

# **The Assessment of Officina Emilia Initiative**

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### ***Introductory Remarks***

The University of Modena & Reggio Emilia, following a decision taken by the Academic Senate in 2000, launched the initiative known as “*Officina Emilia - laboratorio di storia delle competenze e dell’innovazione nella meccanica*” (“historical workshop of engineering skills and innovation”) with the **mid/long-term aim** of regenerating the professional skill base needed to sustain process and product innovation within local industry, particularly that of light engineering. This aim was deemed in line with the function and mission of a modern university rooted in the local territory, addressing its emerging needs from a non-contingent stance. The University of Modena & Reggio Emilia lays claim to a long and well-established tradition of territorial integration and collaboration with local actors. A number of past examples include: the creation of the Faculties of Economics and Engineering, as well as the current research groups on the local economy and on the functioning of industrial districts (particularly that of light engineering) and the technological workshops developing prototypes and research applied in connection and collaboration with a great number of local firms.

The promoters of Officina Emilia also have identified a **shorter-term aim** of obtaining a notable improvement in the quantitative and qualitative output of pre-university training and education programs, of university courses in general as well as other activities aimed at promoting lifelong learning among the population at large. This aim is based on the results of a great number of studies that link higher levels of economic development and effective innovation processes - not only in the field of industry - with a higher level of qualification among young adults, continuous training for new skills among adults, and a cultural climate that supports lifelong learning.

### ***Limits to Local Development***

The proposal of Officina Emilia hinges on a wealth of studies and research projects on the evolution both of the local and the more general situation.

In particular, the research into the local light engineering industry, while on one hand confirms the elements of competitive advantage to be found among local firms as a whole, on the other, it highlights several clear limitations to development and the possible maintenance of the current status quo. The main factor holding back companies from maintaining their traditionally high levels of innovation and quality processes and products is the insufficient ability of the education system to provide these firms with people able to replace the existing skill base. The factory workers, technicians and entrepreneurs currently employed in the sector possess a high level of specialized technical skills, as well as a refined ability to build collaborative relationships between different firms and even between different geographical areas with the aim of supporting an overall competitive system. The recent economic crisis, which originated in the collapse of the financial markets, is subjecting firms to a process of natural selection, exacerbating the difficulties of those who do not possess the human resources necessary to weather the storm, with consequences for work, production and the companies’ relationship with the market.

The research into the qualitative and quantitative results of the education system is wide-ranging, bringing together process efficacy and efficiency with impartiality and the guarantee of the highest degree of involvement on behalf of the population, without social, ethnic, health or gender distinctions of any kind. The promoters of Officina Emilia have a clear idea of the degree of functioning of the national education and training system. A study was specifically carried out on the functioning of the local system, in the pre-university age range in relation to the economic context and the requirements of the labor market. At least since the early '90s, the qualitative success rate of the local pre-university education system has changed radically, losing a great degree of its efficacy. A number of critical elements came to the surface in the study:

1. the quality of elementary and pre-elementary schooling has deteriorated due to the reduction of state resources available and because of the limited resources, (not only in economic terms) of local authorities to support teacher training, and the maintenance or renovation of existing school structures;
2. the state investment for the integration of the weaker members of the population within the education system is insufficient, to the point that the schools with high numbers of immigrants or disabled students offer a lower level of education, a phenomenon found across the field of high-school teaching, with similar problems also found in the field of elementary and even pre-elementary teaching;
3. gender segregation is a notable phenomenon in both secondary and tertiary education, in terms of the very low number of females opting for scientific (and particularly technological) courses;
4. comprehensive secondary education functions in a traditional manner, without introducing adequate changes to support better teaching of math, science and technology (with the exception of the introduction of computer skills and a number of initiatives of environmental education) or for language teaching;
5. the entire secondary education system, including technical/profession-based teaching and regional professional training, does not do enough to promote awareness of the local technological, economic, social, institutional historical/cultural context: knowledge is thus not only abstract but decontextualized;
6. current work placement schemes, internships and company visits, absent from comprehensive education, are of little use in terms of orientation and training, allowing for the achievement only limited goals in terms of the social aspects of work (punctuality, order, responsibility, respect for others etc.) and serve largely as pre-selection periods for companies;
7. the high-school dropout level is excessive, and regional professional training plays an insufficient role in offering young adults a second chance, especially with regard to young immigrants, the disabled or those belonging to otherwise disadvantaged or vulnerable groups;
8. a growing number of young adults obtain entirely unsatisfactory educational results, both among those completing compulsory schooling (middle school or

the junior high school) and those who complete their senior high school education;

9. the number of young people who frequent school on an irregular basis is on the rise, and there is a worrying increase in episodes involving gangs of young people and petty crime;
10. there is a growing percentage of teachers without a permanent employment contract, or those from other regions with no intention of remaining in the local context: all too often this means that they have little interest in investing in their knowledge of the local territory.

### ***Collaborative Networks for Innovation***

The promoters of Officina Emilia are aware that the University is only one of the local actors that may influence the critical areas in the local education and training system. However, the research also highlights the greater difficulty encountered by the local managerial class to find a common ground on which to bring together the resources available and implement effective and meaningful actions. This is an unusual situation for the area, if compared to the remarkable way in the past in which the local institutions managed to foster innovation and quality in the 50 years following the second world war. In this situation, the University believes it may contribute to the renewal of the spirit of sharing among local actors so that they may rediscover the efficacy and efficiency of collaboration processes.

In his work on innovation processes in the educational field, Michael Huberman (Huberman, Miles, 1984:17) theorizes that it is necessary to plan and implement 'scaffolding structures' when the aim is to maintain and develop deliberate change in education systems over time. These structures are defined as "individuals or groups that carry out certain functions (and thus are given certain roles) that may be grouped as four macro-roles: the catalyst, the facilitator, the technical advisor, and the intermediary between the inside and outside of the organizational whole affected by the innovation". The University, also through Officina Emilia, may constitute an important component of this 'scaffolding structure' in terms of the innovation that the local education and training system requires.

There are a range of possible courses of action in this context. Officina Emilia has worked to broaden the general level of awareness of the issues linked to local development (based on solid bases of knowledge and understanding) and has promoted a program of action research, aimed specifically at the education system. Officina Emilia's programs are thoroughly checked using scientific methods, and are carried out in such a way as to encourage the collaboration of all potential actors.

Officina Emilia has created a *museolaboratorio* (a 'workshop-museum') that operates as an experimentation space for innovative teaching approaches for schools, as well as providing a meeting point for a number of local actors. Soon the exhibition space of the workshop-museum will be open to the general public, with guided tours of the installations, thus allowing people to bring together newly gained knowledge with stimulating practical activities, all in a context highly evocative of the technologies and challenges of the light engineering industry. The chance to maintain a degree of active

interest, curiosity and knowledge among the population with regard to the functioning of the light engineering sector is believed to provide an important opportunity within the implementation of the scaffolding structure. In fact, all too often the local debate has undervalued the issues and even the mere awareness of the industrial sector, if anything, tending towards the perspective of deindustrialization as a necessary consequence of the globalization of the markets.

### ***Specific Goals***

In particular, through Officina Emilia and its workshop-museum, the University intends to bring about significant changes in the local education system with reference to the possibility of achieving the following specific goals:

1. to increase the knowledge, levels of awareness and relational integration of young people in and with the technological context (firms, research centers, science and technology faculties, professional studios), the socio-economic context (firms, associations, trade unions, institutions) and the historical-cultural context (heritage, cultural institutions and resources, eye-witness accounts) of the territory;
2. to reduce the level of gender polarization in high-school courses;
3. to offer better qualified learning for students on work placement schemes, internships and company visits, involving industrial firms, technical and professional studios linked to the industry;
4. to offer better teacher training both in pre-elementary/elementary and secondary schools;
5. to offer multi-disciplinary training for college students through direct work experience, workshops, under/post graduate dissertations and internships.

These aims are believed to be fundamental for promoting an improvement in the skill base of the up-and-coming generations, measurable in terms of knowledge applicable to concrete problems, but also in terms of the capability and willingness to invest in an ongoing learning process in collective and potentially complex situations. These objectives are thus a means to achieving the overall goals of the Officina Emilia initiative.

In order to achieve the aims mentioned above, Officina Emilia proposes to work directly on the final beneficiaries: the students currently in the teaching and training system, as well as the teachers and school presidents in a position to bring about stable innovation in school curricula. That said, Officina Emilia also believes it necessary to intervene to a certain extent to raise awareness and the ability to act pro-positively among parents and adults in general, starting from the political decision-makers, administrators and the many other social actors that influence the functioning on all the various levels of educational institutions. An important role may also be played by the business community, company directors, technicians and operators of light engineering firms. There are specific projects aimed at them to facilitate their involvement, without taking up too much of their work time.

## **Activities**

The activities that Officina Emilia has promoted so far may briefly be summed up as:

1. reaching agreements and identifying human and financial resources to promote a more coordinated, effective and efficient approach among local actors affected by or involved in the functioning of the local pre-university education and training system. The local actors considered are: schools, training agencies, the local organisms of the ministry of public education, the education, work and development councillorships of the local and regional authorities, the Chamber of Commerce, the development agencies promoted by local and regional authorities, employers' associations and trade unions, firms and cooperatives;
2. encouraging the participation of classes of school students and training agencies across the territory in multi-disciplinary activities held at the workshop-museum, in guided tours of light engineering factories and informative meetings with people who have spent their lives in this environment;
3. promoting a local curriculum across the board from kindergarten to senior high schools to bring together scientific, technological, socio-historical, linguistic and relational skills with an understanding of the functioning of the local and regional economic and social system;
4. the preparation and experimentation of the means by which to assess the learning that takes place thanks to company visits, short and medium-term work placements, apprenticeships and other initiatives bridging the gaps between schools and companies;
5. the consolidation of initiatives aimed at classes, teachers and the parents of students in the final year of junior high school in order to promote changes in the choices of post-compulsory schooling towards levels that better reflect the professional needs of the local context, contrasting the conditioning given by the usual clichés and misguided concepts to overcome the social, cultural and gender-based limitations;
6. the creation and publication of materials for the initial and in-service training of teaching staff and the staging of seminars, workshops and personalized meetings;
7. the preparation for the public opening of the workshop-museum and the creation of opportunities for reflection among adults on issues relative to the problems and limitations of local development as well as the history of industrial work, especially in the light engineering sector;
8. the promotion of research programs on the ways in which innovations to the education and training system may be introduced and diffused, and on the link between the qualitative level of results of the education and training system as well as companies' and institutions' ability to bring about innovation;
9. the creation of collaborative relationships between scholars, educational staff, administrators, technicians, professionals and the business community that make it possible to hook up the debate and local scientific productions with national

and international research groups and with the best practices in innovation in education systems with a view to the support of local development;

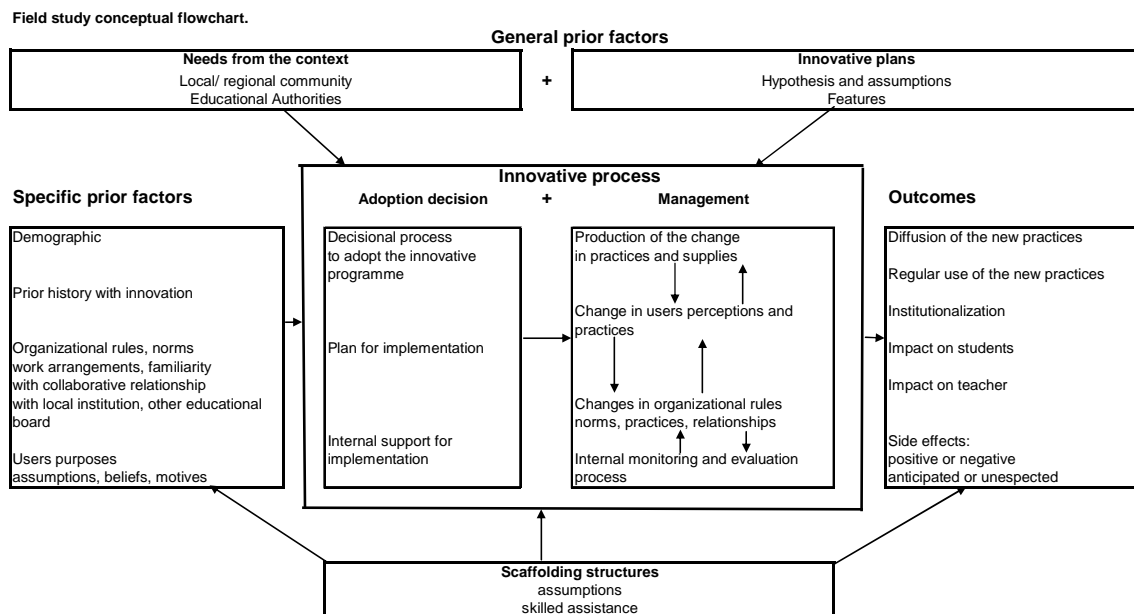
10. the creation of a network of exchange and collaboration with science and technology museums, the eco-museums and other kinds of museums aimed at promoting local development.

### **Outcome Indicators and Assessment Plan**

The work has yet to reach the point of finalizing indicators able to measure the degree to which the aims are met. The tools for gathering data on the results and the quantitative/qualitative effects of the difference made by Officina Emilia’s activities are currently under preparation. It will be necessary to put together a coordination process for the various information needed for the assessments and bridging hypotheses in order to come up with an evaluation judgment.

The following diagram offers an initial general overview of the framework of direct interventions on the educational system that Officina Emilia promotes as a scaffolding structure, being at the same time an educational institution and “authority” on the context.

This diagram has yet to be completed to consider also the actions aimed at local actors who indirectly influence the outcomes of the education system. Most of all, one must bear in mind the actions that Officina Emilia carries out in terms of involving industrial firms, their sectorial associations, the involvement of local institutions, the chamber of commerce and the banking foundations.



**Figure 1: Field study conceptual flow chart: first version**

The preparation of a coherent assessment plan of the correspondence between aims and means of intervention calls for further investigation. First of all, it is necessary to proceed in the task of interpreting the aims of each kind of intervention and, in the case of multiple objectives, in the task of clearly laying out the relative importance of each of them.

Up to this point, a potential assessment strategy may be outlined, based on the synthesis of: the measurement of the quantitative results that Officina Emilia reaches in a time span of two years of its being fully operative, the ex-post assessment of the gross and net impact on the learning of the students involved, the measurement of quality as perceived by the direct target groups (satisfaction, efficacy, deeming it useful) and by the secondary target groups. The direct target groups include: students, teachers, school presidents and students' families. Secondary target groups include: the business community, company directors, labor market observers.

Like every form of social intervention, Officina Emilia risks promoting a mere analysis of its performance, i.e. measuring the difference made to the population after carrying out its interventions, without being able to measure the effect of simultaneous changes that may take place among the population independently of its interventions. This is especially true in the case of Officina Emilia's interventions. The impact assessment, in terms of the net change observed following an intervention calls for a specific choice of data-gathering tools with which to work in an ongoing fashion.

The general purpose of an assessment is to improve performances, or to decide whether to continue or suspend a program. The assessment cannot be isolated from the moment that decision is made, for it would thus lose all meaning. In particular, an action research program must be able to account to all the stakeholders involved, not only to those who finance the project directly, in order to show the reasons why it is potentially important to continue to support the program.