Response profiles in the ROSE survey

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Abstract

Science, Technology, Engineering and Mathematics (STEM) are not particularly popular disciplines among University applicants. In addition, there is high rate of dropouts in the first years of these programs. Since motivation is a very important factor in the selection of a University program as well as in students’ success or failure, we have included the National University of Hurlingham to the Relevance of Science Education (ROSE) project. In order to know more about students’ attitudes, a survey was carried out among 359 high school students in Argentina. A four-point Likert scale was used to analyze answers on the basis of the Principal Component Analysis (PCM). Four profile related components were obtained:

- **C1.** Topics in the sections: “what I would like to learn”. 109 context-related topics in Natural Sciences (environmental protection, common affairs, natural phenomena, health, mysteries, CTS, NOS, etc.). Of these, this profile includes aspects related to health and reproduction, in particular sexual health, sex, growth and maturation and diseases.
- **C2.** Aspects the sections: “What I would like to learn” related with technology (functions of technological objects, substances such as petroleum, explosives). Items from the section “My future work” appear less often (such as work with machines, tools or technology, creation or repair of technological objects).
- **C3.** Topics related with “What I would like to learn” mostly appear in two subject groups: mysteries, outer space objects and extraterrestrial life on the one hand; and on the other recent inventions and discoveries. Protection of endangered species is also mentioned.
- **C4.** In the section “My experiences outside school”, the following are mentioned: use of levers, wheelbarrows and binoculars, garbage separation and tire repair.
After analyzing components according to gender, significant differences were observed in the medias. Females show a bigger interest in sexuality and safety issues (C1), as well as activities outside the school (C4). Males are more interested in technology, their future job (C2) and outer space and inventions (C3). Major differences are observed in C1 and C2.

Keywords
STEM, PCA, Gender, ROSE, Science Education.

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Giuliano, Monica is a Professor en Físico-Matemática at the Universidad Nacional de La Plata and has a Master's degree in Psicoinformatics Education and is specialized in Applied Statistics. She is a research professor in the Engineering of National University of Hurlingham and National University of La Matanza. She is a Professor in Probability Course of Engineering. Also, Prof. Giuliano has category II in the Incentive Program belonging to the Ministry of Science and Technology of Argentina and she is Director of research projects related to Statistics and Education, with multiple publications in the field of education and statistics. She has participated in research projects collaboratives involving various universities.

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