

We teach Science in our schools

A test for the schools:

School'sname: **"Istituto Comprensivo Settanni-Manzoni**

City: **Rutigliano**

Country: **Italy**

Number of students at school: **395**

Students' age: **6-10**

Compulsory age at school: **6-16**

What grade do you start teaching Science? **1st grade**

Is Science a subject or you teach it in a group of subjects (i.e. with History, Geography...)?

Science is a subject with its own program present in the national curriculum.

Do you teach Science in English? (CLIL)

Last year we made a CLIL project in grade 5

Do you teach the same content every year but deeper when the students get older? **Sometimes the topics are the same and deepened over the years, sometimes they are specific to some grades, this happens above all in grade 4 and 5.**

Subjects in Science

Content	Grade/age	Observations
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Human body	Grade 5 - 11	The anatomy of the human body and its functions is a specific topic in grade 5.
Plants	2, 3, 4 grade 7-9	The observation of living beings is repeated in several grades and at different levels of difficulty.
Animals	Different grades	
Matter	3 -4 grade 8-9 anni	The study of the matter usually begins in the third grade starting from observations on the states of matter (solid, liquid, gas) and related transformations.
Machines	/	/
Electricity	5 grade 10-11	Elements of physics are typical contents of 5 grade.
Reproduction	4-5 grade 10 -11	The reproduction of living beings: plants, animals and humans is started from grade 3 and then continues with the reproduction of the man in grade 5.
Cells	5 grade 10-11 anni	The study and observation of various types of cells takes place in grade 5.

A guide to help teachers who works on the project:

Grade/age	Books (text books, another kind of books) Who uses them?	Students activities: Questions, mind maps, pictures... look for information...	Methodology: Traditional* Flipped classroom, project based learning, game based learning, others.	Some tasks which students love doing
<p>1-2 grade Age 6-7</p>	<p>Activities are carried out mainly related to the education and discovery of the five senses. The lessons take place in groups and essentially involve the discovery of the properties of objects or "things" through touch, hearing, smell, taste, sight.</p> <p>All this takes place in the classroom environment or in the scientific laboratory through a mainly recreational-laboratory teaching.</p> <p>We use structured cards or drawings of children to illustrate what has been done, The students also elaborate short phrases to summarize the activity.</p> <p>Very often we use the Interactive board to present video lessons or watch scientific films.</p>			

<p>3-4-5 grade Age 8-9 -10</p>	<p>In these grades the activities take place in the classroom but several times in the laboratory. The teacher presents the PROBLEM and the students ask questions and try to formulate solution hypothesis to the problem. The teacher plans the experiment and prepares the material, the pupils EXPERIENCE, LOOK UP, VERIFY, and together they elaborate the Conclusion (EXPERIMENTAL METHODOLOGY of GALIEO)</p> <p>The students also deepen the subject through textbooks or find news on the net. Usually, they elaborate maps of synthesis on the subject that are read and discussed together in the class. Sometimes in grade 5 the methodology of the flipped classroom is used but this teaching is not always effective for the slower students and with less instruments!</p> <p>We use also the frontal teaching based on the listening of the lesson, with subsequent development of the cooperative learning: the pupils listen but next, organized in groups, elaborate the didactic contents and plan the possibilities of support activities.</p> <p>They use textbooks, multimedia, ...</p>
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*The teacher explains the lesson, the students listen to him/her and then they do the tasks.

We do experiments in Science:

What?/	Materials/kit	Step 1	Step 2	Step 3

<p>FLOATING OF THE BODIES (grade 2)</p>	<p>Common objects (wooden stoppers, pencils, scissors, glue, plastic glass, nail), a bucket full of water</p>	<p>After the presentation of the problem Hypothesis are made about the floating of objects</p>	<p>The experiment is prepared and students observe what happens.</p>	<p>The experiment is performed by immersing the objects in the bucket full of water. The observations in a table are recorded and the hypotheses made are verified. Conclusions are drawn.</p>
<p>Chlorophyll extraction</p>	<p>Green leaves Glass jar Ethyl alcohol</p>	<p>The leaves are cut and macerated in alcohol</p>	<p>They are left under observation for about 4 days</p>	<p>Observation: after 4 days the alcohol has turned green. Conclusion: the leaves contain a green substance called chlorophyll</p>
<p>Chromatography</p>	<p>Green leaves Glass jar Ethyl alcohol Filter</p>	<p>The leaves are cut and macerated in alcohol</p>	<p>With a pipette you take the extracted chlorophyll and let it fall on a sheet of filter paper</p>	<p>When the sheet dries appear some colours from green to yellow: they are the coloured pigments contained in the leaves</p>

				together with the chlorophyll.
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A test for students:

Students	Have you enjoyed the task?	Have you work on your own or in a team?	Have you left your desk cleaned?	What have you learned?
1	Yes, a lot	In a team	In turn we put order in the laboratory or in the classroom under the guidance of the teacher.	I have learned that not all bodies float and that the float depends on many factors but above all on the density of a body (Archimedes' principle)
2	Yes, when we do science we really like doing experiments.	We almost always work in a team	In turn we put order in the laboratory or in the classroom under the guidance of the teacher.	I learned that the green colour of the leaves is given by the presence of chlorophyll which is found in some

				cells called chloroplasts.
3	Yes, when we do science we really like doing experiments.	We almost always work in a team	In turn we put order in the laboratory or in the classroom under the guidance of the teacher.	I learned that the leaves contain other coloured pigments: xanthophyll, anthocyanin, carotenes that emerge in some periods of the year: so in autumn the leaves become yellow, red ..