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Educators' Information Pack



Introducing *Innovative Educational Material* and their application in class through the use of appealing True-3D material.

January 2011



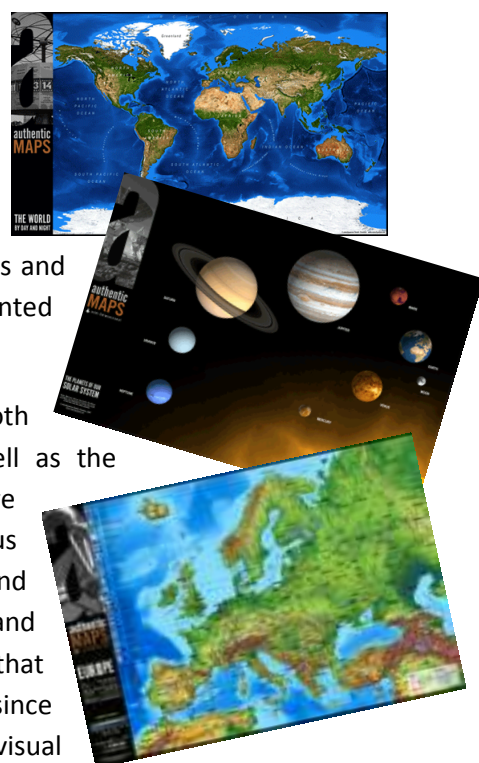
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Introduction

Gryphon Malta is the sole distributor in Malta of true-3D material manufactured by a renowned German company. This organisation was set-up with the objective of providing **innovative teaching material** to schools. The innovation currently proposed are cards and maps using 3D technique. In a number of countries around Europe, such material is being recognised as the new generation of teaching material since three-dimensional structures are being understood spontaneously, thus *speeding up learning* significantly in all age categories. A case in particular are the 3D-maps whereby seeing landscapes in various perspectives, continuously discovering new details and experiencing temporary sequences¹, each class gets an unprecedented superiority in terms of information.

All 3D material was specifically selected by **Gryphon Malta** so as to fit both the educational curricula for primary and secondary classes, as well as the majority of development plans designed for schools. Pupils will improve their learning experience through **repetitive visual interaction** thus enabling students to effectively establish a link between schooling and their personal experiences where learning becomes more effective and fun! The following information will give an overview of the material that was specifically selected to fit educators' **active learning strategies**, since students will have personal involvement in their learning through visual interaction.



Available True-3D material for Primary and Secondary Classrooms

The **True-3D maps** and **Flip-image maps** offer an innovative teaching experience both to teachers and pupils. Teachers, especially, can use these maps repeatedly to explain a number of scientific or topographical facts to pupils, who in turn have been observed to interact more with such maps. True-3D images fascinate both young and old alike, all over the world.

¹ **Edward de Bono** states that: *"We need creativity in order to break free from the temporary structures that have been set up by a particular sequence of experience."*



Flip-image Continents Map²

Flip-image maps show you two states in one picture, in this case the world **Continents** by day and by night. The flip-image from daytime to night-time can be observed by moving slightly from left to right or vice-versa.



This innovative learning product will promote understanding through visual interaction. A number of schools in other countries have reported that both pupils and teachers are enthusiastic about the potentialities of such maps for modern **geography** lessons since pupils are engaged and show personal involvement in their learning.

This *innovative teaching product* will assist teachers to explain a number of study areas, which among others include:

- Continents' names, sizes and relative positions in the world;
- Areas in continents covered by a high concentration of vegetation or desert, and their relative share to the size of the whole continent;
- Names of the oceans and their relative location to the continents;
- Deduce the depths of oceans depending on the colour shade – the darker the area, the deeper the ocean;
- Positions of continental planes, rises and ridges;
- Parts of the world that are covered by ice and their relative coverage share to the continent;
- Viewing the *map by night*, one can deduce:



the level of industrialisation of a continent or a particular country by observing the level of light concentration during night time; and



how the world looks from space during night-time and the level of light pollution in each relative country or continent.



² Map dimensions are 67.5 cm x 40 cm. It comes with adhesive hanging tabs.



❖ True-3D Europe Map³

This **Europe** map illustrates true three dimensional imaging of the topography of each country in this continent. Within easy reach in classrooms, a country's topography in True-3D becomes intuitively comprehensible. Drawing your pupils' attention becomes quite easy. In fact, a depth of up to 4000% will guarantee a unique dimensional perception. Seeing landscapes in various perspectives, continuously discovering new details and experiencing temporary sequences, each class gets an unprecedented superiority in terms of information.



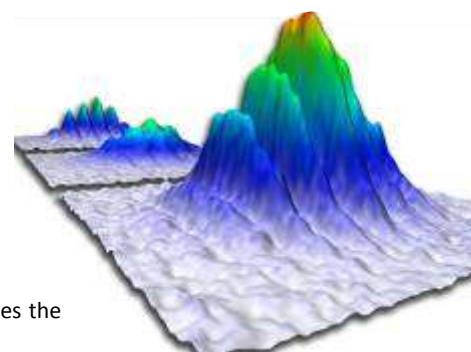
This innovative learning product, which permits repetitive visualisation also due to its appealing factor, will promote understanding through visual interaction. If such maps are hung prominently (*ideally at eye level*) in each classroom, pupils will rapidly learn the names of European countries, their respective capital cities and relative size within the European continent. With these maps, the prompt understanding of reliefs⁴ is easy even for slow learning pupils since fundamental facts are quickly understood.

The apprehension and knowledge of European countries, together with their unique topography and distinct characteristics are easily presented in this *innovative teaching product*. Such a map will assist teachers to explain a number of characteristics, which among others include:

- Names of all European countries, their respective capital cities, surface area and their relative position on the continent (*Scale: 1:9,000,000*);
- Topographical features in three dimensional depth clearly show the mountain ranges and valleys that mark the European terrain;
- Different colour shades of the European map gives a clear elevation of the terrain altitude from sea level in meters;
- National borders and flags of each country are clearly listed;
- Population size for each major capital city is clearly indicated;
- Names of all the seas that surround and touch the European continent;
- Names of major rivers crossing between European countries are clearly indicated;
- Depth of the waters around Europe is clearly shown through the use of different shades - the darker the area, the deeper the waters (depth shown in meters);

³ Map dimensions are 68.1 cm x 47 cm. It comes with adhesive hanging tabs.

⁴ This refers to land elevations whereby this European geographical map demonstrates the variations in height of a land surface, shaping the landscape into hills and valleys.



- A small part of the African and Asian continent are also displayed with the same three dimensional topography. Countries falling outside Europe but which are included in the map are also listed;
- This Europe map also includes an indication of: the total surface area, the total number of inhabitants, the largest city, the longest river, the largest lake, the highest mountain and the lowest point in the sea in the European continent.

Quality Educational Products

The level of map detail combined with the visual three dimensional affect, makes this and all the other maps a unique, creative and innovative teaching product. These world unique True-3D maps have earned the producer company⁵ the most important world championships of the IMTA (International Map Trading Association), namely: **the Gold Award “Best Wall Map 2007”** and the **“Overall Winner 2007” Gold medal**. These maps were also awarded with the **“Certificate of Quality of the Worlddidac Foundation”** in 2008 and regained the IMTA’s **Silver Award “Best Wall Map 2009”**.

These awards are all certificates of the quality level achieved both as an educational material as well as a genuine 3D and innovative product.



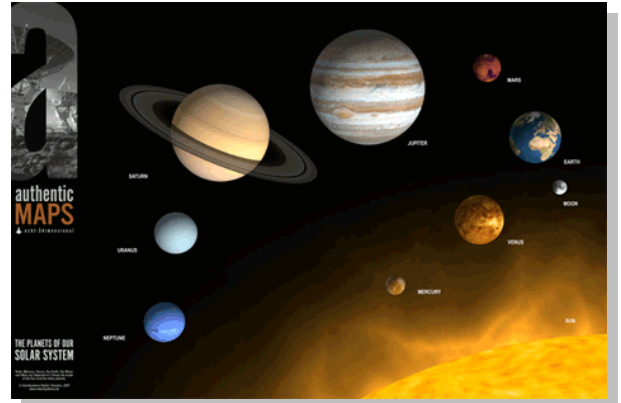
⁵ **mbmSystems GmbH** is the producer of these innovative high-tech-media and is the patent owner of topographical maps and *three-dimensional visually ascertainable maps*. **mbmSystems GmbH** is a Dresden (Germany) based company with distribution partners all over the world. **Gryphon Malta** is their sole agent and distributor in Malta.



❖ True-3D Solar System Map

True-3D images of **planets within our solar system**, as photographed by NASA's space probes, are brought to the classroom through this innovative teaching product (map dimensions are 67.6 cm x 45 cm).

Watching the planets on a daily basis, pupils will learn to identify the planets, their names, comprehend their different structure, colours, relative sizes and surface features. Learning about the planets of our solar system was never so easy and interesting.



The map is designed in such a way so as to show the planets' relative sizes and positions from the Sun. Mercury, Venus, Earth, Moon and Mars have been magnified 5 times, in relation to the size of the Sun and the other planets, in order to be visible on the map. Earth is the only planet that is shown with its satellite, the Moon. The map also shows some solar features as well as activity both on its surface (photosphere granules) and in its corona (prominences). Teachers can use these features to expand more on the solar activity, solar features, temperature, gravity and the sun's effect on our planet Earth following a prominence eruption, such as heat waves and magnetic storms or interferences here on Earth.

The Planets and their moons can be observed in **maxi-card** sizes (21.1cm x 21.1cm) which the teachers can use as show-cards during class explanation, while the pupils can use the planets **postcard** collection (size: 14.8cm x 10.5cm) in class to apprehend better what the teacher is showing. Through this appealing and innovative 3D material, teachers can explain in more detail each planet's characteristics and composition, their respective moons and any particular surface features.

Such material is ideal both as class material (since it is *reusable*) as well as and for students' projects. Gryphon Malta will make available teachers' guides and students' worksheets for the eventual use of this material during **science classes**.



Application of True-3D material in Primary and Secondary classes

Studies have shown that children learn most effectively when they are exposed to an activity-based learning environment. This means that children can:

- 🌐 actively participate in interdisciplinary inquiry based learning
- 🌐 engage in problem solving activities
- 🌐 think creatively and critically
- 🌐 question and test the theories they hold of the world around them
- 🌐 work co-operatively
- 🌐 initiate topics of interest
- 🌐 experiment with real materials
- 🌐 apply their knowledge to real life situations
- 🌐 monitor their own progress, enabling them to know the pleasure of accomplishment



Teaching and learning activities should be carefully designed to allow children not only to be actively involved in the learning process but also to take responsibility for their own learning.

In reality, students spend a lot of time listening to their teachers, writing and doing class work in their school environment. However, very often, they do not have the opportunity to apply what they learn. Doing activities through the use of these 3D-learning materials will enable pupils to be interactive in a school environment. The activity really awakens their curiosity and interest in the discussed subject. By doing so, teachers will be delivering an activity in a way that actually motivates pupils to learn.

One should always keep in mind the basic concept of *active teaching and learning processes* whereby: **students hear and forget; they see and remember; they do and understand**. Thus class group work and activities based on resource-based learning will entice students to take responsibility of their learning and to take ownership of their ideas and work. By using appealing learning material students are actively involved in learning. This allows them to acquire team dynamic skills and process skills during their class presentations.

Gryphon Malta selected this innovative learning material to enhance the deliver of the *National Minimum Curriculum* for primary and secondary classes, in particular:

- **Social studies** primary curriculum from Year 3 to Year 6⁶;
- **Science** primary curriculum from Year 1 to Year 6⁷;
- **Geography General** secondary curriculum from Form 1 to 5⁸; and
- **Integrated Science** secondary curriculum from Form 1 to 5⁹.

Performing class activities using these 3D innovative teaching materials will strengthen what the **National Minimum Curriculum** requires when pupils are learning science, namely:

“ ... it emphasises the need for children to think about the scientific activity in order to be able to make sense of and understand the scientific concepts being introduced. The construction of meaning can take place both on an individual level when a child tries to make sense of the phenomena under study, or else within a social context where a scientific concept is being discussed within a group.”¹⁰

The **National Minimum Curriculum** elaborates on the aspects of **knowledge, skills and attitudes** in science, and through the use of these true-3D material pupils will under the **Knowledge dimension**:

- arouse their curiosity about natural phenomena, different species of animals and other fauna, and other things happening around us. This will stimulate the posing of questions about these subjects;



⁶ **Primary Social Studies Syllabus** in particular *“Ambjent Ġeografiku”* and *“Ambjent Soċjali”*: (a) *“Il-Klima u t-Temp”* in particular 3.1.3 and 5.1.3; (b) *“4.3: L-Użu tal-art u tal-baħar, riżorsi u tibdil”* in particular 4.4.5 and 4.4.6; (c) *“4.3: Jien u l-Ambjent”* in particular 4.3.4; (d) *“6.2: Il-Pajsaġġ u l-Proċessi Fiżiċi”* in particular items 6.2.1, 6.2.7 up to 6.2.10.

⁷ **Primary Science Syllabus** in particular: (a) *“Sharing our World: Plant Life”* in particular 1.2.1, 2.2.1, 3.2.1, 5.2.1, 5.2.2, 6.2.1; (b) *“Materials around us: Our Planet and its neighbours”* in particular 1.11.1, 2.11.1, 2.11.2, 3.11.1, 3.11.2, 4.11.1, 4.11.2, 5.11.1, 5.11.2, 6.11.1, 6.11.2; (c) *“Other Animals and Us”* in particular 2.1.1, 4.1.1, 5.1.1, 6.1.1; (d) *“Habitats”* in particular 4.3.1; (e) *“Light”* in particular 6.8.3.

⁸ **Geography General syllabus** in particular: (a) *“Map reading and interpretation”* in particular 1.1.2, 1.1.3, 3.1.1; (b) *“Weather and Climate”* in particular 2.2.12, 5.2.3, 5.2.5, 5.2.7; (c) *“Landforms and processes”* in particular 2.3.12, 2.3.14, 2.3.15, 2.3.23, 2.3.26; (d) *“Socio Economic Human Systems”* in particular 2.4.3, 4.4.10; (e) *“Environmental Concerns”* in particular 5.5.6; (f) *“Location and Places”* in particular 1.6.1-3, 1.6.6, 2.6.5, 2.6.9, 2.6.10, 2.6.11, 2.6.12, 2.6.14, 2.6.15, 2.6.16, 3.6.6, 3.6.7, 3.6.9, 4.6.3, 5.6.1-4, 5.6.6, 5.6.7

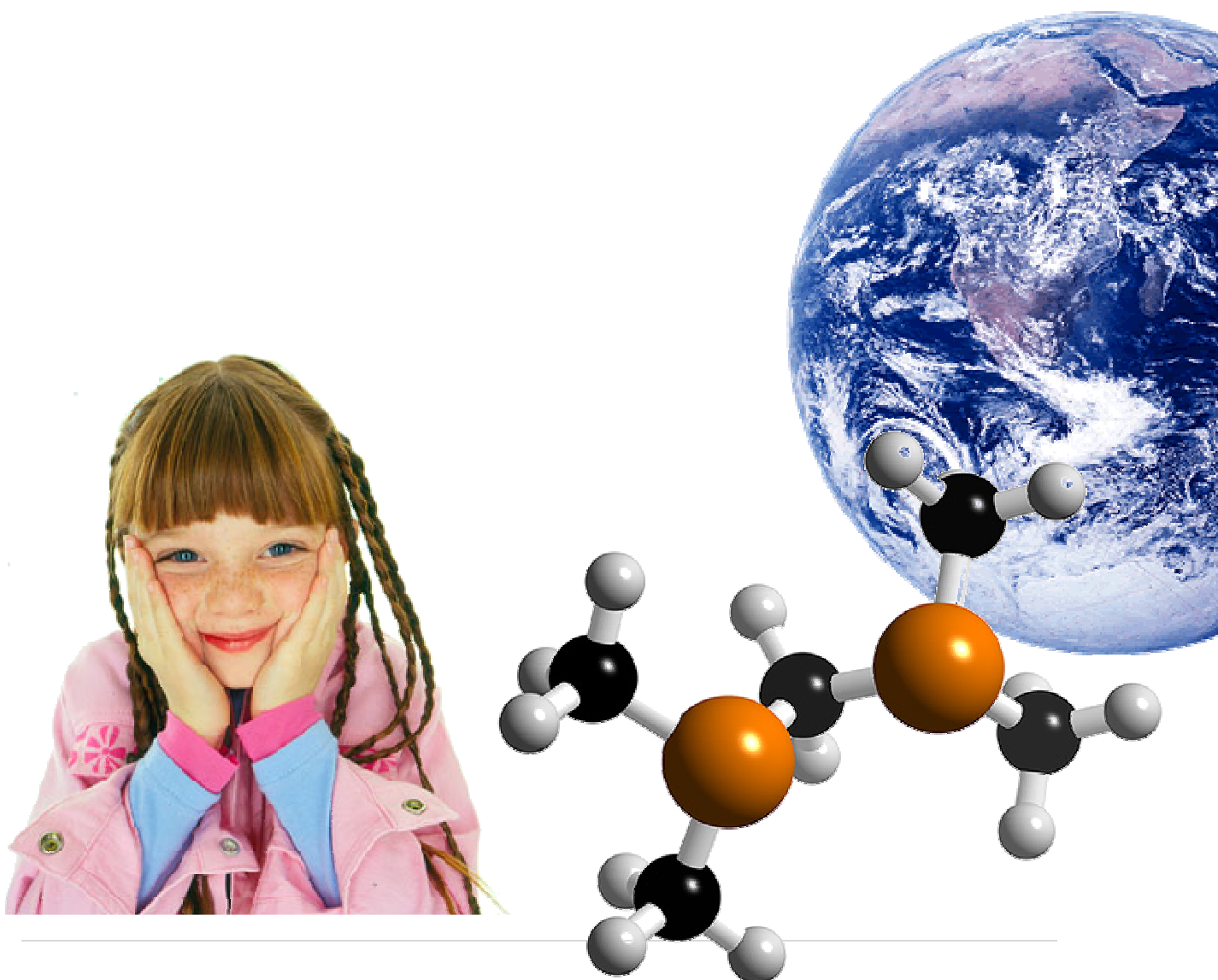
⁹ **Integrated Science syllabus** in particular *“Concepts and Processes”*: **Strand 2** – Life Science and **Strand 4** – Earth and Space Science. In terms of units the ones that mainly apply include: **Unit 2** – The Living Environment and **Unit 10** – The Solar System and Beyond

¹⁰ Primary Science Syllabus for Primary Schools, *How do children learn science*, pg. iii

- have a systematic means of asking and attempting to answer questions arising from observations especially following class interaction of particular subjects; and
- recognise that students have different learning abilities and so experience science differently. The latter is mainly observed during group class work where pupils react differently to such 3D material since it entices their creative and imaginative skills.

Under the **Skills dimension**, pupils will have the ability to develop cognitive skills related to science such as acquiring scientific language, making observations, gathering information on the subject matter, making generalisations, communicating and carrying out investigations. All this could be achieved in class by splitting pupils in groups to identify and describe the 3D motifs (be it planets, animals, flowers, dinosaurs, etc.) and talk about their characteristics following research done at home or in the library as a group.

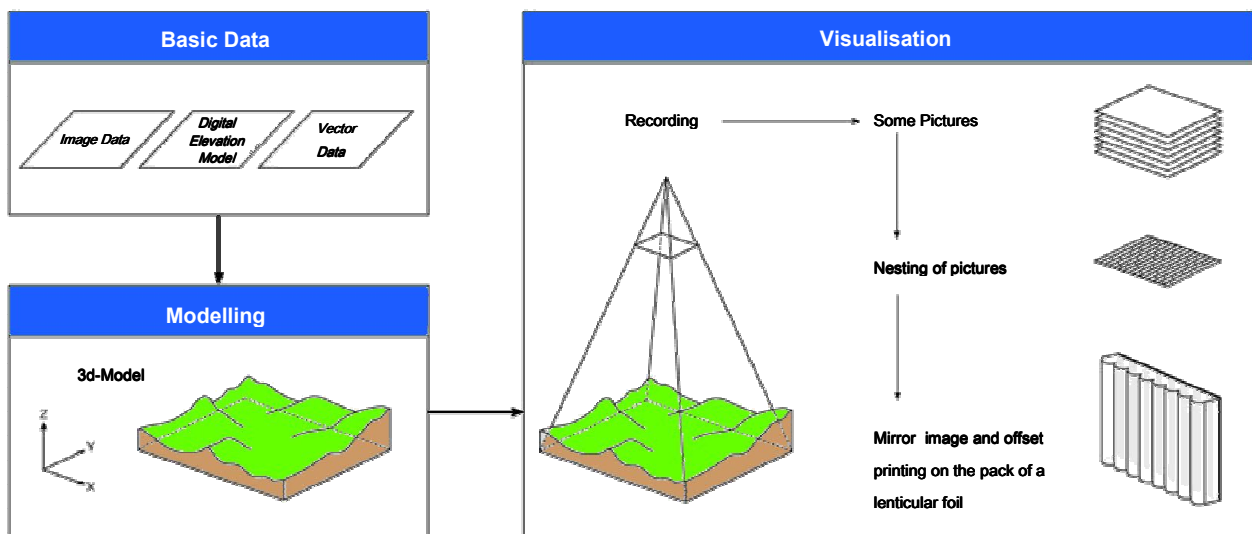
From an **Attitude dimension** pupils will be introduced in having fun through independent learning, besides an appreciation for the things that surround them or that exist in the world. This will make pupils appreciate the importance of science in everyday life and the influence that science can have on society. With the help of their teacher, pupils will develop a positive critical attitude towards scientific developments, besides recognising the limitations of science.



How does True-3D imaging work?

An interesting fact to discuss during one of the science sessions is the *production* of these innovative three dimensional products. When looking at real objects, our eyes perceive two slightly differing pictures. On the basis of this difference, the brain figures out the objects' three-dimensional depth. Thus, the three-dimensional impression takes shape.

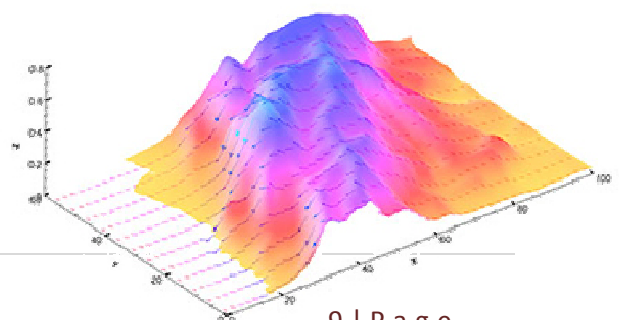
True-3D displays contain several shots of the same subject taken from different perspectives. These “takes” are slotted into each other, resulting into a highly complex process.



The lenses are accurately aligned with the interlaces of the image, so that light reflected off each strip is refracted in a slightly different direction, but the light from all strips of a given image are sent in the same direction.

Consequently, when looking at the pictorial content, each eye perceives only the visual information according to its current angle of view. This happens due to an exactly adjusted lenticular foil coating covering each display. Therefore, both eyes perceive a pictorial content that is slightly, yet decisively, differing in perspective – just like when looking at the real three-dimensional structure. Thus, the brain constructs the same three-dimensional picture.

Such a 3D phenomenon is capable of creating an illusion of depth of up to 60cm from a 1mm lens without any additional optical tools. Such a technology has the ability not only to create depth but also to change or move as the image is viewed from different angles. This is what makes True-3D images so fascinating for people all over the world.





Available True-3D material to be used in Classrooms

Gryphon Malta has a vast range of authentic 3D teaching material, besides maps, that can be used in classrooms when teaching **science** and **social studies** subjects. These include:

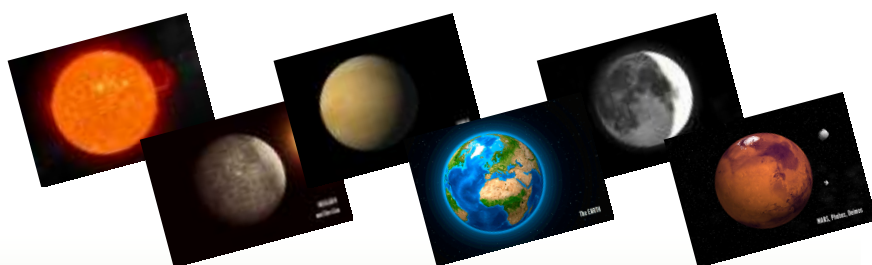
- 🌐 Planets of the Solar System;
- 🌐 Lunar and Space missions;
- 🌐 Herbivorous and Carnivorous Dinosaurs;
- 🌐 Domestic Animals;
- 🌐 Wild Animals that live in the Savannah and in cold habitats;
- 🌐 Sea mammals and other sea creatures;
- 🌐 Variety of bird species;
- 🌐 Insects and their habitat;
- 🌐 Vast selection of flower species;
- 🌐 Zodiac signs and their respective constellations;
- 🌐 Continents, countries and island states;



All the different true-3D or flip-image teaching material can be viewed from the **Gryphon Malta Product Catalogue** (available on demand). Items could be purchased as a gift set of 4 or 6 cards, or individually as the educator desires.



6 pieces



4 pieces



4 pieces

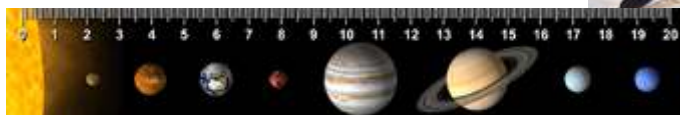




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Educational Gift Items

Teachers sometimes face the difficulty in identifying the **right gifts** to give to their students during special occasions. Available as well in true-3D, **Gryphon Malta** have bookmarks (size: 6.1cm x 21.1cm) and flexible rulers (size: 21.1cm x 3.6cm) which contain interesting information at their back side. Some of the bookmarks carry a message narrated by famous persons or contain a famous proverb. Teachers can also choose among a variety of small magnets (available sizes: 8.4cm x 5.6cm and 9.4cm x 9.4cm), all in true-3D imaging.



Bald Eagle

Body length: 78 – 102 cm (28 – 40 in)
Wingspan: Up to 2.49 m (85 ft)
Weight: 2.5 – 7 kg (5.5 – 15 lb)
Range: Canada, USA and north



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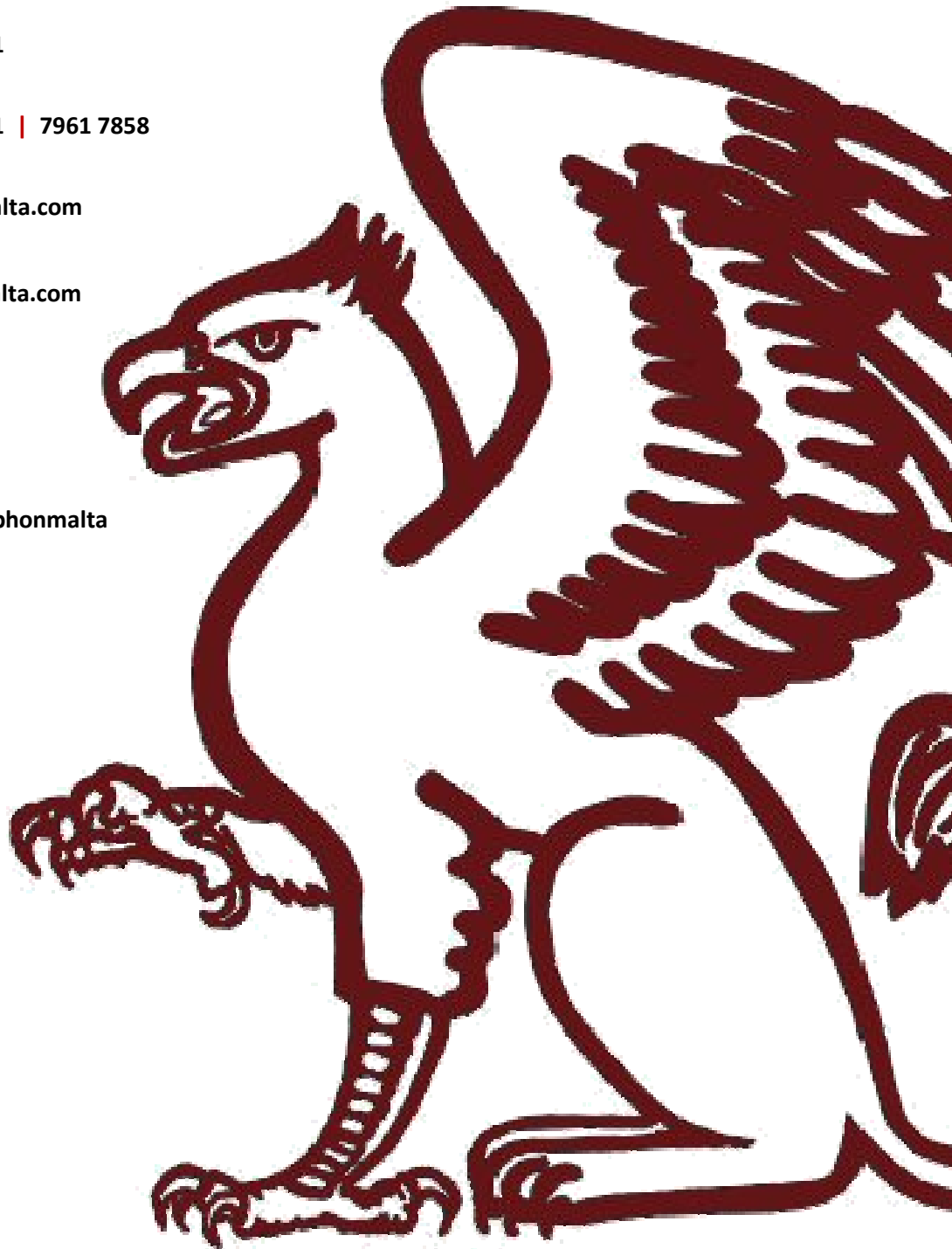


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