FINAL VERSION
CLIL PROJECT: Subject: Science

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MODULE: L'UNIVERSO E LA TERRA

- Introduction

People have always been interested in space and the fascinating and mysterious factors that surround it. Our society and our everchanging modern technological world are proving just how important our solar system is to our future. Scientists are trying to find out what lies beyond the solar system. They are also interested in finding out how far space extends. With astronomy, there are so many areas to consider and so much of our universe to study.

- Place in the curriculum

This module is the first step of a yearly curriculum of a 2nd year Tecnico Commerciale (IGEA). Its title is "L'Universo e la Terra" and it is divided into four units:

1. L'UNIVERSO 6 hours
2. IL SISTEMA SOLARE 10 hours
3. IL PIANETA TERRA 7 hours
4. LA LUNA 5 hours

- .Description of the module

Level and class	**Time**	**Aims and objectives**	**Material and Aids**	**Working techniques**	**Place**	**Assessment and Evaluation**
A2 - B1 (mixed ability class) 2nd year Tecnico Commerciale	28 hours	1. Aims: - stimulate sts' curiosity, creativity and motivation - look for emotional involvement - appreciate and create awareness about the universe and the earth 2. Learning objectives: Sts will learn about - the universe (stars and galaxies, cosmological theories, diagram	- videobeamer - pictures of the sun and of the planets - models of the planets and of the sun - student's book - the Net	- multisensory approach -communicative approach - frontal lesson - Individual , pair and group work - brainstorming - notetaking -problem solving	Lab Classroom	Assessment - quiz (composed of questions about the module) Evaluation - interest, participation, emotional involvement, motivation

		H-R) - the structure of the solar system (orbit, satellites, planets) - the sun (composition and characteristics of the layers) - Keplero and Newton - the earth (shape and dimensions, rotation and gravity - the moon (main characteristics, movements, lunar phases, hypothesis about its origin)		- predictions		

UNIT: THE SOLAR SYSTEM

This unit is divided into 5 steps:

1. La struttura del sistema solare 1h
2. The sun 3 h
3. Keplero e Newton 1h
4. I pianeti, satelliti, comete, asteroidi 3h
5. Assessment 2h

Part only for the English teacher	Part to be done as a team, in co-presence.	Part only for the Content Specialist
· lesson 2: (2h) the interior of the sun: vocabulary: layers and creation of a sun model · lesson 4: (1h)the nine planets and their position in the solar system (terrestrial and jovial planets)	· lesson 1: English teacher (15mins) vocabulary: structure of the solar system: stars, planets, satellites; Science teacher (45mins) explanation of the astronomic unit, gravity, distances · Assessment (2h)	· lesson 2: (1h) sun temperatures, deeper explanation of the sun layers: diameter, composition, temperature, pressure, energy, prominences, solar eclipse, sunspots, solar cycle · lesson 3: (1h) Keplero and Newton heliocentric and geocentric system, Keplero laws and Newton law · lesson 4: (2h) elongation, , planets rotations and revolutions around the sun, deeper explanation of the planets: temperature, pressure, atmosphere,

		distances, satellites, comets and asteroids

Time	Pre requisites	Skills	Aims and objectives	Material and Aids	Working techniques	Place	Assessment and Evaluation
7 hours	- stars and galaxies	Sts will practise: the four skills Speaking Listening Writing in an integrated way reinforcing and improving their grammar and vocabulary	Learning objectives: Sts will learn about - the structure of the solar system - the sun - Keplero and Newton - Planets, Satellites, asteroids, comets Aims: - stimulate sts' curiosity, creativity and motivation - look for emotional involvement - appreciate and create awareness about the solar system	Videobeamer Students'book Pictures Models The Net	- multisensory approach -communicative approach - frontal lesson - Individual , pair and group work - brainstorming - notetaking -problem solving - predictions	Lab Classroom	- activity: drawing of the solar system - writing a diary Interest, emotional involvement, motivation, participation

INTEGRATED TEST

Activity:

Draw the solar system taking as a point of reference the earth. Pay attention to the real dimension of the Sun, planets and satellites and their orbits and label them.

Writing: Imagine you are on a space shuttle travelling around the solar system. Write a diary where you express your own sensations and describe what you can see out of the shuttle window.

ASSESSMENT GRIDS and EVALUATION
Cognitive aspects
English Teacher

1. Drawing
   - Label

4	All planets and are labelled by name with correct spelling, neat writing
3	Almost all planets are labelled by name with correct spelling
2	Some planets are labelled by name with correct spelling
1	Planets do not have labels

2. Writing a diary
   - Writing

4	Excellent use of the vocabulary, grammar structure and linkers
3	Good use of the vocabulary, grammar structure and linkers
2	Satisfactory use of the vocabulary, grammar structure linkers
1	Unsatisfactory use of the vocabulary, grammar structures and linkers

Science Teacher

1. Drawing
   - Content

4	Corretti i pianeti e i satelliti, mostra differenza nelle misure e nel corretto ordine
3	Corretti i pianeti e i satelliti alcune imprecisioni sulle misure e il corretto ordine
2	Molti imprecisioni riguardanti i pianeti e i satelliti la loro posizione e dimensione
1	Pianeti, satelliti, misure e ordine scorretti

2. Writing a diary
   - Content

4	Eccellente la descrizione del sistema solare, approfondita e dettagliata
3	Buona la descrizione del sistema, piuttosto approfondita e dettagliata
2	Sufficiente la descrizione dei contenuti, sufficientemente approfondita e dettagliata
1	Non sufficiente la descrizione dei contenuti, non sufficientemente approfondita e dettagliata

Non Cognitive aspects

4	Excellent participation, motivation, emotional involvement and interest
3	Good participation, motivation, emotional involvement and interest
2	Satisfactory participation, motivation, emotional involvement and interest
1	Unsatisfactory participation, motivation, emotional involvement and interest

LESSON: THE INTERIOR OF THE SUN (PART ONLY FOR THE ENGLISH TEACHER)

Time	**Pre-requisites**	**Skills**	**Aims and objectives**	**Material and Aids**	**Working techniques**	**Place**	**Assessment and Evaluation**
2 hours	Linguistic	Sts will practise: the four skills Speaking Listening Writing in an integrated way reinforcing and improving their grammar and vocabulary	Learning objectives: Sts will learn to - describe the composition and characteristics of the layers of the sun -build/create a three-dimensional model of the sun with plasticine, identifying six layers of the sun's interior -memorize vocabulary: sun, corona, transition zone, chromoshpere, photosphere, convection zone, core	-Plasticine for each student: one block each of the primary colours and white - Sharp knives - Black squares of paper for mounting - White pencils for labelling - Pictures of the Sun's interior: one for each student - Model completed by the teacher - Videobeamer	-Multisensory approach -Communicative approach -Individual work, pair work -Brainstorming -Notetaking	Lab	Assessment and evaluation for this lesson should be based upon neatness, adherance to instructions, and accuracy of layers in the model and in the drawing.

DEVELOPMENT OF THE LESSON

TIME	CONTENT FOCUS	WORKING TECNIQUES	MATERIALS and AIDS	TEACHER ACTIVITY	PUPIL ACTIVITY
5 mins	**Warm up:** Checking previous knowledge	Brainstorming and bubble gram,	Blackboard and coloured chunks Sun picture (1) Videobeamer	Leads in discussion and exposition - Guides question: What do you know about the sun? - Aim to elicit: 1.Sun is a star 2.Sun is at the centre of the Solar System 3.Sun is energy 4. Sun gives off heat and light. 5. Sun looks yellow from the Earth	Discussion and exposition session - response to the question posed by the teacher
30 mins	**Introducing the Sun and its layers** **Learning vocabulary**	Communicative approach	Videobeamer Interior Sun picture(2)	Introduces the Sun and its layers using the Interior of the Sun picture - asks students to reflect on the picture and on the layers and asks them How many colors do you see? What are the different colors referred to? - distributes interior Sun pictures without the name of the layers (3) - lists all the layers, one by one and explain them using PP presentation	Listen to the explanation and give feedbacks Write on the pictures the name of the seven layers as the teacher lists them Repeat the layers and try to memorize them. Ask information about the layers
10 mins	**Introducing the hands-on activity**	Multisensory approach and	-Plasticine -Sharp knives	Explains the process of this part of the lesson as follows:	Listen to instructions

		individual/ Pair work	-Black squares of paper -White pencils -Interior Sun picture (3) - model completed by the teacher	1. students will each receive blocks of plasticine; this must be used carefully to avoid waste. 2. models should begin very small (Sun's core should be about the size of a small marble). 3.students must be careful when adding additional layers to: -pay attention to relative thicknesses of layers -avoid pressing current layer into the previous layer,mixing them - make layers as smooth and round as possible 4. students can practice their color mixing skills to create pleasing colors for each of the Sun's layers; colors used are unimportant, but completed model must be accompanied by a color key indentifying each layer of the Sun. 5. when all layers have been carefully added and Sun is smooth and round, students should approach teacher for supervised use of sharp knife to cut away approximately 1/4 of their model (in pie shape), revealing the interior	
60mins	**Hands on activity**	Multisensory approach and individual/ Pair work	-Plasticine -Sharp knives -Black squares of paper -White pencils -Picture of the interior of the Sun - model completed by the teacher	Monitors and supports: teacher monitors pupils' progress providing guidance and support where necessary	Independent/pair work

10 mins 5mins				The teacher takes homes her sts' models and drawing in order to assess them	Upon completing their models, students will carefully draw a schematic diagram of the interior Sun with layers' name in their Science Journal. Then, they expose their models and drawings

GLOSSARY

Convection zone: the region of the interior of the Sun which lies just below the surface. Hot material is brought up to the surface and the cooler material flows down towards the centre in a constant cycle

Core: the centre of the sun

Corona: the thin and hot upper atmosphere of the Sun visible only with special filter

Chromosphere: the lower layer of the atmosphere of the Sun

Photosphere: the surface of the sun

Radiation Zone: the inner region of the solar system

Transition zone: the layer of the atmosphere of the Sun