

TEACHING STATISTICS – TEACHING MATHS AN EXPERIMENTATION ROUTE

Gaetana Bartolomei, Ornella Giambalvo
ornella.giambalvo@unipa.it

We would like to point out an experimentation performed in the school year 2010-11, in the first year of a Professional School in Palermo (Fashion course). A lot of ideas, such as beauty, proportionality, perfection can be found in many professional subjects and also in basic ones (Maths, Italian language, English language, Sciences, etc.). For this reason, we tried to plan a macro cross-curricular didactic unit, in which we inserted these concepts and subjects, in order to develop some statistic skills.

Taking the m@t.abel (E-learning basic Maths) experience “L’uomo di Vitruvio”, the famous picture by Leonardo da Vinci showing the perfection of the human body, as a model, performed in a middle school (Bartolomei et al., 2010), with the coordination of M.G. Ottaviani and G. Anichini, we tried to adapt these materials and methods to a professional school. This time we planned a cross curricular unit in order to teach statistics as a cultural and key competence, experimenting the scientific method (Batanero et al.).

We asked the students to start from a problem: “Three friends discuss on the human body beauty. Everyone agrees that beauty is a subjective concept. Many students ask if there are any common characteristics to define a well done body”. The next step was to analyze some of Leonardo’s statements on the Vetruvian man on the ratio between the parts of the human body (for example, “the arm is one-fourth of the height”). This didactic activity, organized by the Maths teacher, involved other three teachers and lasted for 50 hours, not taking into account the planning and presentation to the class. The chosen methodologies were: brainstorming, problem solving, cognitive activity, individual and group works, lab, interactive and frontal lectures.

The students documented their activities in a diary. They measured the length of some parts of the bodies of all the school students in the first year born in 1996. Then they recorded, tabulated the data and, at the beginning, the results were represented graphically. Later on, data were processed by finding the average, mode and median, the range, and some elementary measure of correlation. The students verified Leonardo’s hypotheses and, with their utmost surprise, they found out they were reliable. During the activity the students produced: a diary, two glossaries (Italian and English) of the main parts of the human body, technical files, a power point presentation and an individual report each.

The assessment of the experimentation provided the teachers’ evaluation (based on the products and the acquired skills) and the students’ self- evaluation. Teachers used a shared evaluation grid where an individual score (for every subject or group of subjects) was assigned to each student. Students had their own grid for self-evaluation, too.

To conclude, we would like to show the results in learning statistics of two groups of students: the first is the group of students following the experimentation, the second one is a group of students learning statistics without the experimentation.

REFERENCES

- Bartolomei, G., Della Torre, G., Perelli M. (2010)
http://risorsedocentipon.indire.it/offerta_formativa/f/index.php?action=copertina_percorso&lm_s_id=282&id_ambiente=7
- Batanero, C, Burrill, G., Reading, C. (editors) (2011), *Teaching Statistics in School Mathematics- Challenges for Teaching and Teacher Education*, Dordrecht, Springer, New ICMI Study Series, Volume 14.