

*Editorial***Industry partnership and third mission as allies for educational research****Pierpaolo Limone ^a, Rosaria Pace ^b, Editors**^a *University of Foggia, Italy, pierpaolo.limone@unifg.it, 0000-0003-3852-4005*^b *University of Foggia, Italy, rosaria.pace@unifg.it, 0000-0002-7121-815X*

Keywords: *educational research, third mission, industrial research, social innovation, design-based research***Introduction**

This issue of Research on Education and Media is focussed on an emerging educational research practice in Italy. We are referring to a very heterogeneous set of applied empirical studies developed in close collaboration with the industry sector. Social impact, industry and educational research are three categories that no longer seem to appear disjointed; indeed, they are bound in a new alliance aimed at developing products and processes that could have a transformative influence on the way we teach and learn.

The issue addresses the need to take over the terms of this cooperation, through experiences already undertaken and discussions held at the international level. We are still far from the definition of a model of partnership, but the studies discussed here can help us to understand better the reasons for a dialogue.

1. Industry, educational research and the third mission: the reasons why

In recent years, a new generation of Italian scholars is defining, through non-linear practices, new functions and domains for the educational sciences. The authors of this issue are a significant part of a group of researchers who are increasingly involved in the industrial research processes in education and, in a wider perspective, in the applied research that has a direct impact on the final user experiences. Far from perpetuating the traditional idealistic dualism between economic value and pure theoretical research – the first one ascribed solely to the industry, the second one to the university – the meeting point can be found in the development of educational products and processes fostering innovation together with social growth and revenues.

The main reasons for the partnership can be found in the following elements:

- The assimilation, also in academia, of a neoliberal attitude of competitiveness;
- The obstinate search for external funding in underfinanced universities;
- The improved ability of academic researchers in education to foresee consumer needs;
- The recognised value, in industrial research, of university skills in terms of prototyping services and products;
- The ability to broaden the audience of the actors involved in participatory design processes.

Starting from this scenario, it would be thought provoking to detect a precise model, or specific procedures and research tools, which are emerging in this new field. We initially scrutinised the consolidated experience in the field of industrial research of our laboratory (ERID Laboratory, University of Foggia, Italy), thus detecting some constant features in our applied research experiences. Rosaria and I decided to collect other similar testimonies from some Italian colleagues. In our case, we started to work closely with industries more than 10 years ago, in studies that concerned the creation of cross-media learning environments (“MediaEvo” project); the development of digital platforms and educational resources capable of creating a dialogue between schools and museums (“Education, School, Museums” project); the design of social learning environments and educational innovation with the support of digital technologies (“Living Lab” projects; “Smart Future” project); learning innovation in schools with mobile technologies (Smart Future).

It would be inappropriate to describe here in detail those experiences (Limone and Pace, 2016a); for this reason, we wish to mention just some constant features:

- The work in interdisciplinary and cross-sectoral teams;
- The extended time for design process, including the monitoring of the adoption in the context;
- The use of participatory design tool;
- The involvement of the final users.

In practical terms, the operational steps that have driven the applied research process in our laboratory can be summarised as follows:

1. Extensive survey of user needs together with in-depth understanding of the need for innovation.
2. Participatory design methodologies and ethnographic techniques.
3. Return on iterative design cycles, through periodic end-user feedback.
4. Reflection on teaching/learning models that could cross-fertilise formal and informal learning environments.
5. Vision of a transformative social impact of digital technologies for teaching and learning.
6. Open dialogue with industry.

All the elements we mentioned are associated are also linked to the enhanced role of design activities supporting innovation processes in a collaborative manner, i.e. the adoption of a design thinking framework for the educational context, as described in Limone and Pace (2016b).

Then, starting from our own limited experience, we realised that a comparison of different perspectives of colleagues sharing their motivations, their values and their case studies of industrial research would have been essential to understand this growing phenomenon, especially in Italy. Despite the lack of project management competences and the naïve funding dynamics of most of Italian educational researchers, the growing number of published studies related to industrial research stimulated us to launch a call for papers. We wanted to understand how a chronic shortage of incentives and recognition of such activities had not yet restrained many academic colleagues from pursuing applied studies.

2. The richness of the issue and the voices that compose it

The aims of the *Journal* in this issue are twice: to investigate the models of collaboration between university and industry; and to outline strategies to promote effective relationship between educational research and technological innovation. Some first experiences in this direction emerge and the contributions proposed offer us themes, experiences and perspectives that may suggest an initial modelling.

The paper *Educational research between mobile devices and mobile learning*, by Lucia Martiniello and Nicola Paparella, offers a significant reflection on the core concept of “educational setting”, since the intersection of formal and informal introduced by mobile learning. This scenario changes the nature of the educational context, which escapes from the teacher and student and predictably requires new reflection on roles, messages and interactions.

University museums and the third mission: the project “Young people for culture” in the Museum Laboratory of Education of Bologna University is the topic of Chiara Panciroli and Anita Macaudo's work. The contribution describes the third mission through the actions of social, cultural and economic development promoted by the relationship between accessible cultural heritage and local communities. The case presented relate to the project The ModE Museum Laboratory of Education of Bologna University; it has been designed with the purpose of strengthening the enhancement of professional profiles related to the cultural heritage and participation in cultural life as a common good that is also accessible.

We also read the experience of Ezio Del Gottardo and Salvatore Patera from the paper *Spin-offs of the Third Mission and social innovation: the case study of the research–training–intervention project in Geodata Ltd.* The contribution sheds light on the role of university spin-offs and start-ups as actors able to drive applied research and, consequently, social innovation. The paper also presents a research project – training intervention named “Participatory Culture, personal branding and organisational wellness”, by Espéro Pvt Spin-off of the University of Salento for the Geodata Engineering Ltd. in Turin as a concrete action of the industry–academy relationship.

The evaluation of an e-learning device for the workers' compulsory training. An example of collaboration between University and Company is the topic of the paper proposed by Floriana Falcinelli, Marco Gatti, Francesco Claudio Ugolini and Serena Sabatini. The focus of the paper is the model of collaboration between private and public actors for compulsory training in the fields of Job Security and Food Hygiene addressed to the employees of several cooperatives operating in the large-scale organised distribution sector. The aim of collaboration between private and public actors is the high quality and the effectiveness of the e-learning courses.

University knowledge exchange and the SKIN project by Sara Djelveh and Francesco Contò fosters the reflection on the role of humanities and social sciences, through multidisciplinary and participatory research, for an effective process of knowledge circulation and for social growth. The authors investigate the position and role of the university in this process within the framework of the Europe 2020 Strategy and they present the SKIN project (H2020-2016) as an example of the systemic approach to university–business–society dialogue.

Patrizia Magnoler and Mariachiara Pacquola, instead, offer a perspective related to the *Approaches to training in companies*. They also offer interesting strategies to enhance the tacit knowledge of the workers, in order to support the organisational learning process and to foster an effective synergy in the relationship between training and work.

A *comparative study on educational management in public and private institutions in the Twin Cities of Pakistan* is presented by Muhammad Rizwan, Zeeshan Azad, Ashiq Ali and Saba Mahmood. The paper aims to compare the quality of education delivered at the undergraduate level in public and private institutions of the Twin Cities (Islamabad & Rawalpindi) in Pakistan. Through a quantitative analysis, the factors involved in higher student performance in private and public institutes are compared. These factors can be implemented in the public sector to increase student performance.

Virtual realities and education is the topic of Igor Curcio, Anna Dipace and Anita Norlund. They highlight the state of the art of virtual reality, augmented reality and mixed reality technologies, as well as their applications in formal education. A selected list of case studies also offers an evidence of the needed relationship between very advanced virtual environment technologies developed by the industry and a pedagogical framework supporting their contextual adoption.

Michele Baldassarre presents his perspective about big data and learning analytics applications as resources for school and university. In the paper *Think big: learning contexts, algorithms and data science*, he argues that the quality of learning and teaching process could be supported by these elements, as long as an effective and ethical policy is related to the management of the available data, both from the institutional and the personal sides.

The papers composing the journal contribute to showing the opportunities and the weaknesses of the industry–research partnership, starting from the need to work on a common language, but also on the recognition of the specific added value of the actors. We can summarise the lacking elements in the following hints:

- A conceptual framework recognised by industry and university;
- The operationalisation of the activities and a joint platform for the reading of experiences, patterns and interactions;
- The identification of a meeting point of goals and objectives: the social development of the country;
- The academic legitimacy of the industrial research and prototypal development;
- The ability to translate into action the third mission for the local development, starting with a common language and training paths shared between industry and academia;
- The capacity to systematise experiences and good practices already implemented, the research prototype patterns and participatory design techniques.

In the paper “Why the Future of Social Science is with Private Companies”, Michael Schrage (2015) states: “tomorrow’s most important discoveries into why people do what they do will most likely come from business innovation than university research. The best and most rigorous social science experiments will be done for profit”. Maybe we have to reflect and cooperate.

3. A starting point rather than a conclusion

The contribution of the academia to industrial research in education can be found in the expertise in research methodology, the access to educational contexts and the academic reliability in public sectors.

What we still fully need to achieve are the following:

- An open and continuous dialogue with industry, not just on single research projects;
- Supportive academic policies in order to facilitate opportunities for industry–university liaisons in educational research;
- An increased mobility of researchers between sectors.

Just to mention an example, we can refer to the recent initiative PhD ITalents. The project has been funded by Confindustria, the Conference of Italian Universities' Rectors (CRUI) Foundation and the Italian Ministry of Education University and Research for €16.236 million. The purpose of the “PhD ITalents” project is twofold: to meet the growing demand for high-skilled human capital by enterprises; to give young PhD holders the opportunity to consider careers in the industry as a viable alternative to the academic career. The paradox is the request for experience in industrial research without specific academic training or previous connection between the sectors. The university–industry collaboration should promote and empower the strengths for students, university and industry (Lucia et al., 2012). The students could benefit from an innovation-oriented education, thus enriching their skills and knowledge, in addition to promoting spin-offs and business opportunities; the university could benefit from funding, industrial support and industrial experience/expertise; the industry, finally, could be nourished by creative ideas, a better trained workforce and, thus lead the market through innovation (refer Ivi, p. 26, for an overview of the elements; Table 1)

Table 1. Strengths, weaknesses, opportunities and threats analysis for the university–industry collaboration programme, from Lucia et al., 2012, p. 26

	Strengths	Weaknesses	Opportunities	Threats
Students	<ul style="list-style-type: none"> • Innovation-oriented education • Industry knowledge • Skills development • CV development 	<ul style="list-style-type: none"> • Increased workload 	<ul style="list-style-type: none"> • Early career development • Promotes creation of spin-offs and business opportunities 	<ul style="list-style-type: none"> • Loss of focus in academic activities • Focus on a single subject
University	<ul style="list-style-type: none"> • Funding • Industrial support • Industry-oriented activities • Knowledge transfer • Professors with industrial experience 	<ul style="list-style-type: none"> • Dependency • Restrictions due to confidentiality agreements • Overload due to research deliverables 	<ul style="list-style-type: none"> • Industrial interest in educative and research activities • Better education quality • Further institutions support 	<ul style="list-style-type: none"> • Efficiency requirements limit creativeness • Migration of unqualified students to industry • Limit long-term projects in favour of short-term ones • Lack of motivation for real challenges
Industry	<ul style="list-style-type: none"> • Creative ideas • Better trained workforce • Economic benefits 	<ul style="list-style-type: none"> • Complex IP management • Know-how transfer 	<ul style="list-style-type: none"> • Lead the market through innovation 	<ul style="list-style-type: none"> • IP leaks to competence • Creativeness limits efficiency

IP = intellectual property.

We think the time has come to define social responsibility models nourished with the cooperation between research, industry and end users, but also through the creation of mixed research consortia (observatories, networks, etc.) that include all the actors. It is this effort that we tried to make with the Smart Future project, involving a wide group of Italian teachers, Samsung Company and a network of academic researchers (Rivoltella, 2014).

The wish/need list seems to be rich, but yet we see promising signs of change. To rethink the aims of academic research would not be enough without a changed logic of product development for the industry. A sort of permanent “contamination laboratories” may be on the horizon, with partnerships that go beyond singular project proposals. The revolution will neither be easy, nor fast. However, we believe that it can give the true meaning of the third mission as a service for the collective well-being and the common growth.

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