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Mixed Methods for Research in Education. Studying an Innovation

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Abstract

In the Italian-speaking part of Switzerland a reform of the secondary school system is taking place. This reform originates from some preliminary reflection started during the '90ies. During the academic year 2004/2005 started the first visible transformation in school. A study on this process of change has been conducted during the years 2006 - 2012.
Data from different sources of information have been collected and analyzed: public documents concerning the reform; interviews to opinion leaders and decision makers; four cases of scholastic institutes and a questionnaire administered to all the teachers belonging to the school system.
Analysis of data collected and consequent results allow to confirm and up-date the initial theoretical framework; a system of detection and a grid for the analysis of the educational institutions and the school system has been produced.
To use model of investigation that come from different contexts (for example institutional, national or cultural) may cause problems in evaluating different aspects of the phenomenon; the process of including field data in pre-existing theoretical framework has been explored.

Keywords: Innovation, Reform, Implementation, Change, Content analysis, Data triangulation

1. Introduction

At the present time, a reform of the secondary school system (CITE 2) is taking place in the Italian region of Switzerland called Canton Ticino; the process of its institutionalization is going on. In Ticino the "Scuola media", the lower secondary school (CITE 2), is organized in four years, from the age of 11 to the age of 15. Moreover,

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the years are divided in two blocks each one of two years. The secondary school system in Canton Ticino can be said to be "inclusive", because all kind of students attend normal schools, so that only 2% of students are enrolled in special schools. The advantages of these inclusive systems are seen both in terms of quality (OECD, 2005) and equity (Corbett Burris, Heubert, & Levin, 2005).

The reform project named "Riforma 3" (R3), confirms the effectiveness of Ticino's model for secondary schools, and suggests a process of modernization on different levels, namely structural, pedagogical and didactical. The reform started in 2004-2005; according to the operating project, there has been a process of generalization of the reform, then, in 2005-2006 it has been extended to the third year of the "Scuola media" and to the fourth year in 2006-2007.

The aim of the reform is to "ensure a wide structural, pedagogical and didactical innovation to answer the new requests of students, society and professional change for teachers, consistently with basic principles and general aims of secondary school" (UIM, 2005). According to the R3, changes will be focused on three different elements: the curriculum, the organizational structure and the pedagogical structure.

The new curriculum, named "Piano di formazione", is based on subject matters, but its crucial point is the "Mappa formativa generale". This map should answer the basic question "what a student should have learned at the end of the secondary school"; one of the most relevant aspects of the "Piano di Fornazione" is that much importance is given to the development of competencies. Concerning the organizational structure, relevant changes are going to be taken in language classes, namely compulsory classes of English for all the students, optional classes of French for second biennium, and an increase in classes of Italian.

The pedagogical elements are linked to the "Piano di Formazione", but they keep their autonomy and their presence in all the parts of School. The Reform emphasizes particularly the idea of "pedagogical differentiation" and "formative evaluation". As a matter of fact, a school that is said to be "inclusive" has to practice a differentiated teaching, to develop the potential of each single student.

The evaluation of education is a necessary practical consequence for an effective differentiation; the R3 promotes a certain form of evaluation, though already being included within the regulation has not yet been put into practice. The Reform further includes other issues, such as maladjustment, integration, wellness, teaching and class hours, self-evaluation of scholastic institutes and computer literacy. This paper is based on the project of evaluation of the R3 that began in 2006.

2. Theoretical framework

The theoretical framework in which the process is investigated refers to the main international streams on scholastic innovation, starting from Hargreaves, Lierman, Fullan, & Hopkins (1998), to the studies of Fullan (1993, 1998, 1999, 2000, 2001, 2003), Leithwood, Jantzi, & Mascall (2002), Huberman & Miles (1984) and Huberman, Miles, Taylor, & Goldberg (1983).

According to Fullan (2001) the main problem in school is that there are too many untied, episodic, scrappy and chaotic projects, rather than in the lack of innovative initiatives. Bryk, Sebring, Easton, & Luppescu (1998) refer to the "problem of Christmas tree": schools are often decorated with a large amount of small projects (as Christmas balls), but the global sense of them is hard to understand.

Projects of innovation are given to schools in an uncoordinated way, and each single institute does not have a real opportunity – or the capability – to choose between them. Unfortunately schools involved in effective projects are part of a narrow minority. The further important step for scholastic institutions is then to switch from a superficial and fragmentary change to coherent and deep programs. This means to carry out different reforms, processes that are clear and perceptible to everyone involved.

As many organizational authors (e.g. Schein, 1998) sustain every change induces anxiety and insecurity, rather than enthusiasm. These aspects need to be taken into consideration, not only as negative. They are natural and

their origin has to be questioned. Concerning teachers, change has to face their every-day pressures that can be defined as "class pressures" according to Huberman, Miles, Taylor & Goldberg (1983).

These phenomena lead teachers to focus on their own daily job, in a short-term perspective; then teachers tend to be more isolated from other adults and colleagues, and have no more energy to a deep thought on change processes that are taking place.

Furthermore, strategies to support reform are planned in a superficial manner (for example through refresher course), are highly time-spending, and concern very seldom about culture and values. On the contrary, according to the author, culture is the most important aspect of these processes. Every process of change would fail if there is no structure that involves teachers in the process of a deep understanding.

In addition, an effective change need to be considered as a multidimensional phenomenon that, beside culture, involves also materials and didactical approaches, and all these aspects have to be involved in the process of change. According to Fullan "innovations that don't include changes in all these three dimensions are not changes. For example, the use of a new book or didactical support without a modification in teaching strategies is a small change […] real changes involve changes in ideas and behaviors, that are very difficult to reach" (Fullan, 2001).

In organizational change processes there are at least three main steps of change that has been identified initially by Lewin (1947) but are almost accepted in most of the managerial literature (Tosi and Pilati, 2002). Actually change is considered a so constant feature of organizational life that the ability to manage it is seen as a core competence for managers and for successful organizations (Bumes, 2004). It is important to bear in mind that the idea of well defined punctual steps is a model and that in real changes the transformation take place mostly in the time that prepare the level changes. First of all, there is the beginning of innovation, it happen when an innovation is adopted by an organization. This step includes also the decision to begin a certain innovation, or to join some previous reforms (for example in the case of an institute). The second step is the implementation, which is to put an idea into practice (or a reform). Then there is the institutionalization, in which changes are involved in every-day practices of schools.

This process should lead to results, which can be transposed into learning results, changes in teaching practices and results at the organizational level (Fullan, 2001). This model can be used both at the macro-level of analysis of the educational system and at the meso-level of the scholastic institute. For example, a reform can be discussed and established in the educational system but every single institute decides to implement it or not — depending on the kind of innovation. Using a visual representation of the process as a whole we can identify it as pyramid (fig. 1) with a triangular base in which is possible to identify the three steps and the top of the pyramid with the results.

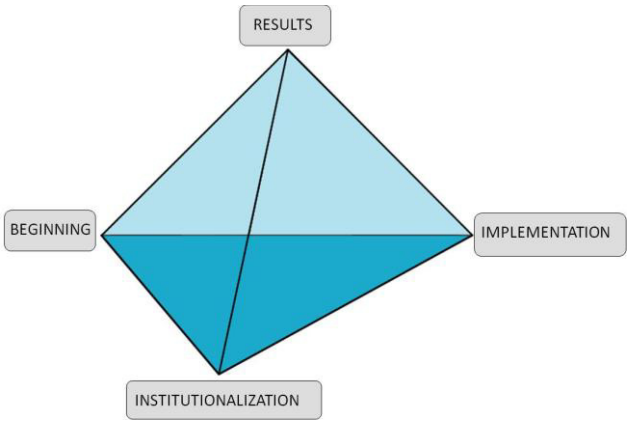

Fig. 1. Pyramid of change

The decision can occur at every level of the pyramid. It may be that depending on the analyzed dimension, there are more aspects in one level than in another. Then, in the case of a reform, most of the initial aspects can be found in the system level, while the implementation will be seen mostly inside the single institutes.

3. Methods

In the last years, scholars have strongly discussed about whether or not to use a conceptual frame work to read information coming from the environment. Our project research has been leaded a priori by a theoretical framework, but we decided to give us the opportunity to change it or integrate it during the process. Then, this model can be said to be formally pragmatic (Johnson & Onwuegbuzie, 2004).

We choose a mixed methods design and following the ideas of Creswell and Clark (2011) we can identify some reasons:

One data source is insufficient due to the lack in knowledge;

It is necessary to generalize a schema of reform analysis for the future;

Data from different sources of information needs to be validated;

There are specificities that need to be recognized and a general view that is requested.

In a first phase we collected data from official documents and journal articles concerning the reform process published since 1990 more than 30 documents have been deeply analyzed and several have been taken in account to describe the atmosphere. In a second phase some interviews divided by area (Denzin & Lincoln, 2000) have been conducted to opinion leaders and decision makers that have had a role in the beginning phase, 20 interviews have been conducted each one of around one hour.

These two phases aimed to point out: the institutional frame work in which the reform has been implemented; the perception of decision makers about reform process; the consequences of the process on territory; the acceptance of it by teachers.

In a third phase of the research, according to the case study methodology (Creswell, 2007) four scholastic institutes have been studied. Documents and papers from these institutes concerning the reform in all its aspects have been collected; at the same time a number of interviews with teachers, principals and a focus group with students from every institute have been conducted (it is important to remind that four institute is 10% of the institute in Canton Ticino). In the first two phases of the study issues for the third phase interviews have been identified.

A qualitative content analysis has been used to analyze data from documents and interviews. The 'content analysis' label comes from a declared quantitative perspective (Lasswell, 1941 and Lasswell, Leites and Associates, 1949) that has the aim of giving objectivity to the research conclusions. A possible definition is the classical from Berelson 'Content analysis is a research technique for the objective, systematic, and quantitative description of the manifest content of communication' (1952, p. 18). The perspective problem that lies under a research of objectivity is not part of our actual discussion but it is important to remember that the main aim of content analysis is to use a shared and transparent methodology of data collection and analysis to give the opportunity of sharing our conclusions. The presence of a defined and shared set of rules may assure, in the original idea of Lasswell, a better transparency and communication in the scientific arena and, therefore, an increased acceptance of the research statements.

Content analysis "consists in the fragmentation of one or more units of analysis (communicative units) in simpler elements" (Amaturo, 1993, cited in Besozzi & Colombo, 1998, p.144). "This fragmentation has to be systematic, and criteria have to be clear and standardized; criteria have to be applied to the whole unit and to all the subjects that constitute the sample of comparable units" (Besozzi & Colombo, 1998, p. 144).

In the present study, units of analysis were collected and produced documents concerning the Reform 3; their "fragmentation in simpler elements" has been done through two different phases. First, all the information has

been coded by using conceptual elements (codes) from the "pyramid scheme". Then, all the parts identified by the same code have been reviewed and re-coded in a more specific way.

For example, all the parts concerning the launch and the promotion of the Reform 3 have been primarily classified as "promotion of the Reform 3"; then these parts have been classified another time by using more specific "subcodes", like "way of promotion", "actors of promotion", "difficulties", etc. This double procedure has lead to identify some elements that may have influenced the Reform process itself, and to clarify whether they have stimulated or disturbed it. A team of five researchers has been established at the beginning and it contributed in all the phases following the whole process.

The team work has been simplified by using the AtlasTi software, that allows to code and share documents on a resident server, and permits the remote access and distance collaboration. Then it is possible to work and being sure of geographical references of the documents. Thank to the use of AtlasTi, a large amount of documentation has been integrated, the code-grid has been steadily up-dated to new information and a process of regulation of the team on the single codes content has been allowed.

In the fourth phase a survey has been conducted. A questionnaire via web has been administered. To build the questionnaire has been taken in account the initial theoretical framework, the initial research questions and the results of the previous phases. The questionnaire has been used to verify the main themes identified during the qualitative phases and to analyze some other dimensions, for example the degree of institutionalization of the reform. Around 30% of the teachers answer to the questionnaire, the sample is similar to the population for the main dimension (age, gender, years of experience, distribution on schools.

To use so different techniques a team with different competences has been built and has worked for several years together. Qualitative data have been analyzed by different researchers and each researcher has been involved in the different phases on collection and analysis of data.

4. Results and conclusion

This reform has been initiated pursuing a mixture of external and internal pressures. On the external side, politicians were decisive in introducing English as a compulsory foreign language (which was until then an optional offer). This decision influenced of course a new asset of the whole time organization. Inside school, there was a growing necessity for renewing programs, and a strong need for reinforcing teaching of Italian: those elements also contributed in shaping some elements of the reform.

In general, it is possible to affirm that the reform is not clearly understood by stakeholders, which perceive it as a set of organizational measures not particularly connected with each other. There are several possible reasons to that, related both to the beginning and to implementation aspects of the reform process.

In relation to the "beginning" of the reform process, there is the "vision" of people in charge of the reform. From first analysis, it seems as if people have some difficulties in linking visions and objectives emerging inside and outside the educational system. In fact, stakeholders give more importance to organizational aspects than to a global vision that should guide the entire reform process. This lack of a clear and shared vision, is perceived by many as one of the main reasons of the difficulties in implementing the reform, which is in fact not clearly perceived as a whole.

Related to those elements, it seems that stakeholders do not perceive clearly the nature and content of the reform (we are still in the field of implementation). This problem could be related partly to the process of communication, which is recognized by respondents as generally "poor". In interviews we noticed a certain lack of reciprocal confidence between stakeholders, which could partly explain this limited communication.

Those results (which are only partially reported here) are in a sense quite surprising, because they emerge only during interviews with decision-makers, and not teachers or students. This means certainly that they are very

transparent in their answers, and also very much aware of problems and limits of the implementation of this reform.

The information collected with the case studies and the questionnaire confirm these information and underline how is difficult to maintain enough energy in sustain a transformation. The changes applied *de iure* are almost generalized in all the schools but the changes that need a more deep involvement and an autonomous decision by the teachers are not shared completely.

Also if the reform start with a huge involvement of all the teachers probably the amount of time that pass from the decision to the beginning play an important role and the teachers perceive the reform as a top down decision that change their life and their work habits.

In Ticino, it is the first time that an evaluation of a reform has been made following an articulated theoretical framework: this is certainly an advantage for research, but exposes also researchers to certain risks, because if implementation is conducted with different parameters and methodologies in respect of the framework, results can be very contrasting.

The application of a mixed methodology helps us in maintaining a direct relation with the field and, at the same time, in analyzes and produces report with a high level of generalizability. The level of soundness (Kvale, 1996) is higher and the different stakeholders may find "their own language" in the report. We agree with Silvermann (2000 and 2009) that it is impossible to obtain a complete knowledge of natural and social phenomena so the false dichotomy (Ping, 2000) between qualitative and quantitative research need to be considered outmoded like the so-called "war of paradigms" (Guba, 1990).

Even if the most controversial phase of this war seems to have been overcome, the issue of how to reach most precise knowledge of a phenomenon is still an open question. Recently, it has come up since the method is one of the elements influencing the correctness of the answer: "the researcher's task – to understand, describe and explain the reality and its complexity – is limited by our research method" (Morse, 2003, p. 189). One of the possible ways to come through this obstacle is the use of methodologies that collects strengths from different methods.

In relation to this situation, and to the issue of the non-communicableness between researchers from qualitative and quantitative traditions, the so-defined "mixed" research approaches have been progressively developed as a possible integrative solution (Burke & Onwuegbuzie, 2004). Mixed methods, while using different instruments and techniques for collecting information on the same object, allow to reach a more complete and differentiated knowledge (Berger, Crescentini, Galeandro & Mainardi Crohas, 2010); the motivation that has driven us to focus on mixed methodologies is the desire to get a pragmatic solution of an apparently dead-ending debate.

Recently, the effort made in this direction have led to the publication of international handbooks (inter alia: Tashakkori e Teddlie, 2003 and 2010), and journals (e.g the Journal of Mixed Methods Research) on mixed methodologies. Moreover conferences addressing the topic ("8th Mixed Methods International Conference", June 2012; "Mixed Methods in Educational Interactions" September 2012) have been organized.

Social research and research in education have similar interests. Nowadays, as a demonstration of the evolution by the methodological "third wave" (Burke e Onwuegbuzie, 2004: 17) when talking about search methodology in education, most of the handbooks present at least a chapter focused on mixed methods research designs.

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