars of organizations (Lindblom and Woodhouse, 1993; March, 1994), the influence of research, either from direct or indirect/diffuse ways, rarely is a determining factor for decision making.

2.3.1. Factors that Influence Information Utilization in Policymaking

Numerous factors affecting information use in policymaking have been identified in the literature. They can be organized into six general categories:

1) Complexity of policy decisions

2) Policy makers characteristics

3) Information characteristics

4) Organization characteristics

5) Decision aspects

6) Use of Information Technology

2.3.1.1. Complexity of policy decisions

Several authors (Dunn, 2003; Weiss, 1990; Anderson and Biddle, 1991; and Haddad, 1994; among others) have highlighted the complexity of policymaking processes, especially those from the education sector. Complexity, which is determined primarily by political and technical factors, affects the likelihood of that information influencing a policymaking process.

According to Dunn (2003), complexity of a policy problem is defined by the "degree to which the problem is actually an interdependent system of problems" (p79). There are five elements associated with the degree of complexity of a policy decision: (1) Number of

stakeholders and decision makers involved in a policy decision, (2) quantity of existing policy alternatives for a decision situation, (3) degree of consensus on the value or utility of each alternative (4) degree of certainty of the alternative outcomes, and (5) the likeliness of calculating probabilities These five factors produce for Dunn three kinds of policy problems, which are summarized in Table 2.2.

Table 2.2: Differences in the Structure of Three Classes of Policy Problems

	Structure of Problem		
Element	Well Structured	Moderately Structured	Ill Structured
Decision maker(s)	One or few	One or few	Many
Alternatives	Limited	Limited	Unlimited
Utilities	Consensus	Consensus	Conflict
Outcomes	Certainty or risk	Uncertainty	Unknown
Probabilities	Calculable	Incalculable	Incalculable

Source: Dunn (2003) p.79.

Dunn (2003) describes each policy problems as follow (pp.79-81):

Well-structured problems are those that involve one or a few decision makers and small number of policy alternatives. Utilities (values) reflect consensus on goals which are clearly ranked in order of a decision maker's preferences. The outcomes of each alternative are either known with complete certainty (deterministically), or with acceptable margins of probable error (risk)

Moderately structured problems are those involving one or a few decision makers and a relatively limited number of alternatives. Utilities (values) also reflect consensus on clearly ranked goals. Nevertheless, the outcomes of alternatives are neither certain nor calculable within acceptable margins of error; they are uncertain, which means that the probability of error cannot be estimated at all.

Ill-structured problems are those which typically involve many different decision makers whose utilities (values) are either unknown or impossible to rank in a consistent fashion… The main characteristics of ill-structured problems is conflict among competing goals. Policy alternatives and their outcomes may also be unknown.

Many, if not all, of the most important public policy problems are ill-structured. This means that they are defined by the presence of multiple stakeholders with in conflict positions, and uncertainty and risk in relation to policy choices' outcomes.

From a less rationalistic point of view, Weiss (1990), in studies of U.S. federal government bodies, states that policy "is the resultant of a complicated conjunction of forces. In a democratic system, many groups vie to affect public policy, each of them armed with a set of ideologies, interests, and information. Out of the contest among them—and within the rules set by institutional arenas in which they contend—public policy emerges" (p. 99). In other words, the complexity of a policy decision is, in part, determined by the existence of several stakeholders in the policy-making process, making the political factor one of the most influential. In this context the political factor deals primarily with the ability to affect the decision or policies to be made.

Anderson and Biddle (1991) argue that the educational policy arena is one of the most complex sectors within public policies. Because of this, it is particularly difficult to estimate the role that research-based information has played and is playing in the design and formulation of education policies. Anderson and Biddle provide a good description of the education field complexity (p.3):

By comparison with other institutions, education in most countries is massive in size, is largely supported by public funds, has a sizeable bureaucracy, serves a vulnerable client

population, has low professional status, has complex and often contradictory goals, has

diffuse effects which are hard to assess, and is often politicized. These features tend to

generate a unique arena for social research impact… These interest groups include, at

minimum: politicians, administrators in governments, policy advisors of governments,

district and school administrators, teachers, teachers' unions, parents, schools boards,

citizen groups representing specific interests, teacher educators, educational researchers,

industries with needs of trained employees, … and pupils.

Accordingly, Haddad (1994) claims, "educational development is actually a series of untidy and

overlapping episodes in which a variety of people and organizations with diversified perspectives

are actively involved—technically and politically—in the process through which issues are

analyzed and policies are generated, implemented, assessed and redesigned" (p.3).

Complexity of policy decisions might affect information utilization in at least technical,

and political aspects. First, the use of rational procedures, such as policy analysis and strategic

planning, has characterized policymaking in the last decades (Reimers & McGinn, 1997;

Deborah Stone, 1997). Rationality, according to Stone (1997), "means simply choosing the best

means to attain a given goal" (p.232). To evaluate the best means it is necessary to use

information. From a technical point of view, the more complex a policy problem, the more

information is needed to evaluate policy alternatives and reduce uncertainty about policy

outcomes. Complexity also might influence the kind of information used for policy. Complex

policy issues are seen differently by various stakeholders, generating conflict about how to

address these policies. In cases of conflict or no consensus about policy solutions, policymakers

"tend to look for knowledge that supports their positions" (Spaapen, 2001, p.100). Thus, from a

political point of view, the more complex a policy problem, information and arguments are more likely to be used selectively and often distortingly to support a decision (Knorr, 1977).

2.3.1.2. Decision maker characteristics

Personal characteristics of decision makers often determine to some extent what information and how much information is taken into consideration within a policy-decision process. Based on research in the evaluation field, Patton and colleagues (Patton, Smith, Guthrie, Brennan, Dickey, & Blyth, 1977) identifies the "personal factor" as a key variable to explain information utilization. He argues that when there is a decision maker or a group of decision makers who personally care about the evaluation and its findings, evaluations are more likely to be used. On the contrary, where the personal factor 'is absent, there is a marked absence of impact" (p.155). The personal factor is made up of "leadership, interest, enthusiasm, determination, commitment, assertiveness, and caring of specific, individual people" (p.155). In their study, Patton et al. (1977) found that the personal factor made some decision makers initiate studies to fulfill information need. In other words, the personal interest that decision makers have for information-based decisions can take them to be personally involved in information production. These authors found so important this factor that they suggest that "one of the major contributing reason for underutilization of evaluation research is the high degree of instability in federal program operations" (p.159). They distinguish three kinds of this instability:

> (1) high turnover rates among senior government staff so that the person initially interested in an evaluation may be in an entirely different office before the study is completed; (2) reorganization of government offices so that decision-making patterns are unstable, personnel are frequently rearranged, and responsibilities are almost constantly

changing; and (3) program mobility, as programs move from office to office… even if no formal, structural reorganization occurs. (p.160)

Regarding decision making in general, Oh (1996) argues that decision makers' need for information and their perception of the decision-making process (i.e. decision making as a political or as a scientific activity) are key elements to understand decision makers' behavior in use of information within an organization. If decision making is seen as a political activity, decision makers will search for information that supports their position. On the contrary, if decision makers see their job as a rational or scientific one, they will look for information to determine the evidence concerning the best solution for a policy problem (Oh, 1996). Those who recognize both aspects in policymaking "may be more likely to use information than either individuals who emphasize the scientific aspects of the policy decision or those who emphasize the political aspect of it" (p.98). In any case, there are cognitive limits or a limited rationality to deal with the complexity of social realities and policy problems (Charles Lindblom & Woodhouse, 1993).

Other decision maker characteristics that are viewed as important for information use in a decision-making process are described in this section:

- Types of decision makers. Pierce and colleagues (1987), in a study that examines "Japanese and American local environmental policy elites' trust of several prominent information sources", distinguish three types of decision makers at top positions: Technical, elective, and administrative elites. These three types of policy makers are expected to have different behaviors in searching for, and trusting of, information sources. According to these authors, the differences are defined by the influence of political values and beliefs. For example, "because of their dependency upon the electoral

arena, elected elites may be more sensitive than other local elite decision makers to variations in the political context and political consequences of acting upon information from different sources" (p.579). In the case of technical elites, their role expectation "is generally one of removal from politics, and the exercise of decisional or advisory authority on the basis of professional standards of good practice acquired as part of advanced education in a particular field of human knowledge (p.580). Even though it is not clear to what extent technical elites (best description of the group of experts in charge of the education reform in Chile) are independent of influence of political values upon utilization and differentiation among sources of information, this distinction marks a difference between what to expect from different types of policy makers' behavior in searching and using information.

- Position in an organization. Those who are in higher positions and have served longer in an organization may become more conservative and resistant to change than those who have served for less time (Oh, 1996). Those in the highest echelon of positions in bureaucracies are likely to view the policy-making process as a political activity, that is, policy choice as the result of compromise, negotiation, and bargaining among stakeholders, who vary in power and influence. Consequently, decision makers in higher positions tend not to use information unless it helps them support or legitimize their policy positions in negotiation (Oh, p.105).

- Interaction between researchers and decision makers. The more the communication between decision makers and researchers, the greater the possibility of information use (Oh, 1996). Similarly, in a literature review on evaluation research utilization, Leviton and Hughes (1981) found that good communications between producers of evaluation

and potential users increase the chances of evaluation use. Reimers and McGinn (1997), through several cases studies in developing countries, have illustrated the importance of the dialogue between researchers and policymakers to enhance research utilization for policy development. As it was pointed earlier, the interaction between decision makers and researchers is influenced by the different settings and cultures to which these two groups belong (two communities theory); the more different they are in backgrounds and perspectives, the more difficult is the dialogue. For this reason, in order to enhance the dialogue between these two groups, both researchers and policymakers have to show interest (personal factor) in overcoming cultural barriers between them.

- Participatory information production. In the evaluation field, Ruskus and Alkin (1984) have reported a high impact of evaluation use when users get involved in the evaluation design and data collection. These authors think that one possible explanation to this participatory factor "is that involving users in the process of evaluation changes their attitudes about what the program should be and how it should operate" (p.12). Similarly, Reimers and McGinn (1997) reported several cases in which direct involvement of policymakers in research enhanced information utilization in policymaking processes. According to these authors, it is necessary to change the perspective that sees researchers as knowledge producers and decision makers as knowledge users. Based on their experience as consultants supporting educational policy reforms in developing countries (see Reimers and McGinn, 1997, pp. 127-176), they propose the perspective where "policy makers select which products of research to consume and help researchers frame the problems to be investigated so research can be most useful for policy" (Reimers &

McGinn, 1997, p.107). From this perspective, both researchers and decision makers become knowledge constructors through dialogue.

- Familiarity with the nature of policy issues. The more decision makers face unfamiliar problems, the more they are likely to use information, (Oh & Rich, 1996, p.13), especially when they are in top positions.

- Decision makers' knowledge vs. scholarly knowledge. There is some evidence that decision makers make their decisions based on a subjective and personal knowledge, which become a competitor of scholarly knowledge (Cousins & Leithwood, 1986). Various authors have defined this personal knowledge in different ways. Barabba and Zaltman (1991) talk about different *frames of reference*, which are constituted by a set of general assumptions, decision rules and expectations. "Frames of reference reflect our perceptions of the world and serve three very important functions. They influence our orientation toward problems, the way we conceptualize problems, and the kinds of solutions to problems we prefer" (p.139). Kennedy (1983) uses the term *working knowledge*, which she defines as "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). Lindblom and Cohen (1979) first, and Cousins and Leithwood (1986) later introduce the term *ordinary knowledge* in contrast to the knowledge derived from social sciences. These last authors contend, "ordinary knowledge provides the basis for decision and action in most organizations" (p.331). March (1994) in talking about interpreting reality, claims that decision makers are strongly influenced by their beliefs when they interpret reality. "That is, they tend to

interpret new experiences and information in ways that make them consistent with prior beliefs" (p.183).

2.3.1.3. Information Characteristics

There are at least four aspects of information that affect its use in policymaking processes: 1) intelligibility of information, 2) adjustability of information to personal or organizational beliefs, 3) information source, and 4) types of information produced by research.

1. Intelligibility of information. Information that is easily understandable by decision makers is more likely to be used than that which is more complex. A policy-relevant document has to be concise, well organized, simple in presenting policy alternatives, and easy to read (combining text with illustrations, graphs, figures, etc.) (Dunn, 1994)). Cousins and Leithwood (1986), based on a systematic review of empirical studies, argue that the use of an oral and non-technical language improves readability and a greater appreciation of results, and increased use.

2. Adjustability of information to personal or organizational beliefs. Information is more likely to be used when it supports, and is not counterintuitive to, interests of the organization or individuals (Oh, 1996). Cousins and Leithwood (1986) draw a similar conclusion from a review of empirical studies on the use of evaluation results; "when evaluation findings were congruent with decision maker expectations, acceptance and utilization increased" (p.354). Accordingly, Caplan (1991), in a study about knowledge utilization in public policy making, found that "many respondents who rejected policy-relevant information did so because they found the result to contradict what they considered to be true" (p.199). This author concludes that officials are generally willing

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to accept findings that are consistent with their beliefs, but unwilling to accept findings that are inconsistent or counterintuitive to their beliefs.

3. <u>Information source</u>. Decision makers use internal sources to inform routine problems/issues that arise most frequently; and external sources to get relevant information for critical and high priority issues. The "user goes with the external sources because they provide more legitimacy or because the research is 'better' or for 'unspecified reasons'" (Oh, 1996, p.95). Cousins and Leithwood (1986) reported that "internal evaluations were more useful than external evaluation" (p.353). These authors also found that the credibility of the evaluator was positively related to use. Pierce et al. (1987) reported different degrees of trust of information sources by environmental policy makers in Japan, and U.S. Experts and university professors got the highest trust level in both countries among several others information sources.

4. <u>Types of information produced by research</u>. Reimers and McGinn (1997) distinguish information produced by policy research from research designed to understand the world. The former is the more pertinent for policymaking because it anticipates the consequences of action. In general, the latter only clarifies "why the world is the way it is without describing how it could be made different" (p.23). Examples of policy research are sector analysis, sector assessment, and evaluation research. The results of these types of studies might produce relevant information for different stages of the policymaking process; the two firsts are useful to make a diagnosis of a policy problem, and the last one to estimate the extent to which a policy has been successful in reaching its objectives and what it is necessary to modify for future actions (Reimers et al., 1995). According to these authors, most researchers are interested in conducting more basic studies that are

not directly relevant for policy. This is one explanation to the well-documented disconnection between policymaking and research.

2.3.1.4.   Organization Characteristics

The characteristics of an organization affect, to some extent, the way decisions are made. Oh (1996) argues that a key variable to determine the effectiveness of decision making is organizational norms or structures, which "tend to be more conservative as they get older" (p.96). Oh also shows that, based on some studies, expectations of reward/incentives for good performance have a direct impact on the amount of information used and the specific channels to get it. In the case of public policy decisions, Weiss (1999) states that "since governments organizations have a history, tradition, culture, standard operating practices, rules, budgets and so forth, there are powerful constraints on what can and cannot be considered" (p. 198).

2.3.1.5.   Decision Aspects

Some decision features influence the extent to which information is used. Cousins and Leithwood (1986) found a relationship between evaluation use and stages of the decision-making process. Evaluation was "reported to be of most use in early stages of the decision-making process" (p.355). These authors also reported that it is possible to associate highly significant decisions and decisions generating personal conflict with high levels of evaluation use and information needs.

The theory of decision strategies developed by Beach and Mitchell (1978) is another way to explore how decision characteristics influence information use. These authors provide a framework to classify individual decision strategies and for considering how a strategy is chosen.

They classify decision strategies into *aided-analytic*, *unaided-analytic*, and *nonanalytic* strategies. An aided-analytic strategy "contains strategies that require the decision maker to apply a prescribed procedure utilizing tools such a pencil and paper, mathematics, calculator or computer, etc., in a guided, systematic attempt to analyze the decision and evaluate its components. These strategies always require training or invention, and frequently a technician is employed to help" (p.441). Unaided-analytic strategies are those "for which an attempt is made to explore the dimensions of the problem but for which no tools are used, and the decision maker restricts processing to the confines of his mind" (p.441). Finally, nonanalytic strategies use "fairly simple, preformulated rules that are applied by rote to decision tasks" (p.442). These include, among others, rules involving random events such as coin tosses, rules dictating by convention, and rules that are simply habits (Pollard, 1987). One of the major differences among these three types of strategies is in the differing degrees of analysis that they require, and, as a result, in the amount of resources (e.g. time, effort, and information) required for analysis. The more analysis needed, the more resources are used. Aided-analytic strategies, on one hand, "often require extensive information procurement" (Beach & Mitchell, 1978, p.443). On the other hand, nonanalytic strategies require very little analysis and, therefore, few resources. Strategy selection is based on characteristics of decision task (e.g. degrees of unfamiliarity and clarity to decision makers, and complexity) and characteristics of the decision maker (e.g. degree of knowledge about available strategies, ability to exercise strategies, and motivation).

According to Pollard (1987), this model can also be applied to group decision making. In this case, the characteristics of the group, in terms of agreement on problem definition and alternatives and agreement on criteria for evaluation among individuals involved in the decision,

add an additional factor that influences strategy selection, and, therefore, the nature and degree of information that will be used for problem solving.

2.3.1.6.   Use of Information Technology

Increased availability of information technology (IT) has improved access to information and data in organizations (Heintze & Bretschneider, 2000), and also improved the ability of bureaucratic organizations to "structure information processing and flows using networked computing" (Fountain, 2001, p.32). Also, IT has enhanced the ability to organize, maintain, and retrieve information needed to make a decision. Modeling computers has allowed that large amounts of information be reduced to key indicators that are understandable and usable by decision makers. This decision support system has been especially useful for well-structured policy decisions, but it generally has not provided answers to complex questions (Kraemer & Dedrick, 1997), which is the case of large public policy reforms. It has also been argued that IT has had a greater impact on policymaking in developed than developing countries because of infrastructure availability and cultural factors (Stone et al., 2001). In the time that the Chilean secondary education reform was planned, IT was not widely used in the government and therefore, its likely impact on information use is low.

These groups of factors provide a comprehensive framework to explore the different variables that influence information use in policymaking processes, especially those carried out in Chile. In the next section, several conceptual models that have been developed by researchers to understand how policymaking processes take place are reviewed, and how factors that affect information utilization are related in each model are discussed

Table 2.3 summarizes factors that are considered in the literature as important for information use by policymakers under the five headings presented above.

Table 2.3: Summary of the Factors that Affect Information Utilization

Complexity of Policy Decisions	Policy Maker Characteristics	Information Characteristics	Organization Characteristics	Decision Aspects	Information Technology
Degree of consensus. Number of stakeholders involved. Degree of certainty of the alternative outcomes. Quantity of policy alternatives.	Need for information. Perception of policy process. Educational level. Types of decision makers. Position in an organization. Interaction between researchers and decision makers. Policymakers participation in information production. Familiarity with policy issue.	Type of information. Information source. Intelligibility of information. Adjustability of information to personal or organizational beliefs. Types of information produced by researchers.	Age. Organization rules and structure. Organization culture.	Stages of decision-making process. Significance of decisions. Decision strategies used.	Availability. More effective for less complex decisions.

2.4. POLICYMAKING MODELS AND VARIABLES THAT AFFECT "INFORMATION USE"

Theoretical models have been developed to explain and describe how policymaking takes place. Some of these models can be utilized to explore how researchers have conceptualized the relationships among variables that affect information use in policymaking processes. According to Phillpott (1999), policymaking models can be analyzed from two broad camps: a "rationalistic" and a "political" camp. "A 'rationalist' view is that new research can directly prompt policy change. The 'political' camp on the other hand assumes that various external factors play a part both in defining the question that a research project tackles and in influencing

the impact of the answers on policy" (p.2). The five models briefly introduced below describe policymaking either from a more rational approach or from a more political one. Both approaches influence the way in which the relationships among variables that affect information utilization are conceptualized.

Following the description of each model, I provide a likely explanation about what variables, described in the previous section, are interacting and affecting information use in the policymaking process understood under its corresponding model.

2.4.1. The Rational Model

The term "rationality" is originated in the philosophy and economic fields. It is associated with choices, which "should satisfy some elementary requirements of consistency and coherence" (Tversky & Kahneman, 1981, p.123). In its original sense, rationality "is a normative concept that philosophers have generally tried to characterize in such a way that, for any action, belief or desire, if it is rational we ought to choose it" (Audi, 1995, p.674). The degree of consistency and coherence of our decisions, that is, their degree of rationality is determined by to what extent choice's outcomes satisfy our wants and beliefs. Wants "determine the values or utilities of the possible outcomes of our decisions"; and the Beliefs or information determine "what the world is like and how our possible actions will influence the world. These beliefs determine the probabilities of the possible outcomes" (Gärdenfors & Sahlin, 1988, p.1). According to this definition, the more consistency between beliefs or wants and outcomes, the more rational is the decision.

Regarding policymaking, Stone, Maxwell, and Keating (2001) state, "the rational (or rational-comprehensive) model is 'rational' in the sense that it follows a logical and ordered

sequence of policy-making phases. It is 'comprehensive' in the sense that it canvases, assesses and compares all options, calculating all the social, political and economic costs and benefits of a public policy" (p.5). This policymaking model assumes, these authors argue, that it is possible for researchers to collect and analyze all needed data to formulate all possible policy solutions for a given policy problem. It is also assumed that knowledge is neutral or apolitical, and "consequently technocracy and cliques of 'experts' can emerge" (p.5). The decisions made under this model are expected to maximize the attainment of objectives.

Even though this rational policymaking model is practically impossible to apply in real decision-making situations, especially for ill-structured problems, policymaker bodies, through policy analysis and strategic planning, generally attempt to follow rational procedures in the expectation of providing stronger foundations for making good decisions. The utilization of rational tools has been highly supported in developing countries by some donor agencies, such as the USAID, believing that "good analysis will translate into good decision making and this into good policy" (Thomas & Grindle, 1990, p.1164).

Under this model, information utilization is viewed as affected especially by those variables related to complexity of decisions, and decision aspects described previously. Regarding the first group of variables, those that can be examined by technical analysis like "degree of certainty of the alternative outcomes" and "quantity of policy alternatives" are expected to be more relevant in an analysis of information utilization. In the case of variables related to decision aspects, decision strategies are expected to directly affect information utilization under a rational model of policymaking. As a consequence, variables that influence information utilization have a relationship that can be viewed as technical or rational rather than political.

2.4.2. Incremetalism or 'Muddling Through' Model

Recognizing that there are practical constraints on rational decision making, Simon (1976) developed a model of decision making based on the notions of 'bounded rationality. He states that "it is impossible for the behavior of a single individual to reach any high degree of rationality. The number of alternatives he must explore is so great, the information he would need to evaluate them so vast that even an approximation to objective rationality is hard to conceive" (p.79). As Simon (1976) has pointed out, in real decision-making situations, the individual often must consider alternatives sequentially and decide about them as they are presented. The individual then will choose the first alternative with an outcome at or above her or his level of aspiration, or the first satisfactory alternative. Accordingly, March (1994) states, "behavioral students of decision rules… have observed that decision makers often seem to *satisfice* rather than *maximize*. Maximizing involves choosing the best alternative, while satisficing involves choosing an alternative that meets some criterion or target" (p.18).

According to Stone and colleagues (2001), Lindblom took up Simon's notion of "satisfacing" to argue that "policy-makers are generally conservative in decision-making, and that policy is generally a matter of 'muddling through'. There is rarely the time, resources or inclination to conduct comprehensive research with the aim of informing the policy-making process" (p.6). Moreover, Lindblom's idea of 'incrementalism' "relies on negotiation rather than on a complete analysis of the situation to develop a blueprint for solving problems. The incremental policymaker is less concerned with "correctly" solving his problem than with making an advance. Consequently, he proceeds incrementally and sequentially and depends on

trial and error, rules of thumb, and routinized and habitual responses to simplify problem solving" (Haddad, 1994, p.6).

In comparison to rational policymaking, the incrementalism view of policymaking is based on both technical analysis and political negotiation. However, time, resources and decision makers' characteristics can limit the role of analytical tools. Information utilization is also limited by the criterion of "satisficing"; information is collected and analyzed only to the extent that allows one to satisfactorily solve a policy problem. Decision makers, under this model, may be politically and/or technically/rationally satisfied with a policy decision. They can choose, for example, to carry out a democratic policymaking process to come up with a decision supported by consensus. In other cases, decision makers may use more technical criteria to make policy decisions. In both cases research-based information can inform decisions, but the variables that affect information use may be different or to provoke a different effect in each case. On one hand, some of the variables that can interact to influence information utilization under the criterion of "politically satisfied" are (taken from the previous section): (a) Number of stakeholders involved in the decision, (b) organization culture, (c) perception of policy process, (d) number of policy alternatives, and (e) significance of decisions. On the other hand, some of the variables that can interact to influence information utilization under the criterion of "technically satisfied" are: (a) Degree of certainty expected of the alternative outcomes, (b) perception of policy process, (c) degree of interaction with researchers, (d) significance of decision, and (e) familiarity of decision makers with technical decision strategies.

2.4.3.   The Enlightenment Model

According to the enlightenment model (Weiss, 1980), the information produced by analysts is rarely convincing or comprehensive enough to determine the policy process directly. Accumulated research findings gradually might shape general interpretations and understandings of issues, and alter the working assumptions and concepts of policy makers (Porter & Hicks, , n.d.). As Stone and colleagues argue (2001), "here policymakers are influenced by the generalizations drawn from social research, and the detail is stripped away" (p.6). As a result, research seldom supplies an "answer" that policy actors use to solve a specific policy problem, rather it influences actors':

> conceptualization of the issues with which they deal; it affects the facets of the issue that they consider inevitable or unchangeable or amenable to policy action; it widens the range of options which they consider; it challenges some taken-for-granted assumptions about appropriate goals and appropriate activities. Often it helps them make sense of what they have been doing after the fact, so that they come to understand which courses of action they have followed and which courses of action have gone by default. Sometimes it makes them aware of the over-optimistic grandiosity of their objectives in light of their meager program resources. At times it helps them reconsider ... entire strategies of action for achieving wanted ends... In sum, policy studies—and social science research more generally—have made highly significant contributions by altering the terms of policy discussions (Weiss, 1982, p.620).

In contrast with the rational and incrementalism models, the enlightenment model does not use information directly to solve policy problems. Research-based information has instead the role of informing thoughts and discussions about policy problems, so that, like in the case of conceptual

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use, the impact of information on policy decisions is, most of the times, diffuse and not easy to verify. Even though there might be many cases and a high proportion of the decisions where this model is applicable, it does not provide a framework to explain those cases where policy maker deliberately search for and use information to make a policy decision. For instance, some policy decisions require information on education indicators, such as enrollment and drop out rates. Others require information about teacher opinions on an eventual decision in order to forecast its success. As a consequence, under the enlightenment model, variables that affect information use are linked, basically, to policy makers' characteristics, such as degree of interaction with researchers, type of decision makers, and personal versus scholarly knowledge. Thus, how technical or political this model sees the relationships among variables that affect information use will depend to some extent on how technical or political decision makers see the policy process.

2.4.4. Interactive Model

This model was developed by Thomas and Grindle (1990) as a result of a study focused on the conflicts and issues that surround efforts to implement reform initiatives carried out in developing countries[7]. They assert that during any stage in its life cycle, especially during the implementation stage, it is more likely that a policy reform will be "altered or reversed by pressures and reactions of those who oppose it" (p.1166). Policy reform is shaped, finally, by the interaction among different individuals in strategic locations, who can influence a particular change. These authors observed that, more than in the policy formulation stage, it is during

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[7] The countries and policy types investigated were: Ghana (economic devaluation), Korea (structural adjustment), Costa Rica (economic development strategy), Philippines (agrarian reform), Mali (primary health care), Indonesia (Rice pricing), India (public water supply), Jamaica (export manufacturing), Kenya (decentralization and reorganization of ministry), Colombia (organizational planning), and Argentina (organizational planning agency)

implementation when it is a more visible policy characteristics and consequences: "Our observations over many years as well as our research indicate that implementation is often the most crucial aspect of the policy process and the outcomes of implementation efforts are highly variable, ranging from successful to unsuccessful, but including also an almost limitless number of other potential outcomes" (Thomas & Grindle, 1990, p.1165). This may be a reason why stakeholders are more active uttering in their opinions and making pressure during this phase of the policy process, as indicated by these authors.

The role of research-based information on the policy process under this model might be variable, depending on how technically the policy decision was designed, and how political and controversial the implementation stage. The main variables that affect information utilization are expected to be, in this model, those related to complexity of decisions (e.g. number of stakeholders involved in the policy process and degree of consensus around a policy decision) and characteristics of decision makers and stakeholders, who are interacting during the policy process. The more political the discussion, that is, the more pressure that is exerted to get favorable decisions for competing interest groups, the more likely that policymakers and stakeholders, in general, use information to support their position rather than use it to discern the best policy option from among the alternatives provided by research.

2.4.5. Policy Paradigms Model

The policy process, as well as knowledge generation and utilization, is seen under this model as mainly influenced by policy or ideological paradigms, which are "largely taken for granted and rarely subject to scrutiny" (Stone et al, 2001)

The paradigm serves to define the problems that are to be addressed, and what policies or instruments are appropriate to resolving them…ruling coalitions or powerful political interest groups exercise a crucial impact on the kind of research, analysis and advice that is selected in policy-making through their influence over these paradigms. Research becomes subordinate to political interests, a resource to be used in furthering those interests (Stone et al, 2001, p.7).

Given its obvious political-oriented position, the use of research, as Stone and colleagues say, is "subordinated to political interests". It is more likely to find policy processes greatly influenced by political positions in polarized societies, where consensus about any matter is hardly achievable. Also, it is likely to find this model in societies with authoritarian regimes that need to produce research-based information to support the rationale of their ideological-policy decisions. The debate between conservatism and progressivism ideologies in Latin American countries is a good example of research use subordinated to political interests[8].

Summary

The five models described above provide different approaches to understand how policymaking takes place. They can be differentiated according to their political and technical approach to conceptualize the relationships among variables that influence information utilization. Some of these models might be more suitable than others to address the relationship between information and decision making in some contexts. The selection of one or more models can determine the method(s) and procedures to study this issue in specific settings. For instance, the social framework analysis might be more appropriate to study information use in cases where the

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[8] For an in-depth discussion on the struggle between conservatism and progressivism, see (Reimers, 2003).

policy paradigm model is chosen to understand policymaking. Both of them address the influence of frames of references and ideologies on policy decisions.

3.   METHODS AND PROCEDURES

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 MECE-Media program. The data utilized to accomplish this purpose were policy claims and pieces of information used as evidence for these claims in appropriate documents and feedback from participating policymakers.

3.1.   KEY DEFINITIONS

As indicated in Chapter I, instrumental use is verified when policy makers cite either in the original documents or when they were asked to do it, the specific way in which policy-relevant information was used to ground a policy decision (Rich, 1977). Given that more than 10 years have passed since the MECE-Media program was formulated, the condition of determining the specific way in which each piece of information was used was not considered relevant for this case. Instrumental use was either the citation of pieces of information as the basis for policy claims or were identified by the lead policy maker.

A knowledge or policy claim was defined as the conclusion of a policy argument (Dunn, 2003), which is based on some evidence. Through knowledge claims the policy-relevant information that was used to ground these claims included in the reform policy documents was identified. Two kinds of knowledge claims were distinguished: knowledge claims about policy problems, and knowledge claims about policy solutions. This distinction allowed documentation of the information directly used to formulate policy problems, on one hand, and the information directly used to formulate policy solutions, on the other.

3.2. PROCEDURES

The main procedures used to collect data in order to answer the research questions were (a) analysis of documents, and (b) surveys completed by a policymaker with information about the use and utility of the various pieces of information. The policymakers contacted in order to request information were: Policymaker A: Head of the MECE program; Policymaker B: Coordinator of MECE-Media program; Policymaker C: Vice-coordinator of MECE-Media program; and Policymaker D: World Bank officer in charge of the team that negotiated with the Chilean counterpart the MECE-Media program. This team prepared the World Bank document indicated below for the document analysis.

(a) The documents analyzed were: The reform proposal document by the Chilean Ministry of Education (*Programa de Mejoramiento de la Calidad y Equidad de la Educación Media, 1995-2000, Vol. 1*) (Ministerio de Educación de Chile, 1994), and the "Staff Appraisal Report" by the World Bank (The World Bank, 1995). These documents present the foundations, objectives, and strategies that were utilized to carry out the MECE-Media program. In addition, other documents by the policymakers in charge of the reform were analyzed (see complete list in Appendix D), such as book sections, papers presented in conferences, and journal articles that introduce the Chilean secondary education reform.

Official documents were analyzed in order to obtain a complete list of knowledge claims related to policy problems and policy solutions, and the policy-relevant information on which they were based. The search for policy claims was focused on the chapters that make a diagnosis of the main problems of Chilean secondary education and propose policy solutions. From the Ministry of Education document, these chapters were: (2) Problems; (4) Policy Frame and Secondary Education Improvement Program; and (5) Secondary Education Improvement Program: Objectives, Strategy, and Components. From the World Bank document, the chapters

were: (2) Education Sector: Description and Issues; and (3) Project Objectives and Description. The policy claims found were grouped into the four large areas that the reform intended to impact for their analysis: internal efficiency, external efficiency, quality[9], and equity. The other documents written by policymakers in charge of the reform were utilized to complement the search for policy-relevant information that was used as a basis for policy claims.

Fifty-seven knowledge claims were identified from the two official documents examined. Thirty-two of them correspond to knowledge claims about policy problems, and 25 to knowledge claims about policy solutions. The policy claims found in the World Bank document were identified with its acronym in parenthesis (WB). Some policy claims identified in the documents were not explicitly stated and were labeled as tacit policy claims. All the policy claims and policy-relevant information from the document analyses were merged into two tables: one for knowledge claims about policy problems (in Appendix A), and the other for knowledge claims about policy solutions (in Appendix B). In both tables, policy claims were grouped by policy areas. The source of evidence used and the specific findings that informed the policy claim were also indicated. Findings could not be identified for every policy claim[10].

(b) The policymakers in charge of writing the two reform documents (policymakers A, B, C, and D) were asked to complement the information found in the document analysis about the sources of evidence and findings. For this purpose, the tables in Appendices A and B containing only the information found in the document analyses were sent by email to the policymakers in order to corroborate or correct their content, and to add the policy-relevant information that was not identified in both documents. They were asked to return the required information by email.

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[9] Quality was also broken up into the following areas: General Quality, Curriculum and Evaluation, Pedagogical Practices, Learning Achievement, Management, and Learning Inputs.

[10] Findings were identified in order to determine the specific way pieces of information were used to ground policy claims. As explained above, this condition was not considered relevant to recognize instrumental use of information in this case study.

In addition, an evaluation table containing all the pieces of information found in the previous procedures was sent to policymakers A, B, and C for ranking each of them in terms of their relevance for the different reform areas (see Tables in Appendix F). The specific process used follows.

3.3.   INSTRUMENTATION

The main instruments used to get data from policymakers were:

- Two tables (in appendices A and B) that policymakers were asked to complete with information about the evidence used (pieces of information and findings) to ground policy claims. Policymakers received the tables by e-mail.

- A third table (see table in Appendix F) was sent to policymakers in order to rank each piece of information used according to its impact on the formulation of policy problems and policy solutions for the different areas of the reform. The rank categories were: 1: low impact, 2: moderate impact, and 3: high impact.

3.4.   DATA RECEIVED

As planned, policymakers A and D, the main informants[11] were contacted. Policymaker A, from the Ministry of Education, provided all the information required. Policymaker D, from the World Bank, claimed lack of time to provide what was asked. For reliability purpose, two other members of the Chilean reform team were asked to corroborate, add, or correct the information that was provided. One of them, policymaker C, corroborated the information about pieces of

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[11] These policymakers were in charge of writing the documents from the World Bank and from the Ministry of Education.

information grounded policy claims, but claimed lack of time to fill out the evaluation table. The second reform team contacted, policymaker B, also claimed lack of time to review and fill out the information required, and provided no feedback.

As a result, only one policymaker, the one who was in charge of writing the Ministry's document and who coordinated the MECE program, provided full information. A second policymaker generally corroborated informally what the former said regarding the identification of pieces of information grounding policy claims.

From the document analysis, 27 pieces of information were identified as grounding some of the knowledge claims found on policy problems and policy solutions. From the other documents written by policymakers, no additional pieces of information were found. From the policymaker who completed tables in Appendices A and B, 36 additional pieces of information were identified as instrumentally used to ground the policy claims extracted from the official reform documents.

3.5. ANALYSIS OF DATA

The purpose of the data analysis was to answer the four research questions. Most of the information collected about policy claims and policy-relevant information was entered into a SPSS database in order to analyze citation frequency within and across the policy claims in the two policy stages (formulation of policy problems, and delineation of policy solutions). Also, a conceptual analysis was done in order to answer research question 4. A brief description of the procedures used to answer each research question follows.

Question 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?

To answer this question, the pieces of information that were instrumentally used to formulate policy problems and delineate policy solutions were identified and analyzed. Tables in Appendices A and B provided the information about the specific pieces of information used by policymakers. In the Appendix C table the main characteristics of these pieces are identified and the reform areas impacted by them were summarized.

Analysis of information

1. For the description of information produced and collected by policymakers, the following variables were used:

    a) Kinds of Information:

    - MECE Studies

    - Other Studies

    - Study Tour

    - National Conversation

    - Educational and Socio-economic Indicators

    - Previous experience with the MECE-Basica program.

    - Other

    b) Information Planning

    - Planned Information

    - Unplanned Information

c) Place of Origin of Information

- Information Produced in Chile

- Information Produced Abroad

d) Policymakers Involvement in Information Production

- Direct involvement

- Indirect Involvement

- No Involvement

Descriptive statistics were used to characterize the type of policy-relevant information used to support the MECE-Media program design, and to determine the frequency of each of these categories across the different program areas, as shown in Tables 4.1 to 4.8.

2. The identification and classification of the pieces of information directly utilized during policy development allowed me to calculate what percentage of that information was produced by the planned preparation activities of the MECE-Media program, and therefore, to what extent the design of the preparation activities was successful in producing the information needed for the MECE-Media design.

Question 2: What kinds of information were most useful for the two major steps of policy development?

To answer this question, "most useful" was understood as those pieces of information more frequently used to support policy claims, and ranked by policymakers as having highest impact. The information more frequently used was determined using the SPSS database with policy claims and pieces of information, and computing the frequency for each piece of information

cited. The more frequently cited pieces of information were then grouped according to the variables used to answer question 1. (e.g. Kinds of Information, Information Planning, Place of Origin of Information, and Type of Policy Makers Involvement in Information Production).

The more important pieces of information were determined by asking policymakers to rank each piece according to its impact on the formulation of policy problems and delineation of policy solutions in each reform area that they were intended to inform (see tables in Appendix F).

An "impact indicator" was calculated based on the total number of citations for each piece of information and the assessment of impact level rated by the primary policymaker. More relative importance was assigned to the policymaker evaluation than to the number of times that a piece of information was cited. The indicator addressed this by multiplying the total number of citations by .25, and the policymaker's evaluation rank[12] (1-3) by .75. For 13 pieces of information cited, it was not possible to get an evaluation from policymakers, so they were dropped from this analysis.

The analysis of this information identified the characteristics of the more important or useful information for the two major stages of the policy development, in terms of the variables used to answer question 1.

Question 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?

The extent to which there was instrumental use of information for policy development in the MECE-Media program was determined by analyzing the number and average of citations for the policy claims. Using the SPSS database, the percentage of policy claims directly grounded with some kind of evidence was determined. This analysis identified those areas and stages addressed

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[12] The impact evaluation rank goes from 1 to 3, being 3 the highest impact.

by the reform that were less directly informed by some kind of evidence. Also, an analysis of the average of citations by policy claims was done to determine the policy areas that had higher (or lower) average of citations by policy claims.

Question 4: To what extent was the instrumental type of use verified in the MECE-Media program typical of models or theories of use?

This question was answered by analyzing the main aspects that characterize the different models of information use, and comparing them with the kind of instrumental use verified in the MECE-Media program. Since this study did not analyze the political and conceptual use of information in this program, the analysis of models or theories was focused on their technical aspects. Therefore, some models that are defined almost exclusively by political or conceptual use of information (e.g. policy paradigm and enlightenment models) were not considered in this analysis.

4. RESULTS OF DATA ANALYSIS

4.1. OVERVIEW OF THE CHAPTER

In this chapter, the results of the data analysis are presented. This analysis is intended to fulfill the purpose of this study of investigating the extent to which research-based information was instrumentally used for the MECE-Media program carried out between 1995 and 2000.

The MECE-Media program was coordinated by policymakers with a strong background in research. During the 1980s they worked in academic institutions as researchers in the education area, and some of them had previous experience as policymakers in primary education programs at the beginning of the 1990s. During the preparatory stage of the MECE-Media program (1992-1994), 15 studies and other preparatory activities were carried out in order to inform the different reform areas (e.g. curriculum, pedagogical practices, and efficiency of the education system) in which the main problems and potential solutions had not been well analyzed and documented at the end of the 1980s.

Given the policymakers' academic profile, and the information produced by the studies and the other preparation activities as foundation for the reform, the instrumental use of research information was expected to be high, which is unusual in policymaking according to the related literature.

The above is the setting in which the analysis of data for this chapter is done, which is organized according to the Research Questions formulated in Chapter I:

a) 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?

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

c) 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?

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

In the first section, <u>Kinds of Information Instrumentally Used in the MECE-Media Program</u>, research question 1 is addressed. The pieces of information that were instrumentally used in the design process of the MECE-Media program were identified and examined using 6 different types of information: MECE studies, other studies, Study Tour, National Conversation, Statistical Indicators, and Others. This information was also analyzed according to: a) whether or not its production came from preparation activities of the reform (planned and unplanned); b) its place of origin (in Chile and abroad); and c) policymakers involvement in the information production. In the second section, <u>Utility of Information Instrumentally Used</u>, the usefulness for the MECE-Media program of each type of information cited is evaluated. This assessment was done by analyzing the frequency of citations for each piece of information, and using an evaluation of information impact done by policymakers. In the third section, <u>Degree of Instrumental Use of Information in the MECE-Media Program</u>, the extent to which information was instrumentally used to design the reform program is estimated. The number and percentage of policy claims that were grounded by evidence across the different reform areas was analyzed. Finally, in the fourth section, <u>Information Use Models in the MECE-Media Program</u>, the information use models and theories that are most descriptive of the results obtained in this study are presented and discussed.

The answers to all four research questions are based on the analysis of the pieces of information directly used as foundations for the formulation of knowledge claims regarding policy problems and policy solutions extracted from the two reform documents examined in this study, and from the feedback obtained from the policymakers in charge of the reform, especially from the one who wrote up the Ministry of Education reform document.

4.2. KINDS OF INFORMATION INSTRUMENTALLY USED IN THE MECE-MEDIA PROGRAM

As established in the methodology chapter, three sources of information were used to find the pieces of information that had an instrumental use in the two major steps of the policy design. These are: (i) the two main official documents of the reform, (ii) additional documents about the MECE-Media program written by the policymakers in charge of the reform[13], and (iii) the lead policymaker who was involved in the design process of the reform[14]. From the first source, 27 pieces of information were identified as grounding some of the knowledge claims found on policy problems and policy solutions. From the second source, no additional pieces of information were found. From the third source[15], 36 additional pieces of information were identified as instrumentally used to ground the policy claims extracted from the official reform documents.

In total, 63 pieces of information were identified (see Appendix C) as having a direct impact on the formulation and delineation of 32 knowledge claims about policy problems and 25 knowledge claims about policy solutions regarding the Chilean secondary education. These

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[13] See in Appendix D the list of articles reviewed.

[14] As explained in Chapter III, one policymaker from the reform team completed the survey requested. Another reform team member corroborated the survey results provided.

[15] One policymaker provided additional pieces of information instrumentally used.

pieces had different origins and provided varied information that was used for the several areas of the reform and the two stages of the policy development.

In order to describe them, the 63 pieces of information were divided into two broad categories: planned and unplanned sources of information by the MECE program. Planned sources included the "MECE studies", "Study Tour to Asian countries", and the National Conversation". The unplanned sources of information included "other studies", "educational and socio-economic indicators", "MECE-Básica experience", and "others" types of information that did not fit into the previous categories. Following is a brief description of the main pieces found in each of these categories.

4.2.1. Planned Sources of Information

Five preparation activities were carried out between 1992 and 1994 to produce relevant information for the MECE-Media. Nineteen pieces of information were produced from these activities. Only 2 of them were not cited as informing policy claims: the International Workshop, and the Pilot Project. The pieces of information instrumentally used are described next.

1. <u>MECE Studies</u>. Fifteen studies were carried out between 1992 and 1993 as a preparation activity of the MECE-Media program. Thirteen of them were directly used for the program design. In Table of Appendix C fourteen studies are labeled Research MECE. This is because the Irigoin and Corvalán piece was cited by policymakers, but it was a study included in the Oteiza research and it is not considered as a single research study. A brief description of each MECE study follows based on the summary of these studies done in Avalos et al. (Avalos, Nilo, & Meckes, 1994).

a) Morales, M., et. al. (1993). *Propuestas orientadoras y operativas para un sistema de supervisión de la educación media chilena* (Orientating and Operative proposals for a Supervision System of the Chilean Secondary Education).

This study did a diagnosis of the secondary education's supervision system founded on the perceptions of its executors from a local and regional level (e.g., technical manager of Provincial Education Department, Supervisors, and school directors). It also proposed modifications to this system mainly through making changes in the Provincial Departments of Education and implementing more efficient educational development projects at high schools.

b) Arzola, S. et al. (1993). *Destino educativo/laboral de los egresados de la EM* (Educational/labor ending point of secondary education graduates).

Using two different data sources, the authors of this study investigated the type of labor insertion of secondary education graduates (both tracks) and their income level. Besides to considerer the effect of the track they graduate from, other demographic factors such as gender and age, were examined in order to determine their effect on income level. The study used data from the CASEN survey[16] and data from 3,972 graduates collected by the researchers through a national survey in 1992.

c) Salas, V. et al. (1993). *Evaluación económica de la educación media*. (Economic evaluation of secondary education).

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[16] National Socioeconomic Survey (*Encuesta de Caracterización Socioeconómica Nacional*)

This study examined the internal and external efficiency of the system. It focused on a cost-effective and cost-benefit analysis of SE.

d) Jarufe et al. (1993). *Indicadores de cobertura y calidad de la educación media chilena* (Coverage and Quality indicators of Chilean SE).

This study investigated internal efficiency indicators of SE, such as coverage (enrollment, repetition, and graduation rates) differentiated by track and type of school (e.g. private, public, semi-private). The study also examined learning achievement tests in Math and Language of a sample drawn from 151 schools.

e) Himmel et al. (1993). *Determinación de la Calidad de la educación media chilena*. (Determination of Chilean secondary education quality).

The goal of this study was to establish the main dimensions of the secondary education quality, along with a set of indicators to evaluate these dimensions. The research was intended to validate and experimentally apply the indicators and schemes proposed, to draw conclusions from the experience, and propose future actions. Through a review of literature and focus groups with stakeholders, the study determined a scheme of education quality indictors related to the following factors: a) teacher and school administration characteristics, b) teaching inputs in schools, c) quality of teaching processes, d) student participation, e) learning achievement, f) student attitudes and expectations, and g) parental participation in the educational process. A set of instruments (questionnaires and knowledge tests) were constructed to measure the factors mentioned above and then tested using the same sample of the previous study (Jarufe et al., 1993).

f) Pascual et al. (1993). *Incidencia de la formación inicial en el desempeño profesional de los profesores de educación media*. (Incidence of initial training on the teachers' professional performance).

This study examined the perceptions of a national sample of 1,415 teachers about their own professional performance and the effect of their training and labor conditions on it. A structured questionnaire with professional performance indicators was administrated among teachers. Also, researchers examined school characteristics where the sample teachers worked through a semi-structured questionnaire to school principals. Descriptive, correlation, and multiple regression analyses were done in order to determine the relative contribution of variables related to teacher training and labor conditions to professional performance.

g) Gysling, J. et al. (1993). *Modelos de Formación de Profesores Aplicados en las Instituciones de Educación Media en Chile*. (Models of teachers training applied in Chilean universities).

This study examined in detail the teacher training programs of 14 institutions, selected from 22 universities that offer this career. The study provided general data about the 14 institutions, the pedagogic careers offered, and the selection mechanisms utilized by them.

h) Marin, R. et al. (1993), *Descripción y evaluación del proceso de desarrollo curricular.* (Description and evaluation of the curriculum development process).

This study examined the implementation of elective curricula using a sample of 329 high schools throughout the country. Using only data from a documents analysis, this study

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described the criteria used to determine the elective courses and what courses were chosen in the provinces studied.

i) Trufello et al. (1993). *Prácticas de trabajo y socialización.* (Working practices and socialization).

This study investigated diverse aspects related to teaching-learning processes, school characteristics, teacher perceptions on their students, and students characteristics related to self-esteem, position in the stages of moral judgment, and their learning strategies. The study also examined the effect of socioeconomic level, geographic location, type of education, educational track, and gender on the learning strategies used by students. A sample of 5,131 students and 411 teachers in 36 schools were used for this study. Several procedures and tests were run to measure the factors studied.

j) Edwards et al. (1993). *Prácticas de trabajo y socialización.* (Working practices and socialization).

Using an ethnographic study carried out in 6 schools and quantitative data on school directors and teachers from 85 high schools, this research examined the working and socialization practices of Chilean schools. The data analysis was done around four main topics: school organization, pedagogic practices, student culture, and the relation between schools and parents.

k) Cariola, L., et al. (1993). *"La Experiencia Internacional en el Diseño Curricular y en las Estructuras de los Niveles Medios de los Sistemas Educativos*. (The international experience in curricular design and secondary education structures of educational systems).

The aim of this study was to examine the strategies used by a variety of countries to deal with secondary education problems. The main issues analyzed were: a) transformations in secondary education (e.g. administrative structure and degree of State intervention on education); b) secondary education structures; c) secondary education and work; and d) characteristics and trends of curriculum development and design. This study did a review of literature and organized some seminars with international experts to collect data on the main problems observed in secondary education around the world and the policies implemented to solve them that could be pertinent for the Chilean case.

l) Oteiza et. al. (1993). *Modelos para la producción y actualización curricular.* (Models for curricular production and updating).

The general aim of this study was to design and propose models to update Chilean curriculum of secondary education. The research included the elaboration of 11 different studies to determine the state of the art in several topics related to curriculum, such as cognitive development and creativity, language and communication, and artistic expression, among others.

m) Errazuriz et al. (1993). "*Demandas sociales a la educación media*" (Social demands on secondary education).

Using a focus-group method, this research was intended to identify the various requests that strategic interest groups related to labor fields for SE graduates had for the educational system. Demands related to the following issues were identified: functioning and management of the system, schooling culture, curriculum, efficiency and social relevancy of school, teachers, and the educational counselors' role.

2. Other MECE preparatory activities. Besides the various studies, the other preparation activities that informed directly the reform design process were the Study Tour to Asian countries and the National Conversation[17].

- National Conversation. In 1993 the Ministry of Education did a broad invitation to education stakeholders and representatives of local community organizations across all the country's regions to participate in a conversation about key topics related to secondary education. To do this, the government distributed discussion material along with a methodological guide with open-ended questions about structure of the system, characteristics of teachers, education quality and equity, youth, and relationship between values and education. More than 30,000 people organized into 2,043 discussion groups, constituted basically by teachers, parents, and students, discussed and answered the guide. The Ministry received 2,905 reports that were analyzed in a document broadly distributed among education stakeholders.

- The Study Tour included representatives from the Ministry of Education, the teachers union, in-service teacher training institutions and the private sector as well as the World Bank. It was undertaken in Korea, Malaysia and Singapore during mid-1992 to explore

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[17] There were two preparation activities that were not cited for formulating knowledge claims: the International Workshop, and the Pilot Program.

the structure and curricular changes in secondary education implemented by these countries, which experienced economic development processes similar to Chile: sustained growth and strong insertion in international economy.

For both activities the Ministry of Education prepared a report where their main findings were explicated.

4.2.2.   Unplanned Sources of Information

3. Other studies. Thirty-eight studies, external to the MECE-media program, had impact on the reform design. In this group, 23 studies were produced in Chile and 15 in other countries (see Table in Appendix C).

4. MECE-Básica Experience. This primary education program was carried out between 1992 and 1997 and had the same general goals as the secondary education reform: to improve quality and equity of education. The strategies designed for the first program and their further analysis and evaluation provided valuable information about what does and does not work to achieve these goals. There are at least two different pieces of information from this experience that were used to design the MECE-Media. One came from the appraisal and supervision missions of the World Bank[18] in which at least one of the policymakers in charge of the MECE-Media program had direct participation. The other came from the review of the Educational Development Programs (PDEs) that were created and probed for the first time during the MECE-Básica project.   The

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[18] From April 1990 to October 1993 there were 12 WB missions–details of number and dates in, World Bank (1999), Implementation completion report. Republic of Chile. *Primary education improvement project* (Loan 3410-CH) Latin America and the Caribbean Regional Office. Washington. (table 11, p.41)

inclusion of the PDEs into the MECE-Media program was directly influenced by the previous experience with them in the primary education program.[19]

5. Reports of Educational and Socio-Economic Indicators. Under this category fall three pieces of information that provided educational and socio economic indicators:

MINEDUC. SIMCE,[20] 1993. Report of test scores in Math and Language for second grade of secondary education.

MINEDUC. Planning and Budget Division. Education Statistics Yearbook, 1993.

ODEPLAN. Encuesta de Caracterizacion Socioeconomica Nacional, CASEN.[21] (National Socioeconomic Survey). Socioeconomic indicators for 1990 and 1992.

6. Others. Finally, there are 5 sources of information that do not fit into the previous categories. They were classified as "others" and are listed below.

- Preparatory Missions of the World Bank. There were six preparatory missions of the Bank (see Appendix E for details). In them various specialists (mainly economists and education specialists), contracted by the Bank, participated. Each mission produced an aid memoir document with findings, analysis, and recommendations for the Education and/or Financial Ministers, as well as for the project implementation unit. Each document

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[19] By 1994, the team in charge of designing MECE-Media had information on the execution of 475 PDEs in 1992; and 807 PDEs in 1993 – an analysis of which was later on published (Ministerio de Educación MECE, (1996) *Directorio de Proyectos de mejoramiento Educativo –PME-*, Tomos 1 a 4, Santiago). Even though by 1994 this analysis was not published, the information on PMEs was available to the designing team, and was critical for deciding on this component of the MECE-Media program.

[20] System of Measurement of the Quality in Education. In 1993 SIMCE was administrated for the first time in 2nd grade of secondary education.
[21] This survey provides information about socioeconomic conditions of the different social sectors of the country, their more important lacks, the dimension and characteristics of poverty, and income distribution within households. This information is used as a basic tool to evaluate the government social policies.

was discussed paragraph by paragraph with the Chilean counterpart until a final version was developed that both WB and Chilean Ministry signed. These documents were mandatory for the World Bank and the Chilean government.

- National Vocational Qualifications (NVQs). The English NVQs are statements of performance standards that "describe what competent people in a particular occupation are expected to be able to do. They cover all the main aspects of an occupation, including current best practice, the ability to adapt to future requirements and the knowledge and understanding which underpins competent performance." (http://www.dfes.gov.uk/nvq/what.shtml)

- ECLAC-UNESCO (1992), *Education and knowledge. Basic pillars of changing production patterns with social equity*, Santiago, Chile. The aim of this document is to propose a strategy that creates certain conditions with regard to education, training, and the incorporation of scientific and technological progress which would make possible the transformation of the production patterns of the region against a background of growing social equity.

- Senge, Peter, (1990) *The Fifth Discipline*, Currency Doubleday, New York. This book introduces the concept of the "learning organization" and the five "disciplines" that serve as guides for creating learning organizations. The book also provides several case studies to demonstrate how these five disciplines have worked in major corporations.

- Mineduc, División de Educación General (1992) *Manual de Supervisión Técnico-Pedagógica*, Santiago. (Manual of Technical-Pedagogic Supervision). This manual provides rules, criteria, and a rationale to guide supervision work in primary and secondary schools.

The complete list of pieces of information is in Appendix C.

4.2.3. Kinds of Information Used Instrumentally for Policy Development

A frequency analysis of the various types of information[22] identified as having impact on the policy claims was carried out. These types of information are presented showing their use in the two policy stages.

Table 4.1 shows the number and percentages of pieces of information used that were planned and unplanned to inform the reform design process, across policy stages. The total number of planned pieces of information used in the reform was 15 (23.8% of the total pieces of information), and most of them (7) were used to inform both policy stages, or only the policy problem stage (6). In relation to the unplanned pieces of information (48), most of them were only used during the delineation of policy solutions (24 or 50%) and to formulate exclusively policy problems (17).

The results shown in Table 4.2 indicate that 52 studies (MECE plus Other Studies) were used in the reform planning process. Research is the more common type of information used in this process (82.5% of the total). Only 1 MECE study (7.7%) was exclusively used to delineate policy solutions. On the other hand, most "other studies" (51.3%) were used for the policy solution stage. Other kinds of information represent only 17.5% of the total pieces of information instrumentally used, and they had similar impact on both stages of the policy development.

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[22] These kinds of information are: a) planned and unplanned; b) types of information according to method; c) local and abroad production; and d) types of policymakers' involvement in the information production.

Table 4.1: Planned and Unplanned Pieces of Information by Policy Stages

Type of Pieces of Information	Policy Stages Informed			Total
	Only Policy Problem	Only Policy Solution	Both	
Planned (% within row) (% within column)	6 40.0%	2 13.3%	7 46.7%	15 100.0% 23.8%
Unplanned (% within row) (% within column)	17 35.4%	24 50.0%	7 14.6%	48 100.0% 76.2%
Total (% within row) (% within column)	23 36.5%	26 41.3%	14 22.2%	63 100.0% 100.0%

Table 4.2: Studies and Other Kinds of Information Used Instrumentally by Policy Stages

Kinds of Information	Policy Stages Informed			Total
	Only Policy Problem	Only Policy Solution	Both	
MECE Studies (% within row) (% within column)	6 46.2%	1 7.7%	6 46.2%	13 100.0% 20.6%
Other Studies (% within row) (% within column)	12 30.8%	20 51.3%	7 17.9%	39 100.0% 61.9%
Other Kinds of Information (% within row) (% within column)	5 45.5%	5 45.5%	1 9.0%	11 100.0% 17.5%
Total (% within row) (% within column)	23 36.5%	26 41.3%	14 22.2%	63 100.0% 100.0%

The place where the information was produced is another variable that can be used to distinguish types of information. Table 4.3 shows that 71.4% (45 of 63) of the pieces of information identified as having some degree of direct influence in the MECE-Media program were produced in Chile, 44.4% of these were only used in the policy problem stage, and 26.7% were only used

to delineate policy solutions. Whereas, most of the information produced abroad (28.6% or 18 of 63) was only used during the delineation of policy solutions (77.8% or 14 of 18). Regarding the information produced in Chile, fifty three researchers[23]—most of them Chilean—were involved in the MECE studies, and more than 80 researchers participated in all the studies produced in Chile.

Table 4.3: Place of Origin of Information Instrumentally Used by Policy Stages

| Place of Origin of Information | Policy Stages Informed | | | Total |
	Policy Problem	Policy Solution	Both	
Chile (% within row) (% within column)	20 44.4%	12 26.7%	13 28.9%	45 100.0 71.4%
Outside Chile (% within row) (% within column)	3 16.7%	14 77.8%	1 5.6%	18 100.0% 28.6%
Total (% within row) (% within column)	23 36.5%	26 41.3%	14 22.2%	63 100.0 100.0

The direct participation of the policymakers who led the preparation of the MECE-Media program in the production of the information instrumentally used is shown in Table 4.4. According to these results, these policymakers produced directly 9 pieces of information (14.3% of the total information used). This information included the Study Tour report, the National Conversation report, MECE-Basica Experience, the preparatory missions of the World Bank, and 5 studies. In the 13 MECE studies cited to ground the policy claims, the reform team had also indirect participation in designing in detail the request for proposals for each piece of research.

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[23] This number was obtained by summing the authors of the MECE studies included in Table of Appendix C. In this number research assistants were not considered.

As a result, some of the reform team members had direct or indirect participation in 34.9% of the pieces of information utilized to ground the knowledge claims about policy problems and policy solutions. In relation to the pieces of information produced with direct participation of policymakers, 44.4% of them were used only in the policy solution stage, 22.2% were used exclusively to formulate policy problem, and 33.3% were used in both stages.

Table 4.4: Policy Makers Involvement in Information Production by Policy Stages

| Policy Makers involvement | Policy Stages informed | | | Total |
	Only Policy Problem	Only Policy Solution	Both	
Direct Participation (% within row) (% within column)	2 22.2%	4 44.4%	3 33.3%	9 100.0 14.3%
Indirect Participation (% within row) (% within column)	6 46.2%	1 7.7%	6 46.2%	13 100.0% 20.6%
No Participation (% within row) (% within column)	15 36.6%	21 51.2%	5 12.2%	41 100.0 65.1%
Total (% within row) (% within column)	23 36.5%	26 41.3%	14 22.2%	63 100.0 100.0

Regarding those produced with indirect participation of policymakers, 46.2% were used only in the policy problem stage, 7.7% used only in the policy solution stage, and 46.2% informed both stages. Hence, the pieces of information with direct participation of policymakers had slightly more impact on the policy solution stage, and the evidence produced with indirect participation of policymakers had more impact on the policy problem stage, but nine contributed to both areas.

As a conclusion, the MECE-Media design process was supported by various planned and unplanned sources of information. Almost all planned pieces of information (15 out of 19) were

instrumentally utilized in different degrees by policymakers to design the reform program. Also, a variety of unplanned pieces of information (48) were directly used by the reform team. From the analysis of both the planned and unplanned pieces of information can be highlighted the following kinds of information that impacted the secondary education reform preparation.

a) Empirical Studies and Other information Used. Most of the pieces of information used in the MECE-Media program were empirical studies, with similar numbers of sources produced in Chile and abroad. They represent 82.5% of the total citations from which 20.6% correspond to MECE studies, as indicated above, and 61.9% represents other studies. The other 15% of citations were the Study Tour, the National Conversation, Educational and Socio-Economic indicators, and the pieces of information that fall under category "Others".

b) Role of Policymakers in Producing Information Used. Some of the reform team members participated directly in the production of 9 pieces of information instrumentally used in reform program (Study Tour; National Conversation; MECE-Experience; Preparation Missions of the World Bank; Cox, 1992; Cariola & Cox, 1990; Cox & Gysling, 1990; Cox, 1993; and Cox, 1989). They also had an indirect participation through planning and designing the 13 MECE studies that informed the reform. This means that, besides their role of knowledge users, policymakers in this reform were actively involved as knowledge producers during the preparation process of the MECE-Media program.

c) Information Produced in Chile and Abroad. The reform team used both Chilean and international pieces of information to ground policy claims. Of 63 pieces of evidence cited, 45 were produced in Chile and 18 abroad. Counting the authors of each piece of information produced in Chile, the number of researchers who were involved in the production of local

pieces of evidence was around 80. Hence, the effort of knowledge construction to improve

Chilean secondary education was undertaken extensively by Chilean researchers.

4.3.   USEFULNESS OF INFORMATION INSTRUMENTALLY USED

To measure what types of information were more useful to design the reform program, two

sources of information were analyzed. First, an analysis of the frequencies of citations that each

kind of information had in the reform areas[24] was done. Then, the evaluation of impact that

policymakers were asked to do for every piece of information collected for this study was

analyzed.

4.3.1.   Citation Frequency Analysis

The analysis summarized in Table 4.5 shows that the most relevant sources of information for

the design of the Chilean secondary education reform were the MECE-Media studies, and other

studies. In the case of the MECE studies, they were more relevant for the policy problem

formulation stage (50.6% of the total citations) than for the policy solution stage (27.1%). As

Table 4.5 shows, 5 out of 9 policy problem areas were primarily informed by these studies, and

in 8 of the 9 accounted for 40% or more of citations. The five policy problem areas primarily

informed by MECE studies were: External Efficiency (50%); Curriculum and Evaluation

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[24] The reform areas are defined as follows: <u>Internal Efficiency</u>: Ratio of learning (a non-monetary outcome of education) to costs of educational inputs. Internal efficiency addresses the question of how funds within the education sector are allocated. <u>External Efficiency</u> refers to the ratio of monetary outcomes (benefits) such as earnings, to monetary inputs (costs). <u>Quality General</u> has to do with claims about education quality understood as richness and pertinence of its formative task. <u>Curriculum and Evaluation</u> refers to what is taught to students and how learning is evaluated; it also includes structure of secondary education. <u>Pedagogical Practices</u> refers to teaching methods, teaching professional update (supervisors included), and extra curricular activities for secondary education students. <u>Learning Achievement</u> addresses the analysis of learning outcomes. <u>Management</u> has to do with administration of schools and the local education system. <u>Equity</u> refers to differences in learning outcomes between students from different socio-economic status. <u>Learning Inputs</u> refer to textbooks, teaching materials, teacher guides, school libraries, computers, and school infrastructure.

(58.8%); Pedagogical Practices (50.0%); Learning Achievement (66.7%); and Equity (50%). Other areas of policy problems with a relatively high impact of the MECE studies were Internal Efficiency (40%), General Quality (42.9%), and Learning Inputs (40%).

In the case of the delineation of policy solutions, the studies under the category "Other Studies" had a greater impact than the MECE studies (57.1% and 27.1%, respectively). The policy solution areas impacted by MECE studies were only Management (33.3%), Pedagogical Practices (29.2%) and Curriculum and Evaluation (30.8%). In contrast, the "Other Studies" had a major impact on the areas Learning Inputs (87.5%), Pedagogical Practices (58.3%), Management (58.3%), and Curriculum and Evaluation (46.2%).

According to this analysis, the MECE studies provided to an important degree a broad diagnosis of the main problems of the Chilean secondary education. However, they played a lesser role in the delineation of the policy solutions proposed by the reform document.

The other two preparation activities developed to inform the MECE-Media program, the Study Tour and the National Conversation (NC), had a minor contribution from a quantitative analysis perspective, with only one area of impact each. The Study Tour had impact on the stage of policy solution of the Curriculum and Evaluation area (7.7%), and the National Conversation impacted on the Pedagogical Practices area in policy problem (7.1%) and in the policy solution (4.2%) stages.

Table 4.5: Number of Citations by Type of Information Across Reform Areas and Policy Stages

Types of Information	Policy Areas																				
	Internal efficiency		External efficiency		Quality-General		Curriculum and evaluation		Pedagogical Practices		Learning achievement		Management		Equity		Learning Inputs		TOTAL		
	PP[25] (3)[26]	PS (0)	PP (6)	PS (0)	PP (1)	PS (0)	PP (8)	PS (13)	PP (5)	PS (6)	PP (1)	PS (0)	PP (1)	PS (2)	PP (4)	PS (0)	PP (3)	PS (4)	PP (32)	PS (25)	T (57)
MECE Studies	2	0	10	0	3	0	10	8	7	7	2	0	0	4	3	0	2	0	39	19	58
(% within row)	3.4	0.0	17.2	0.0	5.2	0.0	17.2	13.8	12.1	12.1	3.4	0.0	0.0	6.9	5.2	0.0	3.4	0.0	67.2	32.8	100.0
(% within column)	40.0	0.0	50.0	0.0	42.9	0.0	58.8	30.8	50.0	29.2	66.7	0.0	0.0	33.3	50.0	0.0	40.0	0.0	50.6	27.1	39.5
Study Tour	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	2
(% within row)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0
(% within column)	0.0	0.0	0.0	0.0	0.0	0	0.0	7.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	1.4
National Survey	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	2
(% within row)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	50.0	100.0
(% within column)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.4	1.4
Other Studies	1	0	8	0	4	0	7	12	6	14	0	0	0	7	1	0	0	7	27	40	67
(% within row)	1.5	0.0	11.9	0.0	6.0	0.0	10.4	17.9	9.0	20.9	0.0	0.0	0.0	10.4	1.5	0.0	0.0	10.4	40.3	59.7	100.0
(% within column)	20.0	0.0	40.0	0.0	57.1	0.0	41.2	46.2	42.9	58.3	0.0	0.0	0.0	58.3	16.7	0.0	0.0	87.5	35.1	57.1	45.6
MECE-BASICA Experience	0	0	0	0	0	0	0	3	0	1	0	0	0	1	0	0	0	1	0	5	6
(% within row)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	20.0	0.0	0.0	0.0	16.7	0.0	0.0	0.0	20.0	0.0	100.0	100.0
(% within column)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.7	0.0	4.2	0.0	0.0	0.0	6.3	0.0	0.0	0.0	12.5	0.0	7.1	3.4
Indicators	2	0	2	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	7	0	7
(% within row)	28.6	0.0	28.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.3	0.0	0.0	0.0	28.6	0.0	0.0	0.0	100.0	0.0	100.0
(% within column)	40.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	0.0	33.3	0.0	0.0	0.0	9.1	0.0	4.8
Other	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	3	0	3	3	6
(% within row)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	16.7	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	50.0	50.0	100.0
(% within column)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	60.0	0.0	3.9	4.3	4.1
TOTAL	5	0	20	0	7	0	17	26	14	24	3	0	0	12	6	0	5	8	77	70	147
(% within row)	3.4	0.0	13.6	0.0	4.8	0.0	11.6	17.7	9.5	16.3	2.0	0.0	0.0	8.2	4.1	0.0	3.4	5.4	52.4	47.6	100.0

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[25] PP= Policy Problem stage, PS = Policy Solution stage.

[26] Numbers in parentheses indicate the number of policy claims found for each policy area.

The experience with the MECE-Basica program was used to plan four areas, all of them corresponding to the policy solution stage: Curriculum and Evaluation (7.7%), Pedagogical Practices (4.2%), Management (8.3) and Learning Inputs (12.5%). As it was explained above, at least one policy maker in charge of the MECE-Media program had important roles in designing and conducting the MECE-Basica program. It would appear that they applied the lessons learned in this reform experience into the secondary education program.

Under the category "Indicators" the SIMCE tests, Mineduc's Education Statistics Annual Report (1992, 1993), and the CASEN Survey were included. These pieces of information had a considerable effect on the diagnoses done for some areas. This is the case of Internal Efficiency (40.0%), External Efficiency (10.0%), Learning Achievement (33.3%), and Equity (33.3). In these four cases the impact of "Indicators" was on the policy problem stage only.

Finally, Table 4.5 shows three areas of impact under the category Others: Curriculum and Evaluation, (7.7% in policy solution); Pedagogical Practices (4.2% in policy solution); and Learning Inputs (60% in policy problem). This last area was the most impacted by the category Others, specifically by the preparatory missions of the Bank, which were directly related to the MECE-media program planning.

The analysis of impact of the planned and unplanned pieces of information is summarized in Table 4.6. According to these results, the planned pieces of information were used slightly more to formulate policy problems (51.9%) than the unplanned ones (48.1%). The reform areas Curriculum and Evaluation, Pedagogical Practices, and Learning Achievement show higher percentages of citations from the planned pieces of information with 58.8%, 57.1%, and 66.7%, respectively. Only the policy problem stage of the Learning Inputs area was more informed by unplanned than planned sources of information (60.0% and 40%, respectively).

On the other hand, Table 4.6 shows that the unplanned pieces of information were cited more to delineate policy solutions (68.6%) than the planned ones (31.4%). This is the case for every reform area that was informed by pieces of information to delineate policy solutions (Curriculum and Evaluation, 61.5%; Pedagogical Practices, 66.7%; Management, 66.7%; and Learning Inputs, 100.0%.

In relation to the impact of pieces of information produced in Chile, Table 4.7 shows that the information produced in Chile was used much more than that produced abroad to formulate policy problems (93.5% and 6.5%, respectively) and delineate policy solutions (72.9% versus 27.1%). The only reform area that was informed more by international products was Learning Inputs in the policy solution stage (75% versus 25%).

Table 4.6: Number of Citations in Planned and Unplanned Pieces of Information across Reform Areas and Policy Stages

Areas of Information Impact	Planned			Unplanned		
	PP	PS	T	PP	PS	T
Internal efficiency	2	0	2	3	0	3
(% within row)	40.0	0.0	40.0	60.0	0.0	60.0
External efficiency	10	0	10	10	0	10
(% within row)	50.0	0.0	50.0	50.0	0.0	50.0
Quality-General	3	0	3	4	0	4
(% within row)	42.9	0.0	42.9	57.1	0.0	57.1
Curriculum and evaluation	10	10	20	7	16	23
(% within row)	58.8	38.5	46.5	41.2	61.5	53.5
Pedagogical Practices	8	8	16	6	16	22
(% within row)	57.1	33.3	42.1	42.9	66.7	57.9
Learning achievement	2	0	2	1	0	1
(% within row)	66.7	0.0	66.7	33.3	0.0	33.3
Management	0	4	4	0	8	8
(% within row)	0.0	33.3	33.3	0.0	66.7	66.7
Equity	3	0	3	3	0	3
(% within row)	50.0	0.0	50.0	50.0	0.0	50.0
Learning Inputs	2	0	2	3	8	11
(% within row)	40.0	0.0	15.4	60.0	100.0	84.6
TOTAL	40	22	62	37	48	85
(% within row)	51.9	31.4	42.2	48.1	68.6	57.8

Table 4.7: Number of Citations of Pieces of Information in Reform Areas by Origin of Information and Policy Stages

Areas of Information Impact	Origin of Information					
	Local			Abroad		
	PP	PS	T	PP	PS	T
Internal efficiency	4	0	4	1	0	1
(% within row)	80.0	0.0	80.0	20.0	0.0	20.0
External efficiency	19	0	19	1	0	1
(% within row)	95.0	0.0	95.0	5.0	0.0	5.0
Quality-General	7	0	7	0	0	0
(% within row)	100.0	0.0	100.0	0.0	0.0	0.0
Curriculum and evaluation	14	22	36	3	4	7
(% within row)	82.4	84.6	83.7	17.6	15.4	16.3
Pedagogical Practices	14	19	33	0	5	5
(% within row)	100.0	79.2	86.8	0.0	20.8	13.2
Learning achievement	3	0	3	0	0	0
(% within row)	100.0	0.0	100.0	0.0	0.0	0.0
Management	0	8	8	0	4	4
(% within row)	0.0	66.7	66.7	0.0	33.3	33.3
Equity	6	0	6	0	0	0
(% within row)	100.0	0.0	100.0	0.0	0.0	0.0
Learning Inputs	5	2	7	0	6	6
(% within row)	100.0	25.0	53.8	0.0	75.0	46.2
TOTAL	72	51	123	5	19	24
(% within row)	93.5	72.9	83.7	6.5	27.1	16.3

The number of citations of pieces of information produced by policymakers in charge of the reform (9) and by others (54) is shown in Table 4.8. As expected, there were many more citations of pieces by "others" than by policymakers in both policy stages (78.9% versus 21.1%). Only the policy problem stage of the learning Inputs area was more influenced by pieces by policymakers than by others (60% versus 40%). Also, the policy solution stage of the Curriculum and Evaluation area had the same number of citations from pieces of information by policymakers and by others (13 or 50%). Another way of comparing these two kinds of information is calculating the average number of times that each is cited by dividing number of citations by number of pieces of information in each group. Thus, the average number of times that pieces by policymakers were cited was 3.4 (9/31), and the average of pieces by others was

2.2 (116/54). Hence, pieces of information by policymakers were cited more on average than pieces by others.

Table 4.8: Number of Citations of Pieces of Information Produced by Policymakers and Policy Stages

Areas of Information Impact	Information Producers					
	Policymaker			Others		
	PP	PS	T	PP	PS	T
Internal efficiency	0	0	0	5	0	5
(% within row)	0.0	0.0	0.0	100.0	0.0	100.0
External efficiency	1	0	1	19	0	19
(% within row)	5.0	0.0	5.0	95.0	0.0	95.0
Quality-General	2	0	2	5	0	5
(% within row)	28.6	0.0	28.6	71.4	0.0	71.4
Curriculum and evaluation	3	13	16	14	13	27
(% within row)	17.6	50.0	37.2	82.4	50.0	62.8
Pedagogical Practices	2	4	6	12	20	32
(% within row)	14.3	16.7	15.8	85.7	83.3	84.2
Learning achievement	0	0	0	3	0	3
(% within row)	0.0	0.0	0.0	100.0	0.0	100.0
Management	0	2	2	0	10	10
(% within row)	0.0	16.7	16.7	0.0	83.3	83.3
Equity	0	0	0	6	0	6
(% within row)	0.0	0.0	0.0	100.0	0.0	100.0
Learning Inputs	3	1	4	2	7	9
(% within row)	60.0	12.5	30.8	40.0	87.5	69.2
TOTAL	11	20	31	66	50	116
(% within row)	14.3	28.6	21.1	85.7	71.4	78.9

4.3.2.   Quantitative and Qualitative Information Analysis

An "impact indicator" was calculated based on the total number of citations that pieces of information got and the assessment of impact done by the primary policymaker who provided information. It was assigned more relative importance to the policymaker evaluation than to the number of times that pieces of information were cited. Thus, the indicator addressed this by multiplying the total number of citations by .25, and the policymaker evaluation rank[27] by .75.

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[27] The impact evaluation rank goes from 1 to 3, being 3 the highest impact.

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)[28].

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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[28] See the four tables in Appendix F.

Table 4.9: Information with Very High Impact

Pieces of Information	Kind of information	Area of greater impact	Total number of times cited	Rank by Policymakers	Final Ranking
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

Pieces of Information	Information Characteristics		
	Planned	Chilean Production	Produced by Policymakers
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
TOTAL YES	5	11	5

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	<u>Final Ranking</u>
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						Total		
	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	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[29]			No. of pieces of information used by Area[30]		
	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

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[29] This information was obtained from Table 4.5.
[30] 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
	No. of PCs	No. of Citations	Average of Cit. by PC	No. of PCs	No. of Citations	Average of Cit. by PC	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[31] identified by Weiss (1991) and five policymaking models[32] 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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[31] The Knowledge-driven, Problem-solving, Tactical, Enlightenment, Intellectual or Research-oriented, Interactive, and Political models.
[32] 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 in1993 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[33] 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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[33] 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. <u>Planning long-term processes of policy development with a stable policymaking team</u>. 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. <u>Including policymakers in research production.</u> 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. <u>Strengthening a national research capacity.</u> 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. <u>To consult a broad variety of types of information.</u> 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 that 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
	I. INTERNAL EFFICIENCY	
-Jarufe (1993) Indicators of Coverage and Quality of Chilean Sec. Educ. Some stats were also compared to those presented by: MINEDUC. Planning and Budget Division (1993)	About 24% of the 14 to 17 year-old cohort is not covered by SE. (WB, p.9) High Repetition and Dropout rates (between 7.9 and 11.7% annual for the 1985-1991 period). (P.36) The system losses almost 30% of its students between 9th and 12th grades. (p.36) 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) Annual repetition average between 1985 and 1991 was 12.3%. (p.37)	**1.1) PC:** The internal efficiency of the system is dramatically affected by <u>high levels of</u> grade repetition and drop out rates (p.37) [34].
-Jarufe (1993) Indicators of Coverage and Quality of Chilean Sec. Educ.		**1.2) PC:** 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)
-Lockheed and Verspoor, (1991) *Improving primary education in developing countries*, World Bank, New York, Oxford		**1.3) PC:** 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)

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[34] 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 indicted by its acronyms WB, otherwise citations correspond to the Ministry of Education document.

II. EXTERNAL EFFICIENCY		
-Arzola, S. et al. (1993). Destino educativo/laboral de los egresados de la EM. PUC- MECE	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) Almost 40% of graduates who were not studying in 1990 were also not working. (p.40)	**2.1) PC:** SE is inefficient preparing students for tertiary education institutions and the labor market. (p.39)
-Arzola, S. et al. (1993).	Almost 60% of SE graduates do not continue studying. (39)	**2.2) PC:** 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)
-Irigoin & 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.	A very small proportion of T-Voc graduates go on to advanced studies.	
-Errazuriz (1993). Demandas sociales…	This study provides opinions from different stakeholders about the relevance of SE for their graduates. (p.45)	**2.3) Tacit P.C**.: 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)

-Arzola, S. et al. (1993). Destino educativo/laboral de los egresados de la EM. PUC MECE -Irigoin & Corvalán (1993). Educ. Tecnica Profesional. Estudio MECE USACH. Also, international evidence and arguments in: -John Middleton, Adrian Zideman, Arvil van Adams, (1993), *Skills for productivity. Vocational education and training in developing countries*. The World bank, Oxford University Press.		**2.4) Tacit P.C**.: External efficiency is affected by weak linkages between secondary schools, especially T-VOC, and the productive sector (WB, p.8)
- Cox, C. (1992). Sociedad y conocimiento en los 90: puntos para una agenda sobre currículo del sistema escolar, Estudios Públicos, N° 47, Santiago -Oteiza, F. & P.Montero (1993), Modelos para la producción y la actualización curricular. Mineduc -Marín, R. Et al. (1993), Descripción y evaluación del proceso de desarrollo curricular.	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.	**2.5) Tacit P.C**.: External efficiency is affected by the low capacity to update and review curriculum and study plans. (WB, p.8)

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

III. QUALITY – General		
- Trufello y Pérez (1993), Prácticas de trabajo y socialización -Edwards, Calvo et.al. (1993) Prácticas de trabajo y socialización. -Himmel et.al (1993) Determinación de la Calidad de la educación media chilena. Previous to the studies of MECE – the following were key papers for building the diagnosis and analysis behind PC 1: - Cariola, L & Cox, C. (1990). La educación de los jóvenes: crisis de la relevancia y calidad de la Enseñanza Media. -González, L.E. (1989), La educación de la juventud, en PIIE, *Educación y transición democrática. Propuestas de políticas educacionales*, Santiago. - Cariola, L (1989). Alumno, familia y liceo, ¿Confabulación para un menor aprendizaje?, in, -Cox, C (1992) Sociedad y conocimiento en los 90: puntos para una agenda sobre currículo del sistema escolar.		**3.1) PC:** 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)

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)
- Trufello y Pérez (1993), Prácticas de trabajo y socialización - Edwards, calvo et.al. (1993) Prácticas de trabajo y socialización.	In terms of *teaching and evaluation*, 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[35]; 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. 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.	**4.1) PC:** 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) **4.2) PC:** 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)
-Cox, C. (1992) Sociedad y conocimiento en los 90: puntos para una agenda sobre currículo del sistema escolar.		**4.3) PC:** 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)

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[35] 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. <u>Prácticas de trabajo y socialización</u>,.

-Cariola, L., et al, "La Experiencia Internacional en el Diseño Curricular y en las Estructuras de los Niveles Medios de los Sistemas Educativos.	Lack of differentiation and rigidity of the curricular structure make it difficult to satisfy the needs of different types of students. (47)	**4.4) PC:** Rigidity and simplicity of SE structure and curriculum are an important cause of the identity and quality crisis of SE (47).
- 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., & Arvil van Adams, (1993), *Skills for productivity. Vocational education and training in developing countries*.	Lack of differentiation and rigidity of the curricular structure make it difficult to satisfy the needs of different types of students. (47)	**4.5) PC:** SE structure is rigid and outdated. (WB, p.8)
- 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.	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.	**4.6) Tacit P.C.:** Poor SE education quality is caused in part by a weak institutional capability for curriculum design, monitoring, and evaluation. (45)
- Marín, R. Et al. (1993), Descripción y evaluación del proceso de desarrollo curricular.	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	**4.7) PC:** Most secondary schools in Chile do not have the technical skills and instruments required to implement the recommendations of the LOCE. (WB, p.5)

- Cox, C. & Gysling, J. (1990) , *La formación del profesorado en Chile*, 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)	**4.8) Tacit PC:** 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). Practicas de trabajo y socialización (enfoque cualitativo). 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.	**4.9) Tacit PC:** 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). Practicas de trabajo y socialización.	Evaluation processes do not promote higher-order skills (50)	
- Jarufe, T. et al. (1993). Indicadores de cobertura y calidad de la educ. Media chilena. Estudio MECE - Himmel, E. (1993). Determinación de la calidad de la EM. MECE - MINEDUC (1994). SIMCE, 1993.	These studies tested a sample of students in several subjects (50-53) Low scores in math and Spanish tests in 1st, 2nd, and 4th grades students. (p.50)	**4.10) Tacit P.C.:** Learning achievement in SE is low especially in public schools. (53)
- MINEDUC (1994). SIMCE, 1993.	This test shows even lower results for 2nd grade students in Spanish and math. (p.53)	
- McNicoll, D. (1991). Estrategia para la reforma y desarrollo de la educacion escolar en Chile. 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)	**4.11) Tacit PC:** Supervisors are not playing appropriately their role of advising teachers and school managers in pedagogic issues, which affects education quality. (p.102)
- Morales, M., M.Astudillo, C.Avendaño, et.cl., Propuestas orientadoras y operativas para un sistema de supervisión de la educación media chilena (1992), Mineduc, MECE , Santiago		
- Edwards et. al. (1993) - Project-preparation missions by	*This source grounds this part of the claim: lack or obsoleteness of materials*	**4.12) Tacit PC:** Quality of SE education is caused in part by: a lack or obsoleteness 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) Prácticas de trabajo y socialización. - Preparatory missions WB-Ministry	Systematic evidence of lack or poverty of libraries	**4.13) Tacit PC:** 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	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)	**4.14)** Many secondary schools lack the essential infrastructure necessary to comply with MINEDUC's requirements. (WB,12)
- Edwards et.al. (1993 - Trufello et al. (1993) - Pascual, E. & Navarro, R. Incidencia de la formación inicial en el desempeño profesional de los profesores de educación media.		**4.15) Tacit P.C.:** The habitual professional isolation of teachers (scarce opportunities for reflection, programming, learning and evaluation among peers) affects education quality. (P.84)
- Pascual, E. & Navarro, N. - Sepúlveda, J et al. (1993), Perfeccionamiento docente: la Mirada de los profesores de enseñanza media		**4.16) PC:** In-practice training actions do not help to improve the teaching practice. (84)
- MINEDUC (1992), *Manual de supervision técnico-pedagógica,* División de Educación general. Santiago		**4.17) Tacit PC:** 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), *Informe Conversación Nacional sobre Educación Media*, 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	**4.18) Tacit PC:** 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, *Educación y transición democrática. Propuestas de políticas educacionales*, 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		

V. EQUITY		
		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)	**5.1) PC:** 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)	**5.2) PC:** Type of schools attended
- Jarufe (1993) - Himmel (1993)	There is a direct relationship between learning outcome and socio-economic level. (p.54)	**5.3) PC:** Standardized academic achievement
- 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)	**5.4) PC:** 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
center **I. FRAME (Regulatory Action) Curriculum and Evaluation**		
		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:
- 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 1993 - Cox, C. (1993) Las políticas de los noventa para el sistema escolar Ministerio de Educación / Programa MECE Santiago, Marzo de 1993	PDE is a tested instrument in (MECE-Basica) to make schools' management *and teachers' team work* more dynamic and flexible (75)	**1.1) PC:** School-based educational development projects (PDEs), which might stimulate the reflection, adaptation, and design capacity of curriculum (81)
- Oteiza, F. et al. (1993).	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.	**1.2) PC:** Technical support networks (TSN) for curricular development of schools, which schools can utilize according to certain procedures and financial resources. (81)
- Oteiza, F. et al. (1993).	More than findings, a well argued proposal, using a lot of international evidence.	**1.3) PC:** 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)
- Oteiza, F. et al. (1993). - Sepúlveda, Gastón, (1992) Descripción y evaluación del proceso de desarrollo curricular (sectores rurales)	It tackled the issues of the 'small High Schools'	**1.4) PC:** 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)
- Oteiza, F. et al. (1993).		**1.5) PC:** To elaborate, on a competition basis and through

		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.	**1.6) Tacit PC:** To design and distribute evaluation instruments intended to develop teachers' capacities to evaluate significant learning in SE (81).
- National Vocational Qualifications (NVQ)		**1.7) Tacit PC:** To design and implement competences certification mechanisms: - General, at the end of first cycle (2nd 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, **from the practice** of the *Enlaces* 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".	**1.8) Tacit PC**: 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)

- Osborne, D. & Gaebler, T. (1993) *Reinventing Government. How the entrepeneurial spirit is transforming the public sector*. - Senge P., (1990) *The Fifth Discipline*, Currency Doubleday, New York. -ECLAC-UNESCO (1992), *Education an knowledge. Basic pillars of changing production patterns with social equity*, Santiago, Chile.	International evidence –theoretical and empirical-, on organizations that are able to learn: to learn they have to link, and trespass boundaries….	
- Cox, (1992) Sociedad y Conocimiento en los 90. Puntos para una agenda sobre currículo del sistema escolar	It provides ideas on the need to inseminate teachers' knowledge on the disciplines through *activating linkages between schools and universities*	
- Cox, C. (1989) Sistema político y educación en los 80', en J.Edo.GArcía-Huidobro (editor), (1989) *Escuela, calidad y equidad. Los desafíos para educar en democracia*. CIDE, Santiago	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.	**1.9) Tacit PC**: 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)
- Cox, (1992) Sociedad y Conocimiento en los 90		
- MINEDUC, Programa MECE-EM, Sistema escolar y desarrollo: Corea, Singapur y Malasia, Informe de Misión de Estudio. Julio 1992	All of the above was more than confirmed in the observed cases of Korea, Singapur and Malaysia in 1992.	**1.10) Tacit PC**: 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)
	National and international 90s' evidence on the absolute need of developing central capacities for designing and developing the national curriculum.	
- Cox, (1992) Sociedad y Conocimiento en los 90	Need to break self-reference of the schooling system regarding curriculum.	**1.11) Tacit PC**: 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)
- Marin, R. Et al. (1993), Descripción y evaluación del proceso de desarrollo curricular.		

- Cox, (1992) Sociedad y Conocimiento en los 90	Need to break self-reference of the schooling system regarding curriculum. .	**1.12) Tacit PC**: 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)
- Marin, R. Et al. (1993), Descripción y evaluación del proceso de desarrollo curricular.		**1.13) Tacit PC**: 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)
II. DIRECT ACTIONS ON SCHOOLS – PROGRAMS		
- Truffello, I. Et al. (1993). Practicas de trabajo y socializacion - Edwards et al. (1993). Practicas de trabajo y socializacion (enfoque cualitativo). - Marin, R., et al, "Descripcion y Evaluacion del Proceso de Desarrollo Curricular". - Avalos, B., Creatividad versus autonomía profesional del profesor: consideraciones sobre el tema derivadas de la investigación pedagógica. *Revista Pensamiento Educativo*, Vol. 14, 1994. - Zeichner M. Kenneth (1993?), El maestro como profesional reflexivo, *Cuadernos de Pedagogía N° 220-* - Schon, Donald (1983) The reflective practitioner: how professionals think in action, - Schon, Donald (1987), Educating the reflective practitioner. Toward a new design for teaching and learning in the professions,	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.	**2.1) Tacit P.C.:** 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). **2.2) Tacit P.C.:** 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)

- 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), - Errazuriz (1993). -Cariola & Cox (1990) - Gonzalez, L. (1989) - Cariola, L. (1989) - Weinstein, J. (1990) .	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.	**2.3) Tacit P.C.**: 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:
- Halcaltegaray, M.Alicia (ed) (1991). - Mena, I., S.Ritterhausen (eds) (1991). -Weinstein, J. (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.	**2.3.1) Tacit PC:** - 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)
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	**2.4) Tacit P.C.**: 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 *liceo*	

III. SUPPORT SYSTEM		
- Lockheed, M., A. Verspoor (1991), *Improving primary education in developing countries.*	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)	**3.1) Tacit P.C.**: 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	**3.2) Tacit P.C.**: 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) *The children's machine: rethinking school in the age of the computer.* Basic Books, New York. - Papert, S. (1980), *Mindstorms: children, computers and powerful ideas*, Basic Books, New York. - Hepp, P., E.Laval, et.al. (1992), *A user-friendly educational network using hypermedia technology. Concepts and experience.* Pacific University Conference PC'92, Kyoto, Japan. - Epstein, K. and E.Hillegesit (1990), Intelligent instructional	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)	**3.3) Tacit P.C.**: 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)

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systems: teachers and computer-based intelligent tutoring. *Educational technology* (November) : 13-19. - Budin, H.R. (1991) Technology and the teacher's role. Computers in the school 8(1/2/3). - Simon, T. (1987) Claims for logo – What should we believe and why? In, J.Rutkowska and C.Crook, *Computers, Cognition and Development*, John Wiley and Sons Ltd.		
- Walberg, H.J., 'Improving School Science in Advanced and Developing Countries'.		**3.4) PC**: 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)	**3.5) Tacit P.C.**: 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) *Las políticas de los noventa para el sistema escolar.*		
- Morales, M. et.al (1992).		**3.6) Tacit PC**: 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) *Manual de Supervisión Técnico-Pedagógica*, Santiago.		
- MECE-BASICA experience.		**3.7) Tacit P.C.**: 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) Las políticas de los noventa para el sistema escolar Ministerio de Educación / Programa MECE Santiago, Marzo de 1993		

APPENDIX C

Information Instrumentally Used

Pieces of Information	Nature	Areas of Impact
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. Irigoin, 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.; Irigoin, 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), *Informe Conversación Nacional sobre Educación Media*, 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) *Improving primary education in developing countries*. World Bank, Oxford University Press, New York.	Research (International)	- Internal Efficiency - Learning Inputs
19. Middleton, J., Zideman, A, & Arvil van Adams, (1993), *Skills for productivity. Vocational education and training in developing countries*. 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, *Educación y transición democrática. Propuestas de políticas educacionales*.	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) , *La formación del profesorado en Chile*, 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) *Reinventing Government. How the entrepreneurial spirit is transforming the public sector.*	Research (International)	- Curric./Evalua.
44. Senge P., (1990) *The Fifth Discipline*, Currency Doubleday, New York.	Book that introduces the theory of learning organizations.	- Curric./Evalua.
45. ECLAC-UNESCO (1992), *Education and knowledge. Basic pillars of changing production patterns with social equity*, Santiago, Chile	Policy Document	- Curric./Evalua.
46. Cox, C. (1989) Sistema político y educación en los 80', in García-Huidobro, J.E. (editor), (1989) *Escuela, calidad y equidad. Los desafíos para educar en democracia.*	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, *Cuadernos de Pedagogía N° 220*	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. *Journal of Education for Teaching*, 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) *The children's machine: rethinking school in the age of the computer*. Basic Books, New York.	Research (International)	- Learning Inputs
57. Papert, S. (1980), *Mindstorms: children, computers and powerful ideas*. Basic Books, New York.	Research (International)	- Learning Inputs
58. Hepp, P., E.Laval, et.al. (1992), *A user-friendly educational network using hypermedia technology. Concepts and experience.* 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. *Educational technology* (November): 13-19.	Research (International)	- Learning Inputs
60. Budin, H.R. (1991) Technology and the teacher's role. Computers in the school 8(1/2/3).	Research (International)	- Learning Inputs

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

Pieces of Information	Kind of information	Area of greater impact	Total number of times cited	Rank by Policymakers	Final Ranking
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)	Reseacrh 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)

Pieces of Information	Kind of information	Area of greater impact	Total number of times cited	Rank by Policymakers	Final Ranking
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)

Pieces of Information	Kind of information	Area of greater impact	Total number of times cited	Rank by Policymakers	Final Ranking
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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Audi, R. (Ed.). (1995). *The Cambridge dictionary of philosophy*. New York, NY: Cambridge University Press.

Auriat, N. (n.d). *Las políticas sociales y la investigación social: Reapertura del debate*. Retrieved February 23, 2003, January 18, 2003, from http://www.unesco.org/issj/rics156/auriatspa.html

Avalos, B., Nilo, S., & Meckes, L. (1994). *Quince investigaciones para el diseño de políticas de mejoramiento de la educación media.* Santiago: Ministerio de Educación, Programa MECE-Básica.

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