Young People and Science

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Chair:
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Speakers:
- Michel Claessens, Deputy Head of Unit, European, Editor-in-chief Research*EU
"What do Young Europeans Think about Science and Technology?"
- Karin Hermansson, Research Director, Vetenskap & Allmänhet (Sweden)
"How to Raise Young People's Interest in Science?"
- Mudite Kalnina, Senior Officer, National Youth Initiative Centre of the Ministry of Education and Science (Lettonie)
"The Role of Out of Class Education in Promoting the Interest of Youth in Science"

It should be noted, by way of introduction, that apart from the paper on the Eurobarometer, all the experiments and analyses presented to workshop participants are drawn from the field of informal education (including the Latvian experiment). This demonstrates the two sides of the question: an artificial and non-functional separation between the formal and informal and also perhaps more widespread innovative processes and initiatives in the informal sphere (although these are very probably much underestimated).

No loss of interest in careers – Conscious but not irreversible loss of interest

The implicit question which is raised by this workshop is how to solve the problem of young people's lack of interest in scientific careers. A number of experiments, such as those in Sweden or Latvia show that initiatives can offer elements of an answer (such as a better understanding children's and young people's perceptions of scientists and better attempts to convey the reality of research jobs as extraordinary work, carried out by ordinary people, etc.) However, at the end of the day, by refusing to rise to an analytical level, we may find the right answers... but to a different question.

There has been no loss of interest in scientific careers among young people. This statement, which appeared notably in the disciplines of physics and chemistry in the mid 1990s, was based on quantitative observations – the number of people enrolled to study these subjects. If these numbers are to be believed, then things look good. However, when we refine the analysis qualitatively, then certain elements appear:

- Knowledge roles (e.g. primarily research scientist) have the best image; these professions are inspirational and they aspire to them (Bernard Convert's study[1], for example).

- The decision to choose other careers can be explained by five main elements:

  - training strategies for young people and their families with regard to the apparent unprofitability of protracted studies (which is not the case);
  - over selectivity for scientific studies (which is genuinely the case);
  - a perception that these studies are "too difficult for me" (resulting from young people's poor self-esteem and self-confidence);
  - a non-existent employment policy in science – a level of unemployment which is too high and too great a risk of underemployment;
  - finally, salaries which do not correspond to the amount of effort expended by individuals and families.

These prominent features demonstrate that we are dealing not with lack of interest, but with disaffection. This means that it could be counteracted by national and European public policy.

[1] To be supplied

As a result, the Rocard report, *Science Education Now*[2], which above all else prioritizes reform of science teaching methods as "the" solution, would seem to be both completely insufficient and largely inadequate. It does not deal either with the issue of employment in science or with the socioeconomic context (the declining economic status of young researchers and underinvestment), but deals only with school, whereas time spent in school constitutes less than 50% of a child's overall educational time. It concentrates on key sciences, with total disregard for the impact of human and social sciences in contemporary innovation processes, it does not draw on any qualitative studies on "the youth of today", nor does it touch on the enormous role which science plays in "the selection of elites" in the minds of children and their families. It therefore offers a good but very patchy response (the need for reform in science teaching) to a different question, namely the image of science in the popular imagination (the famous "I don't really have a scientific mind"). The experimental approach cannot offer a portmanteau solution in a context whose origins are much more complex.

If we add to this analytical element elements from the context of an international crisis:

- The growth of Southern economies means that less funding is available for our regions.
- This explains (although only partially) significant underinvestment in scientific technical and engineering professions and employment.

Then another fact emerges spontaneously: this crisis is not just cultural and educational, but also geopolitical and financial. Continuing to obscure these aspects of the problem by combining "young people and science" would seem to be a rather immature approach in the face of the challenges which exist.

The Need for Positive Collaboration between Formal and Informal Education

No school, university or single institution of any kind can supply the answer to these questions on its own. Schools cannot do everything, and nor can universities. Underestimating the role of informal education in intellectual and citizenship training is a tragedy. It is the result of the anachronistic ideology of an educational monopoly.

If we look at the roles of formal and informal education in promoting literacy in the population, we can see how deeply-rooted this misunderstanding is. The majority of stakeholders in formal education, in France for example, are totally convinced that the major laws relating to universal education

[2] Science Education Now. A renewed Pedagogy for the Future, High Level Experts Group chaired by Michel Rocard, Research Directorate, European Commission, 2007 http://ec.europa.eu/research/science-society

for all (Guisot, Ferry, etc.) enabled France to become literate. Historical studies, by contrast, show that 50% of people were already literate and that Gutenberg and the Reformation contributed much more to this awakening of people's spontaneous awareness of the usefulness of being able to read and write than the state policies which enabled this major historic advance to become to widespread in a very short space of time.

In this respect, if we believe the hypothesis that synergy and consistency across all the main educational stakeholders in a community can provide an answer to the issue of demographics in the knowledge field (and not simply in research) then today's question is: what is the point of informal education? It would seem to provide answers to the following issues:

- improving young people's self-confidence;
- feeding/fuelling their motivation;
- creating a bridge with the world of work;
- creating economic areas for new skilled jobs (a scientific tertiary sector, for example).