VIRTUAL ENVIRONMENT IN SUPPORT OF STATISTICAL LITERACY – AVALE

Irene Cazorla[1], Verônica Kataoka[2], Claudia Borim da Silva[3], Reinaldo Cotrim[4], and Carla Gasparetto[5]
[1]State University of Santa Cruz - UESC, Brazil
[2]University of Bandeirante São Paulo - UNIBAN, Brazil
[3]University of São Judas Tadeu– USJT, Brazil
[4]Foundation for Research of the State of Bahia - FAPESB, Brazil
[5]Federal University of Santa Maria - UFSM, Brazil
veronicayumi@terra.com.br

AVALE is a research and development project of UESC, supported by FAPESB and researches from five different Brazilian colleges do collaborate in it. Its objectives are: a) to offer a virtual interactive learning environment in the WEB, free, for supporting statistics and probability teaching at elementary level; b) to offer didactical sequences (DS) in two learning environments: physical-experimental (paper and pencil) and virtual, in the context of problem-situations in which the students may have a direct participation; c) To contribute to institutionalization of teaching statistics and probability at the elementary level, and to the use of computational resources, and d) to contribute to statistic literacy and scientific formation of the students at public schools.

AVALE is being built on Linux operative system, with the statistics open source software R. The environment offers a personalized system of data input, creating a dynamic electronic sheet in real time, giving statistic tools for dealing with data.

AVALE is being developed by three teams, conformed by: a) statistics educators whom develop and validate the DS; b) statistics experts in programming, developing the computational systems, and c) collaborative teachers, stating the use of AVALE at public schools.

DS's are based on Theory of Anthropology of Didactics, that is, an experimental scheme of problem-situations developed in teaching sessions, from a previous study, characterizing specific objectives in each problem, mathematical analysis and didactical analysis related to the proposed activities for teaching statistics and probability.

Contents on DS's are according to National Curricular Parameters (Brazil, 1998, 2002), in the perspective of statistic literacy and developing of scientific spirit (Cazorla & Santana, 2010). In order to do so, sequences come from contextualized situations in interdisciplinary and transversal subjects, passing through all stages of scientific research (problematizing, constructing hypotheses, collecting and organization data, inferences and communicate results); involving observation, experimentation and random simulation, in two environments (physical-experimental and virtual).

At present moment AVALE has two implemented DS's in Statistics: "Vitruvian Man" and "Planet Water" and two in Probability: "Spaghetti" and "Buffon's needle". Three more DS's are going to be implemented. We hope the didactical sequences, built under a critical dimension and with the idea of scientific discovering and social practice may contribute to give significance to statistic concepts and may help in citizenship formation. And, finally, we hope AVALE may contribute to develop in the students fond feelings towards statistics and mathematics, as well as including digital resources which may be used in large scale at schools.

REFERENCES

Brasil, Ministério da Educação. Secretaria de Educação Fundamental. (1998). *National Curricular Parameters: mathematics.* Brasília: Ministério da Educação/Secretaria de Educação Fundamental (In Portuguese).

Brasil, Ministério da Educação. Secretaria de Educação Média e Tecnológica. (2002). *PCN Secondary Education: Complementary Educational Guidelines to the National Curricular Parameters – Sciences of Nature, Mathematics, and their Technologies*. Brasília: Ministério da Educação (In Portuguese).

Cazorla, I. M. e Santana, E. R. dos S. (2010, prelo). Do tratamento da Informação ao Letramento estatístico. Itabuna, BA: Via Litterarum (In Portuguese).

In C. Reading (Ed.), *Data and context in statistics education: Towards an evidence-based society. Proceedings of the Eighth International Conference on Teaching Statistics (ICOTS8, July, 2010), Ljubljana, Slovenia.* Voorburg, The Netherlands: International Statistical Institute. www.stat.auckland.ac.nz/~iase/publications.php [© 2010 ISI/IASE]