

Research Institute for Geo-Hydrological Protection

in the Department of Earth System Sciences and Environmental Technology

an Institute of the Italian National Research Council (CNR)

The improvement of the expressive and learning abilities of the adult

How to facilitate the risk communication and the divulging of knowledge improving the meta-cognitive abilities of students and adults



The researches and the experimentations carried out, in the learning field, by the IRPI Institute during the last years, started out initially in the field of geoethics, have allowed to set up principles and didactic tools that offer today practical and usable tools to significantly improve, in a relatively short period of time, the expressive, learning and assimilation capacities of students and adults.

The researches have been originally finalized to discover how to improve the expressive and communication abilities of the students who were preparing their degree thesis in our Institute. Many of them, in fact, had been found lacking these abilities. During our

researches, however, we realized the strict correlation between expressive abilities and learning and [meta-cognitive capacities](#) and so the focus of our investigations has definitely included also these latter.

The experimentations, carried out in collaboration with the Order of Engineers of the province of Turin (Ordine degli Ingegneri della Provincia di Torino, OIT) and the multidisciplinary research team SaperCapire, have allowed to open a door in the thought structures of our students, identifying the foundations above which their knowledge and their logic and dialectic capacities were leaning. We have thus been able to ascertain how these foundations were in many cases fragile and inconsistent and required a significant restructuring and strengthening work. This fragility was found first among the students who attended the Institute and subsequently, not without surprise, even among the adult public. The experimental courses that we have developed, in fact, have also been held for the professionals enrolled in the Order of Engineers of the province of Turin, as part of the educational offer for obtaining the professional training credits required by law: the attention received and the results obtained were extremely positive.

The metacognitive principles and exercises developed during the researches have generated in the public that participated in the experiments, a renewed intellectual curiosity and a renewed interest in knowledge and culture. On the basis of the evidences collected, the courses allowed participants to gain a greater definition of thought, meant in a photographic sense, which was reflected in an increased sharpness and precision of expression. This has resulted in an enhanced capacity for understanding and assimilating data, that has made the participants able to strip more easily the objects of knowledge of the mantle of impenetrability and incomprehensibility that in many cases envelops them. The potential applications and the usefulness of the developed tools, an effective toolbox useful to disrupt the doors to any kind of knowledge and, at the same time, to improve expressive and learning skills, have appeared clear from the beginning. By teaching and applying them in schools and universities, in particular, they can improve student performances and make it easier to pursue one of our Institute most important missions: the dissemination of information and knowledge on natural hazards.

In general, their systematic use in school and professional training will facilitate and increase the dissemination of knowledge, made easier by the improvement of the receptive capacities of both students and the adult population.

Results

The results of the research were published in the international scientific journal “Episodes” and on the [Ingenio portal](#).

The main outcomes of the experiments that have been carried out, in particular those in collaboration with the OIT, were instead presented to authorities and citizens at the conference “Ex Loqui – parole da professionisti”, held November 15, 2018 at the council chamber of the OIT. During the conference, a proposal was made to include among the school subjects a new type discipline dedicated to the development of metacognitive skills, the contents of which could be inspired by the experiences gained during our research.



The conference was also attended by the Provveditore agli studi di Torino, the Presidents of the Order of Engineers of the Province of Turin and the Order of Psychologists of Piedmont, the Vice-Rector of the Polytechnic of Turin, the Vice-President of the Order of Journalists of Piedmont and the President of the Young Entrepreneurs of the Industrial Union of Turin.

Since 2014 the courses developed during the research are part of the training offer that the Foundation of the Order of Engineers of the Province of Turin reserves to its members. Starting from 2018 they are also available on the Sofia portal of the Ministry for Education, University and Research (MIUR) and are so devoted to the training of the teaching staff of schools of all levels; so far they have already been delivered in numerous schools in Piedmont.

Since 2018 the courses are also part of the training program of the Popular University of Turin (Unipop), and so are open to the entire citizenry.

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