

IMPROVING STATISTICAL LITERACY BY NATIONAL AND INTERNATIONAL COOPERATION

Reija Helenius

Information Services Unit, Statistics Finland, Finland
reija.helenius@stat.fi

The advancement of statistical literacy is a challenge for each statistical office. However the goals and willingness do not always connect with reality, especially at times of scarce resources and cut budgets. At such time new ways to improve statistical literacy must be adopted. Sharing experiences, learning by best practices, networking and cooperation are increasingly important forms of activities. This paper presents examples on activities carried on to this end. These examples are discussed from the point of view of different user groups, user friendliness and various forms of cooperation.

BACKGROUND

The promotion of statistical literacy and awareness represent a strategic goal of each statistical office. (See, for example, Statistics Finland's Strategy, 2009; Tam & Cross, 2009; Forbes 2009.) An increase in statistical literacy and awareness enhances the influence of statistical information and builds and maintains the legitimacy of statistics in the society. A set of statistics does not become endowed with a meaning until it finds its user and is capable of adding value to the activity of the user of the information.

A statistical office is expected to identify different types of users of data and their needs. Targeting given user groups and focusing on serving their needs does not serve equal dissemination of information or the objective of promoting the use of information widely in society. The more versatile an approach statistical offices and statistics adopt in seeking visibility in different sectors of society and arenas where information is used, the more certain one can be that statistics are made accessible to all those who need information. This is likely to contribute to a picture of a reliable, impartial and user friendly producer of information.

Our life today is characterised by stricter economic and time-specific conditions. This applies to statistical offices as well. One must be able to make adjustments to one's way of doing things; for example, statistical offices must give careful consideration to what services are produced and how they are produced. Equally, alternative ways of acting must be considered. A central question emerges whether activities can be developed for example by networking, cooperation and learning from others. This applies to cooperation with both colleagues and users of information and interest groups.

DIFFERENT USER GROUPS AND USERS

The different user groups impose different expectations, needs and wishes on statistics and statistical offices. The situations where information is used, as well as the skills of the users vary considerably. The diversity of the targets, contact points and expectations of the users makes it necessary to have a variety of arenas, too. The information, information about its availability, information about expectations and wishes, as well as information about the possibilities and limitations related to the use of statistical information can meet and interact on these arenas. The arenas can be large ones for groups, or small ones for face-to-face interaction. Besides arenas for information producers and users, inter-organisational arenas are needed. Examples of existing arenas include cooperative networks and groups, steering groups of projects, shared projects, seminars and other gatherings and meetings. The challenge is how to make most out of these opportunities to enhance also statistical literacy and awareness, and how to activate the stakeholders into participation. New ways and forums are also necessary, especially ones taking advantage of the possibilities of new media (Helenius & Mikkilä, 2010).

Väliverronen (2003) has grouped the arenas of the publicity of science according to Figure 1. The main question is where and how the information is applied. This figure can also be adapted to statistical information and publicity. It may help to understand and identify the relationships

between the various user groups, channels and methods of statistical communication, and to direct the activities and measures to the most relevant and significant arena (Helenius & Mikkela, 2010).

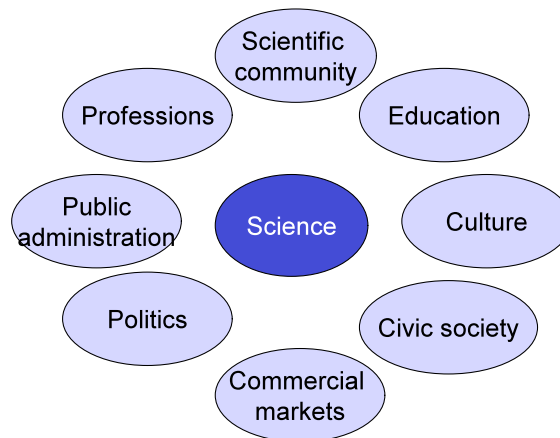


Figure 1. Arenas of publicity of science (Väliverronen, 2003)

For example Australian Bureau of Statistics (ABS) has identified five specific target groups on the basis of the content and context of their statistical literacy needs, as well as three broad ranges of statistical needs and competence (Tam & Cross, 2009).

Table 1. Example on segmenting users of statistics (Tam & Cross, 2009)

	Basic literacy	Intermediate	Advanced
School Students (both primary and secondary)	•	•	
Tertiary Students (including University and Vocational Education students and teachers/lecturers)		•	•
Opinion Leaders (including journalists)	•	•	•
Decision Makers (including politicians, political advisors and government employees)	•	•	•
General Community (including small business/community groups)	•		

EXAMPLES OF CO-OPERATION WITH DIFFERENT USER GROUPS

Next, I will discuss cooperation with a number of user groups by means of examples. The media, educational institutions, citizens, and politicians and decision-makers have been chosen as examples. The examples highlight ways of cooperating, networking and applying best practices and their importance in the development of services and products.

The Media as a user and redistributor of statistical information

The media, as well as educational institutes, are particularly important from the perspective of understanding statistics and using them correctly. Educational institutes and the media redistribute statistical data and “educate” their own customers, i.e., ordinary people. It is vital that they receive support from national statistical offices in this task. The media have a versatile role related to national statistical offices. First, the media are interested in the activities of national statistical office as a public organisation. Second, the media are an important redistributor of statistical information. Third, the media are large-scale users of statistical information: national statistical offices’ output is raw material, i.e. input to their production processes and activities.

Statistical information helps the media to act as the fourth estate and carry out their basic task. The relationship is a win-win situation: statistical information gets more publicity and thus also more effectiveness (Mikkilä, 2008).

The hectic nature of journalistic work sets its own limitations on the presentation of statistical information and on the communication of statistics. In their rush, journalists can usually devote little attention to methods and concepts and, consequently, these will not be communicated to those following the media. This makes it vital that services are developed which include elements supporting the use of information and also provide easy access to all the metadata related to statistics when they are needed. One of the challenges statistical offices face is how to release statistical information as clearly and understandably as possible, and how to include elements that promote its understanding in the release practices. These features are of growing importance as the “self-service” use of statistics increases in this era of growing use of the Internet (Helenius & Mikkilä, 2010).

Example 1. [Statistics Finland](#)’s statistics on 200 topics can be found on its website listed by topic, producer, release date, and alphabetically. Each set of statistics has its own [home page](#) on which the information elements comprise releases of latest data, reviews, tables, figures, maps and descriptive information (quality description, used classifications and main concepts). The descriptive information helps the user to assess which aspects of the data might limit the quality and usability of the statistics. The pages of the individual sets of statistics also contain links to related products and services. All new statistical data are made available simultaneously to all the users as statistical releases on the Internet, which number around 700 annually. Future releases are announced in advance in the annual release calendar and in the weekly newsletter, the weekly calendar, posted on the Internet. Data users are also informed about published releases with personal email messages containing the caption of the release and a link to the release itself. The user can select either all releases, or only those related to the topical themes he or she is interested in. The releases, website as well as the alert service are free of charge and available to anyone interested.

Example 2. [Statistics Canada](#) has provided workshops and training as well as different types of guidebooks and handbooks in a number of subject matters covered by statistics both to provide support for analysing statistics and to increase awareness of different sources. However, it has appeared in practice that journalists tend to be too busy to participate in courses or delve into handbooks. So, Statistics Canada no longer tries to beguile journalists with formal training courses. Instead, the agency has strengthened its media relations program to ensure that journalists are alert to the news potential of the agency’s data releases and that these releases are communicated in a manner that demonstrates their public interest value by telling the story behind the numbers. Operational services under this program include [a media hotline](#) to respond to mediaqueries in finding or interpreting data, booking interviews with subject-matter analysts, advance notices of forthcoming releases and traditional media lock-ups for key economic releases. In the case of special news releases, Statistics Canada invites media representatives to assist them in planning the coverage and potential story lines in advance. Since 2001, The Daily, Statistics Canada’s official release bulletin, has been published on the home page of their website [www.statcan.ca](#) every working day at 8:30 a.m., providing journalists with immediate access to all new releases, with links to supporting publications, concepts and definitions. To further facilitate media access to statistical information, Statistics Canada has also a virtual [Media Room](#) on its website that provides journalists with popular theme-based links, a set of easy to understand definitions and regular feature stories on topical or calendar based events (Cromton and Flanders, 2006). The services developed for journalists by Statistics Canada are a good example of user friendly service.

Educational institutions

Cooperation with educational institutions provides a multidimensional field for disseminating statistical information more widely to society and thus enhances the socially responsible activity of statistical offices. Through cooperation with educational institutions statistical offices can work within two time spans. In the short term they can produce inputs to different teaching programmes, teachers’ further education and research in the educational sector. In the long term young people are being raised into future information users, decision-makers and

data providers in cooperation with educational institutions. Cooperation with educational institutions is also important for recruitment purposes. Statistical offices compete with other employers for skilled labour force.

Training services and learning materials are produced by a number of statistical offices. In particular, this is an area which offers one a great deal to learn of other organisations' best practices. Producing School Corners and similar training courses takes a great deal of resources (e.g. making exercises and illustrative examples, developing interactivity and illustrating material). It would make sense to put existing methods and methodologies to a new use.

Example 1. [ALEA](#), the network learning material produced by Statistics Portugal has served as an inspiration to several corresponding services including Statistics Lithuania's [Statistics for Schools](#) and Statistics Finland's [eCourse in Statistics](#). Also, Statistics New Zealand's [School Corner](#) and Statistics Canada's [Learning resources](#) targeted at teachers and students have served as a basis for corresponding services developed by other countries' statistical offices. The ALEA (Local Action of Applied Statistics) is aimed at primary and secondary schools, but it is also an important resource for supporting interdisciplinary projects, being, simultaneously, of benefit to many other groups of people. ALEA is a joint idea of Statistics Portugal and Tomaz Pelayo Secondary School, bringing together The Portuguese Ministry of Education and Statistical Office (Campos, 2009). The research and development activities carried on for ALEA are a good example of networking with key interest groups for a common goal. This is also a way of ensuring that the contents of the service meets the needs of the user.

Example 2. A joint project between the National Statistics Office of Malte, the German State University (under the supervision of Professor Hans-Joachim Mittag) and Statistics Finland stands for a good example of joint resources and shared information (Mittag, 2010). [The e-Course in Statistics](#) has been further developed on the basis of Statistics Finland's network school. The examples presented have been picked within the EU in order for the service to be widely applicable in a number of countries. The service is intended to be further developed, and there is nothing to keep greater numbers of parties from joining in.

The promotion of Statistical Literacy is one of the most important challenges that National Statistical Institutes have to cope with in the years ahead. In this day and age, dissemination of statistics through the various media is commonplace but it is often observed that a number of statistical users do not have the basic skills to be able to use and interpret statistical data.

The [National Statistics Office](#), in close cooperation with the [University of Hagen \(Germany\)](#) and with [Statistics Finland](#), has prepared this eCourse in Statistics with the clear objective of fostering statistical literacy amongst the local as well as the international community of statistical users.

Although this course is primarily intended for young adults attending post-secondary and the first years of tertiary education, special care has been taken to write the chapters in common everyday language that can also be understood by the occasional users of statistics.

We recommend that users follow the logical sequence of chapters for a comprehensive coverage of basic statistical concepts and examples but specific chapters can also be read separately.

Start your eCourse in Statistics now by clicking chapter 1 below:

- Chapter 1. [Statistical literacy](#)
- Chapter 2. [Basic Statistical Concepts](#)
- Chapter 3. [Organising and Presenting Data](#)
- Chapter 4. [Population Developments](#)
- Chapter 5. [Social/Economic Statistics](#)
- Chapter 6. [Searching for Statistical Information](#)

Figure 2. eCourse in Statistics: A joint project between the National Statistics Office of Malte, the German State University and Statistics Finland

Example 3. Another example of co-operation with educational institutes, especially with secondary and upper secondary schools, is the International Statistical Literacy Competition arranged by the [International Statistical Literacy Project \(ISLP\)](#). The competitions organised in 2008-2009 had many results, including the promotion of:

- cooperation between different actors at a national level (education in statistics, national statistical offices, statistics associations, teacher organisations, educational institutions)
- cooperation between different actors at an international level (applying the competition concept in a number of countries: networking, drawing up homework and exercise material in cooperation for shared use)
- raising awareness in statistical work, the sector and science of statistics.

The strategic goal of the ISLP project continues to be the development of practices that can be copied and given to other countries for use. The central idea is to learn from best practices and solutions that other countries have come up with and share openly information for the promotion of statistical literacy.

Citizens and general community

As it is hardly possible to reach all citizens direct, the media and educational institutes are essential co-operators and associates as they have wide audiences. They also have the capabilities and resources to represent and analyse the information according to the special needs and viewpoints of the various segmented audiences.

Example 1. The statistical literacy framework (Tam & Cross, 2009) of the Australian Bureau of Statistics (ABS) includes the segment of general community. For the general community the ABS has focused on developing basic levels of statistical literacy: providing awareness-raising promotions, articles and information sessions, in addition to information brochures and training sessions to small business groups and networks, and a broad range of non-profit organisations. ABS has noticed that collaborations with other government departments have been an effective way to reach targeted groups within the general community. The ABS website also provides assistance to specific groups within the community. [A portal for small business](#) helps this group find, understand and effectively use ABS statistics and services relevant to their needs. Other online resources have been developed to help the general community understand basic statistical terms and concepts. These include the ['Statistical Language!'](#) product, which is written in plain English for adults and aims to provide them with basic statistical literacy skills to support their use of ABS statistics. Services for the promotion of statistical literacy have also been targeted at a number of special groups.

Politicians and decision makers

The development of society and thus the lives of ordinary people are strongly affected by political decision-making. To enhance sustainable development and democracy, the decision-making should be based on facts and on reliable information.

Example 1. In order to create live and interactive relations with the members of parliament, and to lower their threshold on the use of statistics, Statistics Finland regularly invites Finnish members of parliament as well as their assisting staff to discuss topics of current interest especially from perspective of statistics. During these high-level visits, hosted by the Director General, a couple of brief presentations are usually given before open discussion and informal socialising. After each general election (i.e., every four years), representatives of all parliamentary groups are invited, one group at a time. The shares of participating members from the parliamentary groups and other staff vary. In general, these meetings are considered very useful and often lead to more active exchange of information, and further contacts, too.

Example 2. For decision makers the ABS is active in raising statistical awareness among Federal, State and Local Government employees. The ABS provides a core curriculum of statistical training courses that address basic to intermediate levels of statistical literacy. The ABS also undertakes road shows to regional and metropolitan areas to raise awareness of the ABS data

(including Census) available on the website. Introductory programs for the informed use of data have been developed for new graduate staff starting work in the government sector. The ABS also supports and trains Parliamentary library and research staff as key intermediaries to Australia's political decision-makers. The ABS website forms a focal point for assisting State and Local Government in their awareness, understanding and use of statistics. Website portals for each Australian State and Territory, and for Local Government, provide targeted communication and support for these groups (Tam & Cross, 2009).

CONCLUSION

Information sharing, cooperation between different actors and learning from other organisations' experiences are crucial for developing practices for the promotion of statistical literacy. Cooperating with users of information ensures that the products and services can in fact be used. A set of statistics does not become endowed with a meaning until it finds its user and is capable of adding value to the activity of the user of the information.

REFERENCES

- Campos, P. (2009). The role of Statistics Portugal in developing statistical literacy. *The Proceedings of ISI 2009*, Durban, South-Africa.
- Crompton, V., & Flanders, J. (2006). Communicating statistics to the media: telling the story. *The Proceedings of ICOTS 2006*, Bahia, San Salvador, Brazil.
- Forbes, S. (2009). Raising statistical capability: Statistics New Zealand's contribution. In J. Sanchez (Ed.), *Government statistical offices and statistical literacy*. A publication of the ISLP. Online: <http://www.stat.auckland.ac.nz/~iase/islp/stats-offices-book>.
- Helenius, R., & Mikkilä, M. (2010). *Statistical literacy and awareness as strategic success factors of a national statistical office - case of Statistics Finland*. (Submitted to SJIAOS for publication).
- Mikkilä, H. (2008). *Toiminnan strategisessa ytimessä. Sidosryhmäyhteistyö ja -viestintä asiantuntijaorganisaatiossa, case Tilastokeskus*. (In the strategic core of business - the role of stakeholder co-operation and communication in knowledge-intensive organisations, case Statistics Finland). Master's thesis in Social Sciences, University of Helsinki.
- Mittag, H-J. (2010). Promoting statistical literacy: A european pilot project to bring official statistics into university and secondary school classrooms Improving statistical literacy by national and international cooperation. *Invited paper, 8th International Conference on Teaching Statistics*, Ljubljana, Slovenia.
- Statistics Finland (2007). *Operational strategy of Statistics Finland*. Handout.
- Tam, S-M., & Cross, N. (2009). Improving statistical literacy - Australian Bureau of Statistics' experiences and strategies. *The proceedings of ISI 2009*, Durban, South-Africa.
- Väliveronnen, E. (2003). *Tiedeviestinnän opintojakson luento 23 Oct. 2003 (Lecture on science communication)*. Lecture handout. University of Helsinki. In Finnish only.