

## Statistics Under 21

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### Abstract

Statistics helps to understand social phenomena and to make choices; therefore, improving statistical literacy is a valuable goal because Statistics turns numbers into knowledge!

Istat has been actively engaging in strongly propagating statistical literacy in civil society.

At present the main difference lies in the strategic importance given by Istat to the promotion of statistical literacy. It is obvious that, in doing this, one of the main targets is represented by the world of education, students and teachers.

The use of web, moreover, is vital in order to catch the attention of *digital natives*; that is using the high computer technology and web2.0 skills which young people nowadays possess in order to attract them to statistics.

The community formed by ISLP country coordinators is an important means of increasing statistical literacy and helping disadvantaged countries by setting up a network of statisticians.

Keywords: digital natives, new technologies, statistical literacy, Web2.0

### 1. Introduction

To improve statistical literacy is a valuable goal because statistics turns numbers into knowledge!

Indeed, statistics helps to understand social phenomena and to make choices.

*Statistical literacy*, defined on a worldwide scale as the skill of understanding and correctly utilizing statistical data, is an ability that makes people citizens in the full meaning of the term: that means being able to read and critically evaluate data and statistical information.

### 2. Italian strategies to promote statistical literacy

In Italy, National Institute of Statistics (Istat) has been actively engaging in propagating statistical literacy in civil society. At present the main difference lies in the strategic importance given by Istat to the promotion of statistical literacy.

Therefore, Istat has decided to include statistical literacy as key point of its mission and, in order to accomplish this task in the best way, it has decided to set up the “Advanced School for statistics and social and economic analyses” (SAES), which represents an important innovation<sup>1</sup> for Italy.

One of the School’s main goals is precisely to increase statistical literacy. It is obvious that, in doing that, one of the main targets is constituted by the world of education, students and teachers. Indeed, young people are an investment for the future.

Schools, obviously, represent the best way to contact young people: the current Istat strategy is to devise innovative didactic solutions with schools, which can be standardized, published on the web and used by other schools (teachers and students) and young people in general. Istat works with teachers in order to obtain a clearer picture of the problems in teaching statistics in the classroom and in implementing learning and collaborative environments.

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<sup>1</sup> The School has been established by ISTAT under Decree of the Republic President dated 7/10/2010 n. 166.

The use of web, moreover, is vital in order to catch the attention of *digital natives*; that is, using the high computer technology and web2.0 skills which young people nowadays possess in order to attract them to statistics.

On the occasion of the 15th National population and housing Census (2011), Istat and the Italian Ministry of Education, University and Research launched a contest aimed at making young people aware of the social importance of Census.

In 2011, therefore, Istat organized other events addressed to schools all over the country, both at central and local level. The network of regional Istat departments contributes to promote and share statistical culture in schools, arranging significant initiatives.

Students of all ages (young and very young) have been involved in Census in a friendly way, with the aim of reaching two essential goals: increasing their statistical culture and, at the same time, making them promoter of Census within their families.

For this reason, on line compilation by young people was encouraged, suggesting them to fill in a simulated questionnaire with their parents and inviting youngsters to stimulate and help their families to fill in the on line Census questionnaire.

Based on the idea that the web is now the most useful way to get in contact with young people, Istat is realizing a virtual laboratory (*OpenLab*). It should be an innovative tool to develop statistical skills. The lab will be open to teachers and students' contributions through an on line platform and with the help of an interactive and dynamic visualization tool (Statistics eXplorer). OpenLab should become a laboratory/workroom for statistical knowledge.

OpenLab is planned with different growing difficulty levels. At the lowest level users can watch some tutorials about statistical tables and graphs (how to read them). Difficulty increases in the next levels: for example, users are asked to collect statistical data into time series, also giving comments on them and creating the most appropriate chart. At the final level users can work autonomously in creating statistical indicators.

In the computing platform, structured for e-learning too, users find in addition different didactic materials, depending on the kind of user (teacher or student): slides, methodological definitions, glossary, self-evaluation tests, links.

## The lab conceptual outline



Il Laboratorio è diviso in quattro aree che guidano alla scoperta della statistica, partendo dal dato statistico semplice e via via aumentando il grado di complessità e interazione con gli strumenti di analisi dell'informazione. Altro materiale utile al vostro lavoro è disponibile nell'area [Formazione](#)

Scoperta  
sperimentare la statistica

Curiosità  
incontrare la statistica

Esperienza  
fare con la statistica

Esplorazione  
analizzare con la statistica



Moreover, OpenLab has an approach of cooperative learning because users (teachers and/or students or simple users) can create stories utilizing data loaded on OpenLab.

“[Cooperative learning](#)<sup>2</sup> is an approach to group work that maximizes the learning and satisfaction that result from working on a high-performance team. There are several reasons why cooperative learning works as well as it does. (*Among these*) The idea that students learn more by doing something active than by simply watching and listening (...) and cooperative learning is by its nature an active method”.

Another leading idea of this new Istat strategy is to find and create collaborations with institutional partners and private concerns: the Italian Ministry of Education, University and Research and other public organizations but also: Italian Statistical Society (SIS), AISTAP, which is an Italian association for improving and assisting gifted children and young people, the Italian section of Association on European Economic Education (AEEE).

### 3. ISLP Community

This is a matter of democracy: the worst divide of a modern information society is in fact between literate and illiterate people.

In our information society, what does it mean to be *literate* and *illiterate*? Surely not only to learn to read and write but to know how to swim through the [data deluge](#): people who are not able to read and critically evaluate statistics are also not able to be citizens in the full meaning of this term. This is even more important in our society, in which the daily stream of information has never been faster than nowadays, also due to the extremely rapid development of the web.

In a [globalized world](#)<sup>3</sup>, moreover, it is also very important that young people get to know different realities, different points of view and different experiences.

The community formed by ISLP country coordinators is an important way to increase statistical literacy and to help disadvantaged countries by setting up a network of statisticians.

[CensusAtSchool](#) is - i.e. - an international project presently running in the UK, Ireland, South Africa, Canada, New Zealand and Australia, that encourages children to get involved with data handling and teaches them statistical skills providing real data for analyses. Moreover it shows how Information and Communication Technology (ICT) can be used effectively to enhance teaching and learning, especially in the area of data handling.

### 4. Conclusions

Many people (policy makers, experts, teachers...) are more and more aware of the importance of improving statistical literacy in different target groups such as youngsters, policy makers, researchers and the media.

But very often there is a gap between the awareness and the action and today, with the difficulties arising from the general economic crisis, countries have many problems with their budgets and don't invest in statistical literacy: often politicians think that it is a luxury and that at a time of tight budgets it is better to invest elsewhere.

Therefore we have still a long way ahead!

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<sup>2</sup> P.A. Mabrouk, ed., *Active Learning: Models from the Analytical Sciences*, ACS Symposium Series 970, Chapter 4, pp. 34–53. Washington, DC: American Chemical Society, 2007.

<sup>3</sup> Statistical literacy in Russia, by N. Dmitrieva, M. Balakhnev/Federal State Statistics Service (Rosstat) regional office in Orel region.

Moreover, countries differ regarding the activities to improve statistical literacy: there are good, excellent and weak practices.

For this reason it is very important to enhance the ISLP community in order to disseminate best practices and to develop a network of statisticians and representatives from national statistical agencies who carry out collaborations and joint efforts.

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