Activities of Japanese Inter-university Network for Statistical Education (JINSE)

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Current boom on statistics and big data in Japan

- From the beginning of this year, suddenly statistics became a hot topic in the media.

- A popular business book titled "statistics is the strongest science" sold more than a quarter of million copies.

- Many magazines featured statistics as a special topic (see next page).

- Even the national broadcasting agency NHK had a special 30 minutes program on statistics and big data.

- Some people think that the computers and algorithms can handle big data (without knowledgeable people).

- We try to emphasize the fact that the shortage of statisticians in Japan is really serious.

Current boom on statistics and big data in Japan

- We are obviously happy about this boom.

- We ourselves have been publicizing statistics for a long time.

- At the same time we are afraid that people expect quick solutions and then will be disappointed.

- Statistics is not an easy science, despite these popular books such as "learn statistics with comics".

- We need systematic and continuous statistical education of people,

- in addition to big computers and fast algorithms.

Project proposal to ministry of education

- At the end of April 2012, Ministry of Education announced a new funding program for joint projects among universities for reforming Japanese university education.

- Project proposals have to reflect needs from the society and the general public.

- Project proposals also need to implement some quality assurance program.

- One category for proposal was joint projects for specific academic fields (such as statistics).

- 5 year support. About 600,000 US dollars funding per project each year.

Project proposal to ministry of education

- The funding program seemed very attractive to statistics.
- Statistics is of course very much needed in society.
- However there is no statistics department in Japanese universities.
- This kind of joint university project is very much needed for improving statistics education in Japanese universities.
- For quality assurance, we can use Japan Statistical Society certificates (JSS exam), which was started in 2011.
- We also have strong supports from industrial organizations.
- The deadline for proposals was the end of June. We only had two months to put together a proposal.

- The result was announced in September and our proposal was accepted!

Some background on statistical education in Japan

List of names of relevant organizations.

- MEXT: Ministry of Education. Ministry of Education, Culture, Sports, Science & Technology.
  They control curriculum for elementary, junior high and senior high schools. Curriculum for universities is not controlled by MEXT. (cf. "Academic freedom in universities")

- SCJ: Science Council of Japan. This represents academics in universities. SCJ has partial influence on curriculum in universities.

- JFSSA : Japanese Federation of Statistical Science Associations. Federation of 6 statistical societies in Japan.

Some background on statistical education in Japan

MEXT has been promoting problem solving skills in education from around 2008.

Five skills emphasized in its report in 2008:

1. Communication skill   (in Japanese and in English)
2. Numerical skill   (ability to work with numbers and symbols)
3. Information skill   (ability to utilize ICT)
4. Logical thinking skill
5. Problem solving skill   (find the right problem and solve it)

These are very much related to statistics

Some background on statistical education in Japan

- MEXT asked SCJ to discuss "subject benchmark statements" or "reference standards" for various academic fields taught in university.

- SCJ has 30 committees corresponding to 30 fields.

- Statistics is poorly represented in these committees. It is only a part of the committee on mathematical sciences.

- We were not very hopeful that statistics will be covered by reference standards by Science Council of Japan.

- Therefore JFSSA published its own "Standard Reference for Statistical Education" in August of 2010, much earlier than those by SCJ.

Contents of Standard Reference for Statistical Education

- 1. Framework of Standard Reference
- 2. Essence of Statistics and statistical thinking
- 3. Standard Reference for statistics in various fields
- 3.1 General university education, 3.2 Psychology and education,
  3.3 Economics,   3.4 Sociology, 3.5 Management science,
  3.6 Mathematical sciences,   3.7 Engineering,
  3.8 Medicine and pharmaceutical science

Revision of Official Curriculum Guidelines

Revision of Official Curriculum Guidelines for junior high and high schools by MEXT.

- Around the same time, MEXT expressed that Japanese high school students should be equipped with quantitative skills.
- One reason: poor performance of Japanese students in some international comparison
- An example was the result of PISA (Programme for International Student Assessment) conduct ed by OECD.
- MEXT seemed to have judged that relative performance of Japanese young students has been declining.
- MEXT revised Official Curriculum Guidelines and emphasized the importance of statistical thinking and data analysis.

Formation and structure of JINSE

- In our proposal to MEXT, we proposed to form "Japanese Inter-university Network for Statistical Education" (JINSE)
- Immediately after our proposal was accepted, we formed JINSE at the end of September.

The structure of JINSE is described as follows.

JINSE = 8 Universities + 6 Academic Societies + Related Organizations

= Steering committee + 3 committees + 8 Universities

Universities and committees

- 8 universities:
  University of Tokyo
  Osaka University,
  The Graduate University for Advanced Studies,
  Aoyama Gakuin University (Head of the partnership),
  Tama University,
  Rikkyo University,
  Waseda University,
  Doshisha University

- 3 committees:
  Evaluation board
  Quality assurance committee
 Curriculum committee

Academic Societies

- 6 academic societies (= JFSSA)
  Japanese Society of Applied Statistics,
  Japanese Society of Computational Statistics,
  The Biometric Society of Japan,
  The Behaviormetric Society of Japan,
  The Japan Statistical Society,
  Japanese Classification Society

Related Organizations

- 8 related organizations:
  National Center for University Entrance Examinations
  The Institute of Actuaries of Japan
  Union of Japanese Scientists and Engineers
  The Bank of Japan
  Keidanren
  Japan Pharmaceutical Manufacturers Association
  Japan Statistical Association
  Japan Marketing Research Association

Conceptual picture of JINSE
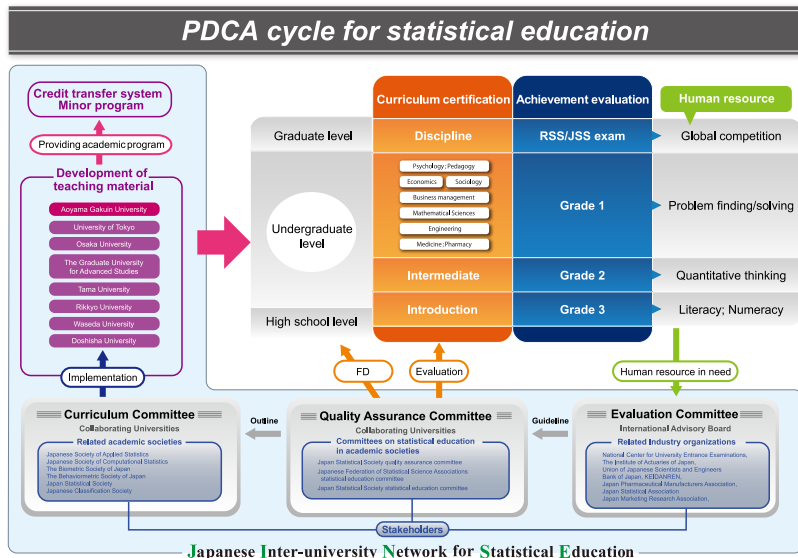
Logo and web page of JINSE

`http://jinse.jp/index_en.html`

MEXT: Program for Promoting Inter-university Collaborative Education
"Quality Assurance in Statistical Education for Development
of Human Resources with Data-oriented Problem Solving Skills"

Japanese Inter-university Network for Statistical Education

J I N S E

Summary of the Project

Fostering people who can setup new challenging issues and solve them by applying data-oriented, quantitative skills have become essential to enhance industrial innovation in Japan in future. In knowledge-based society, it is shared understanding throughout the world that "Statistical Thinking" and "Competency of Statistical Analysis" is a substantial skill for detecting and solving new issues.Thus, building an educational system which aims to foster these abilities is internationally proceeding. Obviously, reinforcing statistical education is one of the most pressing issues for universities.

In this project, we have newly organized "Japanese Inter-university Network for Statistical Education (JINSE) ".The first aim of JINSE is to develop Standard Curriculum and Teaching methodologyfor fostering human resources capable of coping with new issues, and eventually, to establish Quality Assurance system for statistical education by introducing Evaluation Committee consisting of members from academic statistical societies and other educational/economic organizations.

Structure of JINSE

- The broad cooperation among universities, academic societies and related organizations is perhaps the unique feature of JINSE.
- The related organizations advise what kind of statistical skills are needed in industry and government and the academic societies control the quality of the curriculum.
- JINSE also utilizes the examination by Japan Statistical Society to measure the actual improvement of statistical education.
- JINSE has an international advisory board whose members have been leaders in promoting statistical education.
- Through the board and other means, JINSE wants to cooperated with similar organizations in other countries.

International advisory board

- Iddo Gal (President-Elect, IASE. Chair of the Expert Group on Numeracy of OECD PIAAC)
- Rob Gould (The undergraduate vice-chair of the Department of Statistics and director of the Center for Teaching Statistics, UCLA, USA.)
- Neville Davies (Centre Director, The Royal Statistical Society Centre for Statistical Education)
- Joan B. Garfield (Chair of International Research Forums on Statistical Reasoning, Thinking and Literacy (SRTL), Chair the GAISE Project)
- Tae-Rim Lee (Professor, Korea National Open University, Republic of Korea)
- Jessica Utts (Past Chair, Section on Statistical Education, American Statistical Association)

International advisory board

- Chris Wild (Advisory Committee, International Statistical Literacy Project)
- Jim Albert (Chair, Section on Statistical Education, American Statistical Association)
- Roxy Peck (Past-chair of the American Statistical Association's Section on Statistical Education)
- Ronald L. Wasserstein (Executive Director, American Statistical Association, USA)
- Margarita F. Guerrero (Regional Adviser, The United Nations Economic and Social Commission for Asia and the Pacific (ESCAP))
- Hans-Joachim Mittag (A member of the Joint Project of German Universities, NEW STATISTICS)

Current activities

- In April of this year, we prepared 11 reports on statistical education.
- These reports summarizes activities of JINSE from October 2012 to March 2013.

Current activities

- We are collecting useful material on statistics education in our web page.
- E-learning system of JINSE is now working. We need contents.
- Quality assurance committee is working on revising the reference standard.
- Curriculum committee conducted a survey on current status of statistical education in Japanese universities. It also collects and compares statistics curriculum in many countries.

Future plans

- During the five-year support period, JINSE will develop standard curriculum and learning contents.
- It is probably not easy to establish statistics departments in Japanese universities, but at least we want to establish some undergraduate program (minor in major-minor combination) on statistics.
- After the program by the ministry ends, we will open JINSE and its contents to all universities in Japan.
- We also will start some accreditation system for university statistics courses.