learn IT

digital photography

Microsoft Malta National Competition for Creative and Innovative Class Projects

Photosynth Competition

Microsoft Malta has launched a national competition to reward creative and innovative Class Projects using a free Internet application called Photosynth http://photosynth.net that capture national Maltese heritage sites.

Check the inside poster for more details.

3D Photography with Photosynth

The internet is a useful tool – one can use Google.com to search for a photo of a landmark such as a fortification, a church or a monument. Alternatively a teacher, or students, can participate in a project in which photos are uploaded and made available for others, accompanied with textual information.

What if one wanted to view or create something a bit more interesting and immersive than a simple photograph? Imagine, having the option to look at a landmark from all angles, and zoom on the details. Accompanying notes would enrich the learning experience and subject's geographical position would be marked on an interacive map.

*Get your **Microsoft Live ID** from **signup.live.com***

Microsoft's Photosynth does all this, for free. This programme works its magic by joining photos as taken by the user (or users) in a way that creates a 3D presentation which allows the viewer to view the subject from different angles and zoom in to view details. Searching for synths is easy – once you enter this utility's website, hit the 'Explore' button to search for whatever you have in mind. 'Map Explore' is useful, if for example, you want to find synths created in Malta. All you have to do is zoom in and click on the leaf-like icons. Each synth is accompanied with important information one should not overlook – number of photos and synthy. The higher percentage the synthy is, the smoother the synth will display. Creating your own synth is surprisingly easy. First of all you

*View and upload synths from **photosynth.net***

Marking the geographical position of a synth

A number photos displayed in a way that gives a 3D impression

Make sure you overlap (75%) when you taking photos to maximise synthy

have to take photos for your project. Take as many as possible from different angles – it is also important to overlap (Microsoft suggest that there should be at least 75% overlapping for the best results). It is also a great idea to have different students to take the photos. It does not matter if different cameras are used, or the resolution differ. It does not matter if photographs are taken on a number of days. Do not forget to zoom on details to make the final outcome more interesting. Once you are done, upload the photos to your PC – any pictures taken in portrait mode have to be rotated.

To be able to create a synth you have to use your Microsoft Live ID, such as the one you use to login to MSN Messenger. If you do not have Live ID, create one. Follow the on-screen instructions until you are in the actual program used to upload images. The process of uploading the images is not a quick one and be warned that this may take several hours, depending on the number of images you have. Once the synth is up and running do not forget to geotag it and enter potentially useful information for the viewer.

Photosynth is a tool which has great potential. It is very easy to use, promotes teamwork and the outcome is great. Anyone who is capable of using a digital camera and uploading images will be able to contribute through projects and make learning more fun and effective.

Photosynth,
a guide for teachers

Helping teachers to make learning a fun epxerience!

Photosynth is an exciting new technology that has to be explained to the children before embarking on a photography project. Numerous examples are available on the Photosynth website.

To try Photosynth in the classroom dress up one of the pupils as a model (somebody may have a carnival costume) and position the others in a circle around the model. They each take one photo and hand the camera to the next pupil. Some can take extra photos zooming on the face and other details.

> *One can zoom by either using the function on the camera or by getting nearer to the subject*

This is the time for talking about digital cameras, basic photography and heritage or natural subjects.

Prior to the cultural outing it is advisable to send date, time and venue to the parents, in a returnable form, for their consent. However use the form also to gather volunteers for the outing - a good way to include parents as helpers in the education of their children.

> *Cropping: deleting parts of a photo to focus on a small area*

To organise a project with Photosynth the teacher may need help from other adults, more so if the class has more than twenty pupils. One adult to fifteen pupils is a good ratio to ensure safety at most times when the class is taken outside the school premises. An extra adult is required to accompany groups of any number. Consult the Health and Safety regulations regarding outings, from the administration.

> *Parents should be encouraged to actively participate and not limit themselves to a supervising role*

Photosynth lends itself beautifully to heritage, cultural and natural subjects. The idea is to use this creative software as an educational tool. In the lesson plan the teacher connects the chosen subject to the curriculum. Children will enjoy the experience of taking the photos especially as the exercise is carried out outside the school premises. They will also be 'learning by doing' which places the pupils in the active role of researchers.

> *It is important that the pupils know exactly what they are going to do before leaving their classroom*

Arriving at the site, the number of students can be devided into smaller groups depending on the number of helpers and cameras available. Groups can take different angles of the site and would facilitate the procedure if the subject is a large building like a church. Some sites may be impossible to walk around – extra care should be taken if the area is uneven and rough or near the sea.

• Start by taking a panorama of your scene, then move around and take more photos from different angles and positions.

• When moving around the subject take lots of photos to facilitate a good synth. Try for 75% overlap between photos. Better to take extra photos than risk a missing link.

• The visual texture in the photos is what ties them together. A blank wall will not synth. One with lots of detail and texture like art or posters will work well.

• It's better not to crop any of the photos as it confuses Photosynth.

• Shoot wide angle shots (photos taken from farther away or with your camera's lens zoomed all the way out) reconstruct more reliably than closer shots. It's good to have close-ups of specific areas of interest but you'll want to have good coverage of your subject with lots of nice overlapping wide shots.

• Make sure your photos are all right-side-up before you start uploading to Photosynth. It may take a few hours to upload all the photos depending on the amount and on the resolution.

"Photosynth lends itself beautifully to heritage, cultural and natural subjects"

How Does it Work?

In simple terms, Photosynth allows you to take a bunch of photos of the same scene or object and automatically stitch them all together into one big interactive 3D viewing experience that you can share with anyone on the web. Photosynth is a potent mixture of two independent breakthroughs: the ability to reconstruct the scene or object from a bunch of flat photographs, and the technology to bring that experience to virtually anyone over the Internet. Using techniques from the field of computer vision, Photosynth examines images for similarities to each other and uses that information to estimate the shape of the subject and the vantage point each photo was taken from. With this information, the space is recreated and used as a canvas to display and navigate through the photos.

Shooting Interiors

Start by standing in the centre of the room with your camera zoomed wide. Spin around, taking overlapping shots as you go. Make sure successive photos are overlapped by at least 50%. Depending on how wide your lens goes, you'll probably need to take 15-30 photos to go all the way around. To give the room a good 3D model, you should next shoot overlapped shots from each of the corners. For saturation coverage and the most reliable reconstructions, shoot from the centres of each wall as well.

Shooting 2D Objects

If you take overlapping shots of a 2D surface at different scales, Photosynth will create a detailed synth of the result. Move the camera so that it's always facing the subject head on. You don't need to shoot it from different angles, although it doesn't hurt if you do.
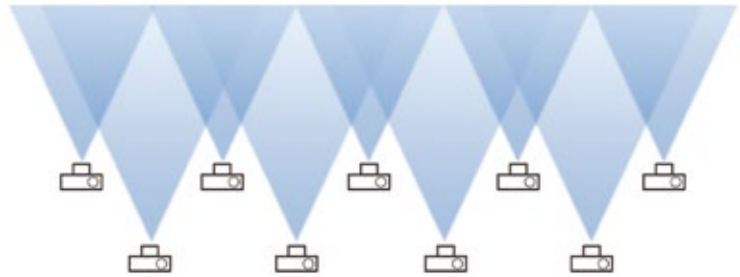
Shooting 3D Objects

It's important to get lots of overlap around an object and to walk around it. To get a great synth around a convex object (such as a vase), you'll want to take a photo approximately every 15 degrees, so it takes at least 24 photos to get around a vase perfectly. If your object is not completely convex, you'll need even more. Make sure that the centre of the object is in the middle of the picture, and that the picture frames the entire object. Be sure to include close-ups. This technique can be used for a full circle around an object, a small arc or anything in between.
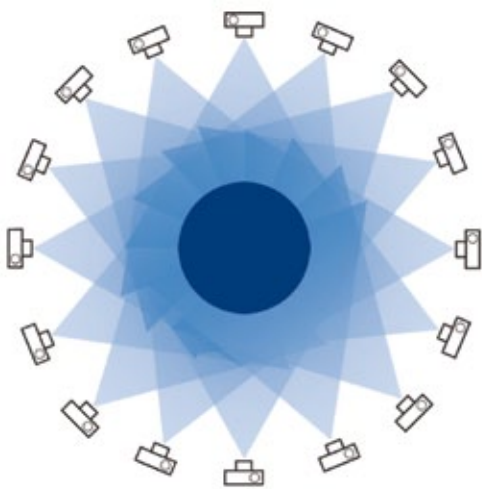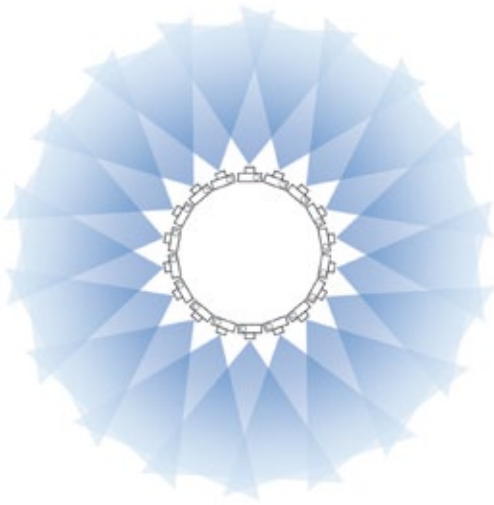
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My Photosynth experience with children

Rose-anne Camilleri
eLearning Teacher

"The children were so proud to see how their team effort had created such a wonderful 3D image"

Top: Photosynth activity in the classroom

Bottom: Photosynth activity outside under supervision of the class teacher, eLearning teacher and parents

Photosynth is a free software and accessed through the internet but it cannot be downloaded for offline use. The synths that are created are uploaded on the photosynth server and are viewed online.

As an elearning teacher supporting primary schools I have used Photosynth with teachers willing to try out innovative technology which can enhance and motivate learning. Most teachers are eager to find ways of bringing the existing curricular topics to life in engaging situations.

Photosynth as a class project

With a particular Year 5 class in Luqa the teacher wanted to introduce this technology through a simple class activity. We showed the children how to access and operate the software from the Photosynth website and showed them samples of synths. We also discussed the basics of a digital camera such as zooming in and out, storing and transferring of photos.

Once the pupils understood what was expected of them the teacher moved on to the actual production of the synth. One pupil dressed up in his Jujutsu kit and took up the 'stance' - a move he is trained to do. The rest of the class gathered around him forming a circle. A digital camera was passed around and each child took a photo of the boy in the centre acting as the model.

The photos taken not only featured the boy in the centre but also the pupils themselves in the background. The pupils were excited to see if they were caught in the background - this was turning out to be really a 'fun' lesson and yet they were learning so many skills.

Finally the resulting photosynth gave a real boost to the pupils who could see what they had achieved as a group. This motivated and encouraged both the teacher and children into moving to the next step: a photosynth session outside the school premises.

Photosynth as a cultural outing

A Year 3 class from the same school were working on creating their own photosynth. These children were moving on to photographing the local parish church as part of the topic they were covering in social studies – "Their local Village" – Luqa. The teacher escorted the class to the church accompanied by three parents who volunteered to accompany the class .

On site the children were carefully lead in a single file on the pavements surrounding the square and took photos of the church from the front and from the right and left sides. However the rear side of the church was inaccessible so the synth was three sided. We asked the parents to take some shots when it was necessary to step down from the pavement.

One boy took photos zooming-in on particular details of the building. In another instance a child with special needs was seen smiling and clearly enjoying herself when she was given the camera to take shots just like the rest of the class. The pupils became very excited and clearly having fun but intent on what they were photographing. We attracted a lot of attention from passers-bye who thought the cultural/photosynth project a very good modern approach to teaching.

Back at school the photos were uploaded and the synth created. The teacher took the pupils to the resource room so as to show them the result on the Interactive Whiteboard. The children were so proud to see how their team effort had created such a wonderful 3D image. The noise level in the class sometimes touched red due to the sheer excitement of the children. We showed them how to access the site so as to show their masterpiece to relatives and friends.

The effect was stunning, not only because it turned out to be a great synth, but because each child had participated and felt involved as a team where everyone was included. I believe this is what we should aim for in education, collaboration in creative learning as 'fun'.