

Promoting statistics to youth through the International Statistical Literacy Project

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Abstract:

The International Statistical Literacy Project (ISLP) aims to promote statistical literacy across all the countries of the world, among the young and adults, in all walks of life. A repository of international resources and news in Statistical Literacy is available on the ISLP website together with international and outreach activities. The ISLP also has groups working around the world to develop strategies for raising statistical capability in particular groups. This presentation will focus on two particular current activities of the ISLP. The first, the ISLP International Poster Competition, is aimed specifically at young people, their schools and their teachers. In 2011, almost 5000 students from 30 different countries registered to take part in this competition with each country selecting national winners to send to the international finals. The final judging of 33 posters from 18 different countries was done at the World Statistics Conference (WSC58) in Dublin in 2011 where the prize winning posters were displayed. Similarly, in 2013, the international final has taken place here at WSC 59, and the winning posters are available for viewing. The competition appears to be a successful mechanism for increasing awareness of, and engagement with, statistics amongst young people. The second activity is also a competition, the Best Cooperative Project Award. Past winners include the Maths4Stats initiative from South Africa and Early Statistics from Cyprus which both focussed on statistics education in schools. One other winner used cooperation to increase the official statistics capability of new graduates and another used an European-African link to build institutional capability in Ethiopian universities. In 2013, the ISLP has over 90 country coordinators registered. They work together with the ISLP executive to increase statistical capability in the next generation of learners.

Key words: raising statistical capability, international statistics competitions

INTRODUCTION:

The International Statistical Literacy Project (ISLP) operates under the International Association for Statistical Education (IASE) and both ISLP and IASE are members of the International Statistical Institute (ISI). ISLP's aim is to promote statistical literacy across the world, among young and adults, in all walks of life. Its website, <http://iase-web.org/islp/>, is already extensively used (see table 1) with 28,694 visitors from 182 countries in the period 10 January 2010 – 20 December 2012. There are currently over 100 ISLP country coordinators and we welcome offers from countries not currently represented. The website hosts a repository of international resources and news together with activities in Statistical Literacy. The ISLP action plan details activities and those for 2012-13 include:

- Activities organised by country coordinators
- ISLP Strategy Project
- Statistical Literacy Competition 2012–2013
- Best Cooperative Project Award 2013
- International Year of Statistics 2013
- The 59th World Statistical Conference and ISLP Meetings 2013

Activities organised by country coordinators are reported regularly in ISLP newsletters, available at <http://iase-web.org/islp/Publications.php?p=Newsletters>. While each of the other activities above will be discussed separately the main focus of this paper will be the two competitions (the Statistical

Literacy Competition 2012–2013 and the Best Cooperative Project Award 2013) designed to promulgate statistical literacy concepts.

Table 1:
Top 20 ISLP website users (10 Jan 2010 - 20 Dec 2012) as at 15 January 2013.

 United States (US)	3,896
 Portugal (PT)	3,065
 New Zealand (NZ)	1,600
 Italy (IT)	1,461
 Finland (FI)	1,087
 Brazil (BR)	1,024
 United Kingdom (GB)	988
 Ireland (IE)	775
 Canada (CA)	757
 Australia (AU)	735
 Czech Republic (CZ)	724
 Argentina (AR)	660
 Germany (DE)	601
 Spain (ES)	565
 Bulgaria (BG)	537
 India (IN)	519
 South Africa (ZA)	479
 Russian Federation (RU)	390
 Korea, Republic of (KR)	387
 Japan (JP)	385
 Mexico (MX)	373

1. ISLP STRATEGY PROJECT

In the past, the ISLP has concentrated on advancing statistical literacy among young secondary school age students but we now to extend teaching of statistical literacy to other spheres of life as well. The purpose of the Strategy Project is to develop models and share good practices that can be utilised all over the world and international groups have been established to report back on the following target groups:

- **Citizens and the Media** Chairs: Jim Ridgway (Professor, Smart Centre, University of Durham) and Milo Schield (Professor of Business Administration at Augsburg College)
- **Universities and research institutes** Chair: Peter Kovacs (Assistant Professor of Faculty of Economics and Business Administration, University of Szeged, Department of Statistics and Demography)
- **Decision makers** Chair: Robert Letheby (Assistant Director, Statistical Literacy Unit, Australian Bureau of Statistics)
- **Libraries** Chair: Olga Mendes (Information Specialist, Statistics Portugal).

Each group is currently drafting a report that considers statistical literacy objectives and level requirements; examples of best practices how to improve statistical literacy and suggestions for new operation models or activities that could be initiated either by member states of ISLP or by ISLP directly for their specific target group.

2. STATISTICAL LITERACY COMPETITIONS

For some time the primary focus for ISLP and its country coordinators has been its International Statistical Literacy Competition, held as an individual competition in 2008-2009 and as a team competition in both 2010-2011 and 2012-13. The overall objective of these competitions is to bring the use and understanding of statistics into teaching in a natural way.

a. First International Statistical Literacy Competition 2008–2009

This competition had three phases and was done in 5 languages without the use of computers: the first phase was in the students' school; in the second phase winners in each school competed nationally for a national champion; and in third phase (called ISIBALO), national champions competed in the final, hosted by Statistics South Africa in Durban, South Africa, August 2009 during the 57th World Statistics Conference (WSC). The overall winners in each of the age categories (12-14, 15-16 and 17-18) receiving their prizes of 200Rand at this conference from the Statistician General of South Africa, Pali Lehohla and ISLP Director (2007-2009) Juana Sanchez. The reason for having three phases in this competition, and being done in 5 languages was to guarantee the largest participation possible but there were some issues with the competition taking too long, the level of resourcing (both personnel and financial) needed and with children being allowed to travel to participate in the final.

b. Second ISLP Competition 2010–2011

In both 2010-11 and 2012-13 poster competitions were used as a means of increasing awareness of Statistics among students and teachers throughout the world, promoting statistical literacy resources and bringing together parties interested in statistical literacy within countries.



The 2010–2011 ISLP Poster Competition was open to teams of 2–3 students in two age divisions: students born in or before 1995, and students born in or before 1992.

The theme of the competition was environment. In each country, the ISLP country coordinator encouraged schools and teachers to participate, provided resources and guidelines, and arranged a judging panel and judging process. The national winner posters were then forwarded to and evaluated by an international jury consisting of members from six countries: Martha Aliaga (USA) chair; Chris Wild (New Zealand); Iddo Gal (Israel); Metka Zaletel (Slovenia); Christine Reading (Australia) and Enriqueta Reston (Philippines).

First, second, third and honourable mention winners were announced in each age division and the winning posters displayed during the 58th WSC held in Dublin in 2011. The winners were:

Younger age division (age 12–15, born in or before 1995)

- 1st prize: Holly Ayles and Emily Baxter from Bliss Carman Middle School, Fredericton, New Brunswick, Canada with the topic *La Pollution Lumineuse (light pollution)*.
- 2nd prize: Beatriz Rocha and Beatriz Morais from Third Cycle and Secondary School of St. Pedro, Portugal with the topic *How the spread of dust in the atmosphere can contribute to reducing the growth of plants.*

- 3rd prize: Megan Snell, Jack Boyd and Mitchell Sammut from Cashmere Primary School, Christchurch, New Zealand with the topic *Can you predict the weather at midday by looking out your window in the morning.*
- Honorable mention: Peltolan Koulu, Mikko Chan and Miko Pusztai from Finland with the topic *Carbon dioxide emissions caused by private cars in Finland.*

Older age division (age 15–18, born in or before 1992)

- 1st prize: Leevi Leppäjärvi, Janne Mustaniemi and Iidaliina Uusitalo from Lyseonpuiston lukio in Finland with the topic *Recycling and waste disposal.*
- 2nd prize: Margarida Santos and Sara Brites, Secondary School of Portela, Portugal with the topic *Experience "Irradiated Seeds Germination" – What is the effect of different radiations on plant growth?*
- 3rd prize: Cecilia Wright, Webber Academy, Calgary, Alberta, Canada with the topic *Black Gold & Alberta's River.*
- Honorable mention: János Mena, Gábor Galgücz and Gergely Dálya, ELTE Apáczai Csere János Gyakorló gimnázium, Hungary with the topic *How do we think we change our environment in Hungary?*

Figure 3a.
Winners, 12–15 year age group
 Ayles and Emily Baxter from Canada.



Figure 3b.
Winners, 15–18 years age group
 Holly Leevi Leppäjärvi, Janne Mustaniemi and Iidaliina Uusitalo from Finland



c. Third ISLP Competition 2011–2013

The 2011–2013 ISLP Poster Competition is currently under similar conditions to the second ISLP competition. That is, it is again open to teams of 2–3 students in two age divisions: students born in or before 1995, and students born in or before 1992 but the theme this time is agriculture. National winners' posters had to be uploaded before 12th May 2013 and will be judged prior to the 59th WSC in Hong Kong where the winning posters will be announced and displayed. The international jury for this competition is: James Nicholson (UK) chair; Iddo Gal (Israel); Helen MacGillivray (Australia); Alexandra Sorto (USA); Adriana D'Amelio (Argentina) and John Shanks (New Zealand).

3. BEST COOPERATIVE STATISTICAL LITERACY PROJECT AWARD

Every two years since 2009, in recognition of outstanding, innovative, and influential statistical literacy projects that affect a broad segment of the general public and are fruit of the cooperation of different types of institutions (national statistical offices, schools, statistical societies, media, libraries etc) the IASE/ISLP presents an award to the best cooperative project award in statistical literacy..

a. Best Cooperative Project Award 2009

Five nominations were received in 2009 for the Best Cooperative Project Award and the international panel of judges was Chair: Pedro Campos (Portugal), Iddo Gal (Israel), Paola Guiacche (Italy), Cyril Parirentyawa (Zimbabwe) and Pinto Martins (Portugal).

Two awards were presented. One to South Africa for the "*Maths4stats project of Statistics South Africa*" that involved the South African Statistical Association (SASA), the association for Maths education in South Africa (AMESA) and the National Department of Education (DOE), as well as Statistics South Africa. The project used mathematics teachers to encourage more learners to study statistics and a series of workshops and training materials were available on its web page. The other was awarded to Cyprus for the '*EarlyStatistics: Enhancing the Teaching and Learning of Early Statistical Reasoning in European Schools*' project that involved a consortium of different partners (a college and several universities from Cyprus and other countries including Spain, Greece and Norway) and facilitated intercultural collaboration of teachers using contemporary technological and educational tools. Other nominations were received from Lithuania for the "*Statistics for School: E-school*" project, from Argentina for the "*Statistical Literacy in Mendoza*" project and from New Zealand for "*New Zealand's Certificate of Official Statistics*" project.

b. Best Cooperative Project Award 2011

The international judging panel in 2011 was Pedro Campos (Portugal – chair), Adriana D'Amelio (Argentina), Larry Weldon (Canada) and Tatevik Zohrabyan (Armenia). Six nominations were received and awards went to the top two projects. The project *A post-graduate program in official statistics* from New Zealand involved collaboration between New Zealand Statistics and a Network of Academics in Official Statistics and the project *North-South-South (NSS) International Collaborative Project in Biostatistics* involved Ethiopian, Belgian (Flemish), and Mozambique universities (under the umbrella of the Flemish Interuniversity Council, VLIR-UOS).

The other nominees were a Finnish cooperation between producers of Official Statistics, MAOL, the Finnish Association of Teachers of Mathematics Physics, Chemistry and

Informatics, the Finnish Statistical Society and several schools called *Actions of the World Statistics Day 2010 in Finland*, the Australian Bureau of Statistics, 'ABS Footy Stats' Program project, and Iranian project involving the Iranian Statistical Society (ISS), Iranian Mathematics House (IMH) and Statistics Department of Central Bank of Iran called *Statistics Literacy in Persia - Project Savade Amari* and a Bulgarian project called *Set of initiatives to promote statistical literacy in Bulgaria*.

c. Best Cooperative Project Award 2013

Detailed criteria for the 2013 cooperative projects can be found at <http://www.stat.auckland.ac.nz/~iase/islp/best-cooperative-project-award-2013>. This year the international judging panel is Sharleen Forbes (New Zealand- chair), Enriqueta Reston (Argentina), Larry Weldon (Canada) and Pedro Campos (Portugal). Applications need to be received by the end of May 2013 and the award(s) will again be announced and presented at the 59th WSC in August 2013 in Hong Kong.

4. RESOURCES, CONFERENCES AND YEAR OF STATISTICS 2013

ISLP members produce statistical literacy resources including an electronic book, *Government statistical offices and statistical literacy* edited by a past ISLP director, Juana Sanchez (www.stat.auckland.ac.nz/~iase/islp/stats-offices-book). Members also initiated activities within their own countries for World Statistics Day (20/10/2010) as reported in the ISLP newsletter Vol. 3.2 December 2010. Our country coordinators will also be actively involved in the International Year of Statistics 2013, a worldwide celebration of the contributions of statistical science to the advancement of our global society. Again activities will be regularly reported on in ISLP newsletters, available at <http://iase-web.org/islp/Publications.php?p=Newsletters> and are designed to:

- Increase public awareness of the power and impact of statistics on all aspects of our society
- Nurture statistics as a profession, especially among high-school and college students
- Promote creativity and development in the sciences of probability and statistics.

5. SUMMARY

The International Statistical Literacy Project exists to promote and improve statistical literacy capability throughout the world. That there is a need for such a project is evidenced by the large number of 'hits' on its website from almost 200 different countries. The ISLP is truly international, calling on members from a variety of countries to participate in judging panels for its international competitions and awards. It is hoped that our presence here at the 59th WSC in Hong Kong will increase participation in ISLP from Asian countries and we look forward to this. There is still much work to be done before the world is a collective of informed societies, but every new student who is motivated to learn statistics and every group that gets together to promote or teach statistics in new ways, is a step in the right direction.