Learning & Creativity plan "All equal, all different"

Report

The Learning & Creativity plan "All equal, all different" was implemented in November 2021, in a second class (grade 10) of the Tourism Course of the ITC and PACLE Elsa Morante of Limbiate.

The driving question was: "Does the length of the leaves of the Prunus pissardii plant follow a precise law of frequency distribution?"

Initially the science teacher introduced the topic of the kingdom of plants to the students, focusing on their characteristics, with the use of textbooks and videos.

After this introduction, the students went to the large garden of the school where the research of the plant "Prunus pissardii" and the collection of the leaves of this plant began (about 1500 leaves were collected).

Subsequently, in the IT lesson, the re-processing of the data began. Initially, the students, divided into groups, measured the length of the leaves and rearranged the data in paper form. Then a discussion began with the IT teacher to find the most effective way to insert the collected data into an excel sheet with its graphic representation. After a series of proposals the students decided, also guided by the teacher, to create two excel sheets: one (detail) in which each group inserted the collected data according to the length classes. In the same sheet the "summation" formula was used to obtain the totals for each length class. This total was automatically reported in the general sheet 1 (with a simple link between worksheets). Sheet 1 also includes a chart that was created dynamically as data were inserted into the detail sheet.

As homework, the mathematics teacher assigned research on the mathematician Gauss and the Gaussian curve.

In the following lesson, the teachers of mathematics and computer science together held a brief class discussion during which the results of the research carried out by the students emerged.

The mathematics teacher focused the attention on the characteristics of the Gaussian curve and invited students to make a parallel with the graph obtained with their work with the leaves. They realised that the two graphs basically coincided. To further demonstrate this, students were asked to calculate the mode, median and arithmetic mean that, in the Gaussian curve, must coincide.

On this occasion, students had to think about how to do the calculations using the excel sheet. This activity completed the general worksheet.
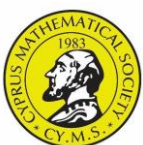
This was followed by a lesson with the co-presence of all three teachers who participated in the L&C plan in which a discussion began during which students were invited to look for links between the work done and the real world.

To the amazement of the students, who until then had thought that they had simply calculated the lengths of the leaves of a plant with some mathematical calculations, they realized that this type of activity is also carried out for the search for scientific data that then provide the basis for making choices or to discover diseases or other. An example above all that greatly affected students refers to how the parameters related to blood tests are determined. The ranges that appear in blood tests derive precisely from a study based on the analysis of the Gaussian curve.

The results of the work were then summarized and shown on a poster created with the Spark Adobe program. Thhe poster can be seen below: