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Mixed methods for research in education; a cross-level study on education systems

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Abstract

In order to pursue equity in education, different directions have been taken by scholastic systems in most of the western countries (Origoni, 2007); the government of Cantone Ticino, established the principle of integration and equality of treatment for compulsory school, while it's, no longer pursued when it comes to the non-compulsory upper secondary school, where the objective is a multi-disciplinary formation, well balanced and coherent as condition for academic studies and to respond to society's needs (SKBF|CSRE, 2010). Still, the rate of scholastic failure in first year of upper secondary school in Ticino has increased from the 20% in 1997 to the 29% in 2010. A problem related to scholastic failure in first year persists, and the application of the principle of equity of results, success and achievements is questioned.

The aim of the research is to understand reasons behind the growing rate of scholastic failure at first year of upper secondary school in Ticino.

A mixed-methods research design (Teddle & Tashakkori, 2009) has been implemented. A preliminary analysis of statistical data has been conducted; then, exploratory face-to-face interviews with schools principals (n=6) and teachers differentiated by subject matters and years of experience (n=32) have been administered. Afterwards, an extensive quantitative phase on the population of students has been designed. First results highlighted some peculiar dimensions related to failure and success in first year of secondary school. A cultural discontinuity between lower and upper secondary level has been detected, determined by a contraposition of basic assumption (inclusivity on one side and selectivity on the other) and the consequent lack of connection between teachers, programs, learning methods and evaluation.

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1. Introduction: foreword and definition of the research issue

The study here presented stems from an explicit request by the Directorate of Upper secondary School (ISCED level 3A and 3B) in Canton Ticino, the Italian-speaking Swiss canton. The research issue was decided based on the fact that, in the last 13 years, the failure rate in the first year at the Upper Secondary School has increased in Canton Ticino. In order to ensure equal opportunities in the schooling system, the Directorate initially considered the possibility that students were not treated equally in the Liceo schools in different parts of the region.

The school system in Ticino envisages that at the end of compulsory school students are asked to make a choice: the two most common choices are either vocational training (therefore the choice of a specific profession and to attend a specific type of training) or to continue education in the high school system. In addition, there are so-called “transition” training solutions, that act as a 'reflection year' between compulsory school and secondary school for students who have not yet decided which direction to take in training or who have not yet been offered an apprenticeship.

Those who decide to attend high school in Ticino have the choice, within the public system, between the Liceo (5 schools in the entire Canton) and the Canton School of Commerce (1 school in the whole Canton). Those who choose vocational training can decide between full-time training and a 'dual' system where an apprenticeship in a firm is combined with training at school (several days a week or several weeks a month).

As pointed out by Cattaneo, in 2010 in Ticino two out of five youngsters chose the high school option, while over half of them moves into the vocational training system. Rastoldo (2007) asserted that there is a general trend for youngsters to aspire to the highest training level they can feasibly access, which nevertheless allows those who have not yet decided on a specific profession to take some time and leave all options open, in order to make a more specific choice in the future. As a result, as stated by Boldrini and Bausch (2009), an internship in a firm is seen as a second choice as it does not directly lead to the “higher profile” professions, which are believed to facilitate success; this belief in turn implies little knowledge of the trades and of the labour market in general.

It is important to recall that in Canton Ticino the enrolment in a high school is subject to a number of formal conditions, which should ensure consistency between the skills acquired by the students in their last year in middle school and the minimum requirements of the Liceo, from a formal point of view but also in terms of the basic general knowledge required. Another issue regards the location of the secondary school, which is determined by geographical distribution criteria: although there may be some exceptions, a student enrolls in the Liceo closest to his/her domicile by rule.

Finally, it is worth noting that in Ticino the Liceo is not specialised: this means that the schools do not specialise in a specific subject or area but that, within the unitary system, each student chooses a specific subject. The system in Canton Ticino allows students to choose a specific subject (the “specific option”) that determines the subject areas they will focus on from the second year. The options available are: Greek, Latin, English, Spanish, French, German, Physics and Mathematics, Biology and Chemistry, Economics and Law. The option is provisionally chosen in the first year at the Liceo, and classes are formed on the basis of this option. Education in the upper secondary school in Ticino is conceived as a unitary system, where there are no structural differences between the different schools. Although it is part of the secondary school system, the Canton School of Commerce differs from the Liceo for a number of structural issues.

2. Theoretical framework

There are different theoretical approaches to study success at school. Moser and Lafranchi (2008) identify three different approaches: one refers to the “pedagogic context”, another to “sociology of training” and the last takes into account the “specifics of the education system” that the students are part of.

The pedagogic approach focuses on the child's individual inclinations, namely intelligence, motivation and handicap (Moser & Lafranchi, 2008); authors that have assessed these issues include, amongst others, Martinod, 2001; Harter, 1990; Lieury & Fenouillet, 1996.

The second approach is sociological in nature: it focuses on the impact of the student's social and family origin (Coleman, 1966; Jencks, 1973; Boudon, 1979; Gambetta, 1987; Schizzerotto, 1997; Gasperoni, 2002). More specifically, amongst the features associated to family socialisation that most influence the success at school of a student, they identify financial and material resources available (books, access to the Internet, a quiet place to study, etc.), the parents' willingness to discuss with their children about social, political or cultural issues and both the parents' and the students' aspirations (Moser & Lafranchi, 2008).

Along the same lines, Neuenschwander, Lanfranchi and Ernmert (2008) take their cue from a study conducted by the Jacobs Center for Productive Youth Development of the University of Zurich and they identify a number of further factors whereby the family is able to influence the educational 'career' and the success at school of young students. Performance at school is apparently higher amongst the children of parents who are understanding and warm towards their children, while also providing direction. Authors also stress the importance of allowing children to be autonomous, while maintaining a supporting role.

Another important issue is that parents may give responsibility for their child's success or failure to different factors.

When failure is ascribed to "external" factors such as, for example, the intrinsic difficulty of a subject, the outcome can be positive in terms of both self-esteem and future performance of the student at school. The opposite effect is achieved if failure is ascribed to "internal" factors that characterise the student, including intelligence or personality.

The third approach for assessing success at school refers to the quality and the specifics of the education system of which students are part.

From this viewpoint, in determining success at school, great importance is attached to factors external to both the student and his or her social context and that are concerned with and determined by the school system in general.

Studies in this area include reflections on the influence of assessment methods (i.e. the works by Ingenkamp (1971) and Kronig (2007) on the reliability of number-based assessment system), on the long-term effectiveness of retention (repeating a grade), (Bless, G., Bonvin, P. & Schüpbach, M., 2005) or on pedagogical differentiation (Legrand, 1995; Perrenoud, Ph, 1997; Montedoro, 2001; Commissione consultiva dei Servizi di Sostegno Pedagogico, 2008; Gillig, 1999).

In the work presented here, it was chosen to adopt a perception that highlights the system as a whole, focusing, as a result, less on individual variables and subjective inclinations, or on social issues (including the influence of the family of origin).

In the Western world, school systems were basically developed along two trends (Origoni, 2007). On the one hand, there are the integration-focused systems, based on low structural differentiation and on the underlying idea that all students should be offered the same learning opportunities; in these systems, the schools welcome all students regardless of their skills and of their interests.

On the other hand, there are school systems based on the separation of students in grades or 'institutes', depending on their skills. In this case, the idea is to provide an answer to the needs of students through differentiation, bearing in mind their interests and their potential.

Canton Ticino has chosen to base its compulsory school system on an integrated system and on equality of treatment.

In fact, in the first two years of middle school there is a unitary system that does not imply any form of structural selection (Cattaneo, 2010); in the second two years, there are two subjects, Math and German, in which students are separated into A and B courses depending on their performance at school.

These structural factors, typical of compulsory school, in addition to what was said above on the organisation of the middle-secondary school system, mean that the issues of fairness and equal opportunities are under the constant scrutiny of government bodies. These are also major issues for the co-ordination of a school system that

is recording growing number of students, while being on the receiving end of strong social and cultural expectations.

For this reason it is worth conducting a preliminary reflection on the concept of fairness, in which success, failure and selectiveness of schools are central issues.

In reference to the above, several authors have analysed the issue of fairness in school systems (amongst others, Tomlinson, 2001; Bottani & Benadusi, 2006; Maitzegui-Onate & Santibanez-Gruber, 2008; Giancola, 2009; Benadusi, Fornari & Giancola, 2010; Castelli, Ragazzi, & Crescentini, 2012; OCDE, 2012), focusing precisely on the concept of fairness and its relationship with the concept of equality.

As stated by Castelli, Ragazzi, & Crescentini (2012) “the concept of fairness also includes that of social justice, and frees itself from being limited to the practices of “equality”, which, theoretically, are not necessarily “fair” (p. 2245).

Within the framework of this paper, it is also important to recall that in several contexts, also in Switzerland, selection processes are not always necessarily unrelated to issues of inequality, such as geographical origin or language or social/economic characteristics of the family of origin (Cattaneo et al., 2010).

3. Aims and methodologies suggested

Based on the assumption stated in the foreword, we decided to investigate the issue of school failure rates in the first year of the Liceo, concentrating on a comparison of the Licei located in Ticino.

Two possible assessment methods were identified:

1. Ascertain the actual lack of fairness in the different Schools of Canton Ticino.
2. Identify the possible causes of this lack of fairness, in reference to:
 - issues associated to context (structural reforms of Ticino's school system)
 - issues associated to the schools' organisational abilities.

4. Methods and instruments

The complexity of the topic under assessment and, at the same time, of the system in which it emerges, have led to the implementation of a mixed-methods approach (Teddlie & Tashakkori, 2009), in order to reach the aim of this research.

Schools are complex systems where individual, social and political spheres overlap and affect each other reciprocally: as a result, in addition to in-depth knowledge of macro-events that can be assessed through standard “measurements”, it is essential to obtain in-depth knowledge of the inter-individual relations wherein certain trends arise and which, in turn, act as the system's “culture”. From this viewpoint, the authors share the position of Johnson and Onwuegbuzie (2004), who state: “Mixed methods research offers great promise for practicing researchers who would like to see methodologists describe and develop techniques that are closer to what researchers actually use in practice. Mixed methods research as the third research paradigm [...]” (p. 15).

In this specific case, the choice was to implement a strategy based on sequential stages, where the information collected in one stage can contribute to determining choices made for the next stages:

1. Stage 1.A: preliminary statistical analysis of available data
2. Stage 2.A: in-depth interviews with the Directorate of Upper secondary School and the directors of the 5 Licei; semi-structured interviews with a group of teachers in the Licei (n=20); focus group with a sample of students of the first class of the Liceo (n=30)

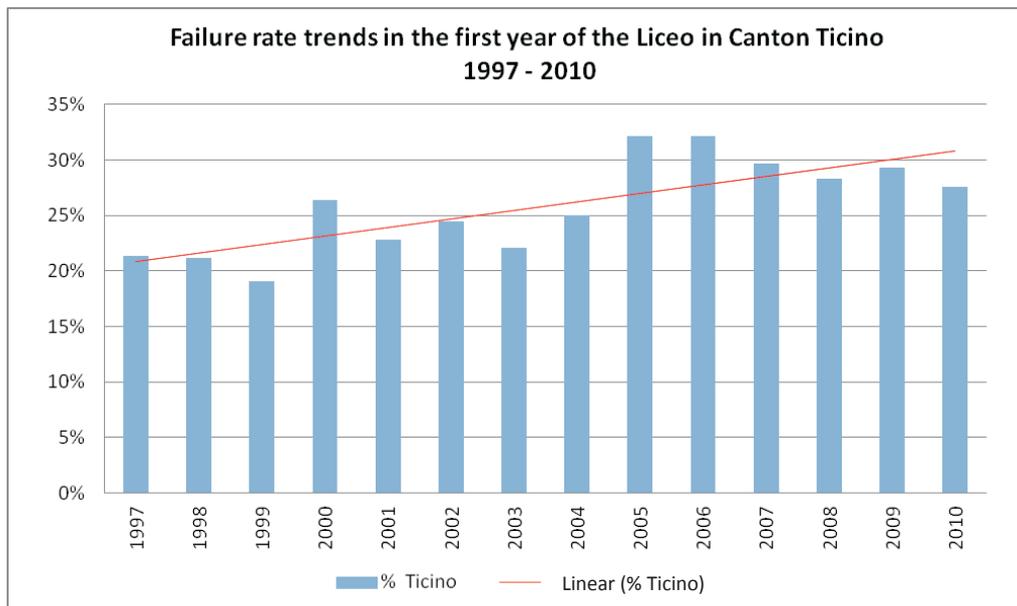
3. Stage 3.A: administration of the socio-educational environment questionnaire (QES)[†] and of an ad-hoc questionnaire to the students of the first, second and third year and the teaching staff of the 5 Licei.

Stage 1.A: analysis, results and review of the research project

Failure rates (end-of-year failure and dropout rates) of first-year students from 1997 to 2010 were analysed.

The assessments show that there is no observable systematic disparity amongst the five schools under examination and, at the same time, there is a growing percentage of failures in the first year (percentages for Ticino have increased from an average of 20% in 1997 to 30% in 2010).

Figure 1: Failure rate trends in the first year of the Liceo in Canton Ticino



The interpretation of the statistical data available lead to the following observations:

- there is a link between failure in the first year of the Liceo and the middle school of origin;
- some subjects are “more selective” than others, i.e. certain subjects are more commonly associated with low marks, so low as to automatically trigger the mechanism that causes students to be retained for the year (these subjects are: maths, physics, chemistry and German);
- success rates are higher amongst students who chose the following subjects as their second year option: Greek, Latin, Physics and maths.

[†] The “Questionnaire on the socio-educational environment” (QES) developed by Prof. Michel Janosz (University of Montreal) was experimented in more than 180 Canadian schools. This questionnaire is based on the assumption that the socio-educational environment includes three dimensions: the school environment, educational practices and social and schooling issues. In 2002, the questionnaire was translated into Italian and subjected to a validation process.

The results of the preliminary assessments and the ensuing discussion with those who had commissioned the survey (the Director of UIMS and the Board of the Directors of the Upper Secondary Schools) encouraged the researchers to shift the aim of the research to a more general framework and to redesign the method. In addition to the five Licei, the researchers decided to include in the research also the Canton School of Commerce, which in spite of having a rather different organisation than the Liceo, has similar failure rates in the first year.

It was decided to focus all attention on the general increase in the first-year failure rate and, as a result, on the issue of the students' success at school, consistent with the assumptions stated in the foreword.

As a result, the research project was redesigned to better capture the historical-cultural issues that defined the evolution of the Liceo system in the last 15 years. Choices as regards methods were also reconsidered to provide an in-depth assessment of the culture, history and context in which the issue arises.

In terms of methods, the questionnaire on the school environment (QES) was eliminated, as were also the focus groups with students. Once again a mixed approach based on the following sequential steps was chosen:

- *Stage 1.B*

It was decided to interview the directors of the 5 Licei and the Director of the Canton School of Commerce (n=6) as “expert witnesses”, basically resorting to the elite interview technique, i.e. interviews to “[...] people who are especially knowledgeable about a particular area of research or about the context within which you are researching” (Gillham, 2005, p. 54). The information was collected in unstructured interviews that lasted between 45 and 90 minutes. The interviews were recorded and transcribed in full.

- *Stage 2.B*

This stage was followed by 32 interviews with a group of heterogeneous teachers chosen based on the following variables: a) main place of work; b) seniority; c) subject taught.

Interviews were conducted on a semi-structured basis, starting from the information collected in the interviews with the directors.

- *Stage 3.B*

Finally, based on the research design, the issues that emerged in the interviews with the teaching staff were in turn used as the basis to define a questionnaire targeting all the students of the first and second year of the 6 schools involved (5 Licei and 1 Canton School of Commerce), for a total of some 2,700 students.[‡]

The main topic of the questionnaire is the transition from middle school to high school and the consequences of this choice on the first year at high school. The main focus were the motivational aspects and the general satisfaction with the choice made. Students were also asked to assess their experience at middle-high-school.

Stage 1.B: Results of the interviews with directors

The interviews with the directors allowed identifying an explanatory model for the phenomenon under consideration, namely the constant increase of the percentage of students that fail at the end of their first year in high school.

[‡] The questionnaire is currently being administered on-line. The term to fill in the questionnaire is the 15th of June 2013.

This explanatory model is based on four main elements:

- the increased number of students enrolling in middle-high school; this rise is in turn linked to a general demographic increase, to a specific image of middle-high school education in families and the lack of awareness of possible alternatives in the vocational sector;
- the recognition that the level of proficiency shown by students at the end of middle school has gradually decreased, an event which is in turn ascribable to several factors:
 - social and cultural change (organisation of leisure time, dissemination of new technologies, changing family structures);
 - downward levelling of learning targets in middle schools;
- lack of structural and organisational continuity between middle schools and middle-high schools, determined by cultural and legislative changes that have affected both schools in the last 20 years;
- lack of consistency in assessment processes, found both in different levels of schooling and also within the teaching staff of the same school and, often, teachers of the same subject. This is often associated to the lack of continuity in the generational turnover amongst teaching staff.

Stage 2.B: Results of interviews with the teaching staff

The issue of growing failure rates is perceived by all the teachers interviewed.

The reasons for that are mainly linked to two groups of factors. One is associated to social and cultural issues, including:

- the current economic instability, that increases the insecurity felt by youngsters and families, on the one hand, and makes options available in the vocational sector more attractive, on the other;
- the generalised greater social demand for education by youngsters and their families, which is dictated by social thrusts, including, for example, a worsening/changing collective image of vocational training, the youngsters' will to keep all options open and to avoid being bound by a specific professional training course;
- students find it hard to choose; this is in turn due to the lack (or excess) of information on possible alternatives, the family's absence/inability to support the decision-making process associated to the perception that high school education is the most natural choice when one does not have a clear idea of what to do;
- changes in how people think, act and live, determined by the technological revolution, the shortening of distances, the multiplication of after-school activities.

The second group of factors concerns issues in the education system and specifically:

- structural lack of consistency between middle schools and the middle-high schools: the former are asked to integrate and include students, while the latter are asked to be selective in the perspective of university education;
- the curriculum in middle schools is increasingly broader, but at the same time more superficial;
- a gradual distortion of the division of students into A and B courses that no longer mirrors the system's initial concept, but is rather based on the growing pressure to “shift all students to the top”. This is associated to the lack of reliable notes and mentions to access the Liceo high school, which is in turn determined by two factors: families and youngsters want to be put in a position where they have the broadest choice possible; teachers do not want to take responsibility for barring a student from an option and do not have adequate tools to contrast family pressure;
- the diverse management of different school levels: middle schools are autonomous in their management and refer to a local system, whereas middle-high schools are part of the federal system, although the school curriculum is defined by the Canton;

- the transition to the “one-lower-secondary school” that occurred in the 1970's has shifted selection forward; as a result, the problem has been “de-structured” and shifted to the differentiation of courses;
- actual lack of middle-high school training other than the Liceo or the Canton School of Commerce.

These factors have determined the events recorded, namely the gradual increase in the number of students enrolled in the middle-high schools and the simultaneous increase in this population's heterogeneity, as emerges clearly in several areas (motivation, preparedness, aspirations, personal features).

Problems mentioned by the teaching staff in reference to this “new population” of students include the lack of homogeneity in specific or across-the-board skills (method of education), in addition to different aspirations and levels of interest that lead students to adopt different attitudes towards school and education

The sense of shared responsibility prevails, both socially and in the school system.

4. Conclusions

In recent years, the student population enrolled in the middle high schools in Canton Ticino has increased; at the same time, there has also been an increase in the number of students who failed at the end of their first year.

This research was commissioned to analyse this dual process and is described in this article. We started from the assumption that there is unfairness in the treatment of students in the five Licei of the Canton. However, after assessing early data, we realised that the initial assumption could not be confirmed. Indeed, it was proved that rather than a disparity amongst the five Licei, there was a general increase in the number of students who failed their first year in Ticino (almost 10% in the last 13 years).

As a result, the research assumption was changed and adapted to the new issue that had emerged. The focus was thus shifted to the general increase of failures and consequently to the issues that could potentially favour success at school in the first year in the Liceo. The research project was expanded to include the sub-population of the students enrolled in the Canton School of Commerce.

In addition to reformulating the research assumption and the educational issues involved, it was also necessary to redesign the method: it became clear that some tools we had planned to use would not help us achieve the new aims (the questionnaire on the assessment of the school environment or the student focus groups), whereas other tools were enhanced (the number of interviews with the teaching staff).

The mixed approach was confirmed, as stated at the beginning: data was collected in sequence and information gathered during one stage was used to select the content to be explored in subsequent stages.

The assessment of the early data collected in the interviews involving directors and teaching staff shows that all the issues identified could be divided into two groups of factors, that possibly influence success in the first year in high school.

On one hand, there are socio-cultural issues that, for example, relate to the difficulties experienced by students in making an effective choice for their schooling and future profession, in addition to the influence of social images that consider middle-high school as a “more prestigious” form of education compared to the vocational option.

On the other hand, other issues emerged that directly relate to the education system and the specific features of the system in Ticino. It has emerged, for example, that it is difficult to move from the inclusive type of education focused on fairness found in compulsory school, to a more selective type of education that has to comply with federal regulations and that, as a result, has to provide students with the skills set in the curriculum.

In addition, the research highlights the pressure exercised by the family (and more generally by society) on the school system, with the aim of including students in more qualifying training programmes (this is already true in middle school with the A and B grading system).

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