INDUZIONI
Demografia, probabilità, statistica a scuola

34 · 2007

- INDUZIONI è una rivista rivolta agli studenti ed ai docenti di matematica, storia, geografia, osservazioni scientifiche, economia, statistica... delle scuole preuniversitarie, ma anche ai docenti universitari. Il suo scopo è quello di diffondere idee statistiche nella scuola e di illustrare attraverso esempi come la statistica possa essere di ausilio in diverse occasioni della vita pratica.

Il taglio degli articoli dovrebbe essere operativo ed effettualmente utilizzabile nel lavoro scolastico.

- *INDUZIONI is a review for students and teachers of mathematics, history, geography, scientific observations, economics and statistics at preuniversity schools, but also for university teachers. It aims to spread out statistical ideas in school and to illustrate, through examples, as statistics can assist us in several occasions of pratical activities.*

Articles should be operative and actual in classroom work.

- INDUZIONI viene pubblicata con il patrocinio della Società Italiana di Statistica (S.I.S.).

- *INDUZIONI is published under the auspices of the Società Italiana di Statistica (S.I.S.)*

- Comitato scientifico / *Scientific Board*: Giuseppe Burgio, Giuseppe Cicchitelli, Giuseppe De Bartolo, Antonella Pinnelli, Silio Rigatti Luchini, Livia Linda Rondini, Carla Rossi, Romano Scozzafava, Alberto Zuliani.

- Fondatore / *Founder*: † Enzo Lombardo.

- Direttore / *Editor*: Maria Gabriella Ottaviani.

- Comitato di redazione / *Associate Editors*: Mario Barra, Anna Maria Birindelli, Giulianella Coletti, Corrado Crocetta, Ornella Giambalvo, Maria Pannone, Isabella Santini, Maria Rita Sebastiani.

SOMMARIO / CONTENTS

MARIO BARRA, *Bruno de Finetti, un matematico geniale al servizio della società (seconda parte) / Bruno de Finetti, a mathematician of genius in service of society (II)*

ANGELA MARTINI, ROBERTO RICCI, *I risultati PISA 2003 degli studenti italiani in matematica: un'analisi multilivello per tipologia di scuola secondaria superiore / PISA2003 mathematical performance of Italian students: multilevel analysis for each secondary school category*

ENRICA AURELI, DOMENICA FIOREDISTELLA IEZZI, *Saperi minimi ed accesso all'Università: l'esperienza del polo scientifico e tecnologico della "Sapienza" / Basic knowledge and University enrollment: the case of "Sapienza" scientific and technological network*

IN ONORE DI ENZO LOMBARDO / IN HONOUR OF ENZO LOMBARDO

ADRIANA CONTI PUORGER, MARIA RITA SEBASTIANI, *Giornata in onore di Enzo Lombardo / In honour of Enzo Lombardo*

GRAZIELLA CASELLI, ENZO LOMBARDO, *Grafici e analisi dei fenomeni demografici / Graphs and analysis of demographic phenomena*

ESPERIENZE E MATERIALI / MATERIALS AND METHODS

DONATA MARASINI, *La Statistica: una disciplina da scoprire / Statistics: a discipline to be discovered*

MARIO DI BACCO, PATRIZIO FREDERIC, *Con chi vuoi volare? / Which company would you like to fly with?*

VINCENZO CATALDO, *Statisticamente parlando … Riflessioni su un'esperienza didattica in un liceo scientifico romano / Statistically speaking: Consideration of a mathematics teacher on a didactic experience in a Roman lyceum*

GRAZIA LAGANÀ, MARINELLA GIOIA, ELENA BIANCO, *Un'esperienza lunga cinque anni / A five years long experience*

ATTIVITÀ IN CAMPO DIDATTICO / TRAINING ACTIVITIES

SILIO RIGATTI LUCHINI, MARIA PIA PERELLI D'ARGENZIO, *La statistica nella scuola di base: un'esperienza a Salvador (Bahia - Brasile) / Teaching statistics in primari and lower secondary school: an experience in Salvador (Bahia - Brazil)*

QUADRANTE NAZIONALE ED INTERNAZIONALE
NATIONAL AND INTERNATIONAL NEWS

Competenze chiave per l'apprendimento permanente in Europa e per il primo ciclo d'istruzione della scuola italiana / Key competences for long life learning in the European Union and for the first cycle of education in the Italian School System
Gara internazionale di statistica per studenti dai 10 ai 18 anni / International Literacy Statistical Project

LO SCAFFALE DEI LETTORI / BOOK REVIEWS

ISTITUTO REGIONALE DI RICERCA EDUCATIVA PER IL LAZIO, *Opinioni comportamenti ed aspettative delle famiglie sul sistema scolastico italiano. Ricerca nazionale, Rilevazione 2005-6*, a cura di Anna Lombardi (Giuseppe Bove, Giovanni Moretti)

ABSTRACTS

BRUNO DE FINETTI, UN MATEMATICO GENIALE AL SERVIZIO DELLA SOCIETÀ (II)

BRUNO DE FINETTI, A MATHEMATICIAN OF GENIUS IN SERVICE OF SOCIETY (II)

MARIO BARRA

Summary: In the centenary of his birth, we try to give a complete picture of Bruno de Finetti's life, character, best scientific contributions in mathemathics and economy, of his philosophy and his research in didactics.

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I RISULTATI PISA 2003 DEGLI STUDENTI ITALIANI IN MATEMATICA: UN'ANALISI MULTILIVELLO PER TIPOLOGIA DI SCUOLA SECONDARIA

PISA 2003 MATHEMATICAL PERFORMANCE OF ITALIAN STUDENTS: MULTILEVEL ANALYSIS FOR EACH SECONDARY SCHOOL CATEGORY

ANGELA MARTINI · ROBERTO RICCI

Summary: PISA 2003 cognitive data on mathematical literacy have been analysed by applying multilevel statistical methods to study the effect of several students and school variables for the three different school categories of the Italian secondary school system (academic, technical, and vocational schools). School level context variables are very relevant and the geographic differences play a very important role, although the magnitude of their effects are partially eased by considering the effect of the average economic-social-cultural status of the school, especially for Southern Italy, but not for Central Italy. By considering the three different school categories, it is possible to isolate significant and different effects of resources, school and class climate. The results suggest that further research is needed in order to explain more in depth the school differences. Finally, the multilevel analysis seems to be a fruitful approach to study the effects of didactic strategies and educational politics on the Italian education system.

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SAPERI MINIMI ED ACCESSO ALL'UNIVERSITÀ: L'ESPERIENZA DEL POLO SCIENTIFICO E TECNOLOGICO DELLA "SAPIENZA"

BASIC KNOWLEDGE AND UNIVERSITY ENROLLMENT: THE CASE OF "SAPIENZA" SCIENTIFIC AND TECHNOLOGICAL NETWORK

ENRICA AURELI · DOMENICA FIOREDISTELLA IEZZI

Summary: The reform of the University system (DM 509/99) established that, before enrollment, students should possess the basic mathematics and Italian language knowledge necessary to enter any university course. The scientific and technological network of the University of Rome "Sapienza" has organised tests to assess content knowledge in mathematics and Italian language of the 18-19 years old students still enrolled in the last two years of upper secondary school.

In this paper, we analyse the main results of the tests provided in 2005. We apply Classical Item Analysis approach to assess the "Sapienza" experience and to compare it with the national scenario.

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GIORNATA IN ONORE DI ENZO LOMBARDO

IN HONOUR OF ENZO LOMBARDO

ADRIANA CONTI PUORGER · MARIA RITA SEBASTIANI

Summary: On September 26, 2007, a meeting was held in honour of Enzo Lombardo at the University of Rome "Sapienza". Two books were presented. The former "Statistica e Demografia: un ricordo di Enzo Lombardo tra scienza e cultura" collects papers by several authors; the latter "Pillole di Matematica. Vitamine per la mente" is a posthumous work by Enzo Lombardo. We report about the most important points, as discussed by the speakers, and we describe briefly the contents of both books.

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GRAFICI E ANALISI DEI FENOMENI DEMOGRAFICI

GRAPHS AND ANALYSIS OF DEMOGRAPHIC PHENOMENA

GRAZIELLA CASELLI · ENZO LOMBARDO

Summary: In this paper, the authors discuss the principal graphical methods which have been used in demographic analysis since 1669. During the first half of the nineteenth century, J.B. Fourier and A. Quetelet used graphical methods efficiently, to help in understanding and synthesizing Demographic phenomena. From 1860 until the more recent years, a number of authors tried to solve the problem of plotting demographic data in three dimensions by age, period and cohort in order to read the dynamics of population processes.

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LA STATISTICA : UNA DISCIPLINA DA SCOPRIRE

STATISTICS: A DISCIPLINE TO BE DISCOVERED

DONATA MARASINI

Summary: The aim of this short note is the diffusion of Statistics. This discipline is not as known as Mathematics or Economics are, but it is strategic in many fields of real life like Medicine, Meteorology, Genetics, Pollution, Finance, Data mining, Forensic science and so on.

It is really crucial to enter into an agreement with schools so that students can be aware of Statistics, and in order to look at the discipline as a choice out of Economics, Mathematics or Computer science. Nowadays we have already taken a step forward, but it is necessary to pay much more attention to diffusion of the statistical disciplines.

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CON CHI VUOI VOLARE ?

WHICH COMPANY WOULD YOU LIKE TO FLY WITH?

MARIO DI BACCO · PATRIZIO FREDERIC

Summary: In the article, we describe the following experiment. We give to lay people, that is, persons without any specific knowledge of probability and decision theory, a hypothetical though not unrealistic scenario. Imagine – we say – two airline companies A and B flying on the same route and taking off at the same time. You judge A's aircraft maintenance to be very accurate, and you assign to "a severe failure occurs" probability g. On the contrary, you consider B's aircraft less reliable so that you assign to the same related event probability kg, $k > 1$. However, you judge B's pilots smarter than A's in case of emergency. Therefore, you assign to event: "if a severe failure occurred, passengers would get safe with an emergency landing" probability s for company A and $sk - 1$ for company B.

Then we ask which company you would like to fly with. The answers given differ among themselves, but their justification is very seldom consistent. We think that it is didactically interesting to show that in the classical decision theory framework, under suitable conditions, both choices can be considered "optimal".

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STATISTICAMENTE PARLANDO … RIFLESSIONI SU UN'ESPERIENZA DIDATTICA IN UN LICEO SCIENTIFICO ROMANO

STATISTICALLY SPEAKING: CONSIDERATION OF A MATHEMATICS TEACHER ON A DIDACTIC EXPERIENCE IN A ROMAN LYCEUM

VINCENZO CATALDO

Summary: Being quickly and precisely informed on what happens in economic, political and cultural fields, is needed for citizenship. Statistics may help fulfill that need. From the pedagogic point of view, statistical methods and tools enhance accuracy in defining phenomena and data; they also make evident the problems posed, by introducing causation hypothesis in a research environment, and they render research conclusions sound and useful. These have been the main reasons why some 17-19 years old students of the

Lyceum “J.F. Kennedy” in Rome have been involved by their mathematics teacher in the competition “Statistics and Society” organised by the Faculty of Statistical Sciences of “Sapienza” University of Rome in 2006. To start with, the teacher helped recall the statistical tools that his students had studied three years before, then he asked his students to find everyday life contexts in which statistics can be found. After this, the students organised a survey in their school, focusing on some aspects of their life that were particularly interesting to them: the University Faculty in which to enroll after Lyceum, the foods they eat, the utilisation of their free-time, and others. The data collected by students and the conclusion they got were organised in a CD Rom that was awarded the prize “Statistics and Society 2006”.

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UN’ESPERIENZA LUNGA CINQUE ANNI

A FIVE YEARS LONG EXPERIENCE

GRAZIA LAGANÀ · MARINELLA GIOIA · ELENA BIANCO

Summary: Nowadays school teachers are more and more aware of the importance of helping students to transform knowledge and skills into personal competencies.

Our experience with some students aged 10-14 of the Institute “Maria Ausiliatrice” in Soverato (Catanzaro, Italy) has demonstrated that statistics, and particularly statistical thinking and reasoning, may help the process of educating students.

We began in 2003 with the project titled “My family and I”, then we went on with “My municipality in figures” (2004), “The trees and I ” (2005), and “Tell me what you eat and I will tell you who you are” (2006). This year, we are engaged in the project launched by the Italian Statistical Society: “Women around us. Let us tell their history with statistics”.

Each project has been carried out by open laboratories with the intervention of external and internal experts in an interdisciplinary environment. The first step in each project consisted in students defining what they where interested in; after this, they drew a questionnaire, collected, organised and analysed data, and then they presented their conclusions by written and oral reports. Statistics has triggered students’ curiosity, has improved their problem solving abilities and has induced them to reflect upon their experiences. In particular, Statistics has facilitated the development of students’ learning processes. Some of them said: “Now, when I have to study a new argument, I pose a question to myself, I collect information or data and I synthesize all of that”.

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LA STATISTICA NELLA SCUOLA DI BASE: UN'ESPERIENZA A SALVADOR (BAHIA - BRASILE)

TEACHING STATISTICS IN PRIMARY AND LOWER SECONDARY SCHOOL: AN EXPERIENCE IN SALVADOR (BAHIA - BRAZIL)

SILIO RIGATTI LUCHINI · MARIA PIA PERELLI D'ARGENZIO

Summary: Statistics in Brazil is little by little improving its prestige in school curriculum due to its importance in the education of future citizenship. This is enlightened by the guidelines of the Brazilian National Curricular Parameters for primary and lower secondary education *(escola fundamental)*.

This paper gives evidence of a teacher-training experience had in 2007 in Salvador, by the authors. This consisted in training mathematics teachers in primary and secondary school on activities on descriptive statistics. 40 in-service teachers attended a 30 hours course, with frontal lessons, workshops and laboratories where they exchanged their ideas with the authors about didactic methods and materials to teach statistics concepts to 6-14 years old students.