HOLOMAKERS PROJECT

Motivating secondary school students towards STEM careers through hologram making and innovative virtual image processing practices with direct links to current research and laboratory practices

Erasmus+ KA2 2017-1-PL01-KA201-038420

Worksheet for Activity 5

Capturing light: the seashell project

Team: .....

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Activity topic: Sea shells

1) **The questions below revolve around the topic of "seashells".** Search for information online, discuss with your classmates and write down your answers/findings below.

2)

A) What us a seashell?	
B) What shape and/or geometry do seashells have?	
C) Where can we find seashells?	
D) Can you name some possible applications/uses of seashells during past or present?	
E) Why are there so many sea shell designs on furniture, textiles, and architecture?	
F) Have artists inspired by seashells? Can you identify pieces of arts where seashells are present? Write down the title, collect pictures and share your findings in the class.	
G) Do you believe that pocketing seashells has any effect on the environment?	

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2) Choosing seashells for the Holokit

a) You would like to holograph a seashell. Choose a seashell among those that are depicted in figure 1. Based on which criteria will you make your choice? Which ones will be the best and which the worst choices?

Figure 1 Retrieved from: **https://seashells.com/**

3) Set up the HoloKit *(ff the HoloKit is not already assembled from previous activities)*

Prepare the set up in order to record your coin(s). You can find the instructions here https://youtu.be/wFbqvzraYds and here https://holomakers.eu/wp-content/uploads/2019/01/Holomakers_holokit_ReferenceGuide.pdf

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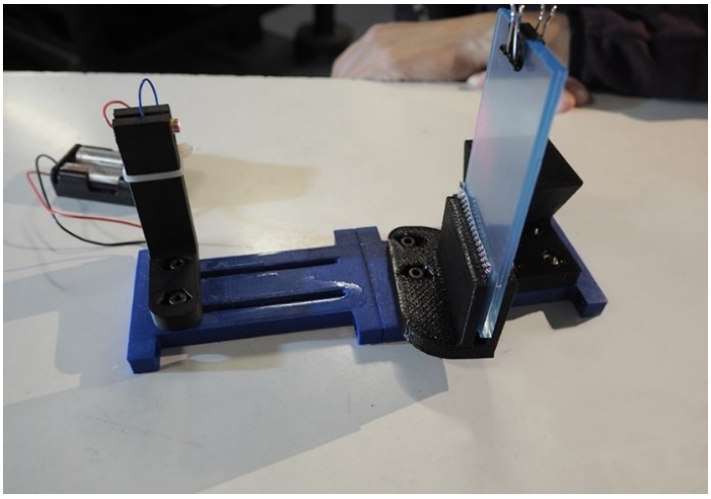

Figure 2 The portable HoloKit

4) Getting ready for physical hologram recording

a) **Work in teams-** Measure the minimum and the maximum height that your seashell should have in order to fit the size of holographic film that is used in the HoloKit. Write your answers below.

b) **Discuss with your team members**

Does the texture, the colour and the size of the seashell play a role in the hologram recording process? Document your answers/thoughts below:

c) **Time for physical hologram recording. Are you ready?**

Note: Bear in mind that the process of holography is not always straightforward, and it takes a lot of tests and practice in order to have the best possible results.

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Some general rules/tips for the physical hologram recording process	**√ / x**
Decide where you will place the HoloKit. It should be placed on a very stable table or on the floor.	
Select the coin that you will holograph based on the discussions that you had earlier	
Check the level of the provided power to the laser beam before you start because low power levels can lead to failure during the recording process.	
Turn on the laser diode at least 5 minutes before making your hologram	
Place the object as close to the holographic film/plates as possible	
Experiment with various heights and positions by using the provided plasticine. *When you agree that the reflection on the plexiglass plates of the selected coin is the finest (that can be done), then the set-up will be ready for the recording phase.*	
Select the member of your team that will be responsible for a) placing the holographic film in the holographic/plexiglass plates and b) removing the shutter.	
Consult your teachers and do not hesitate to ask for advice and support if the process to be followed is not clear.	
Make sure that you have marked on the holographic/plexiglass plates the area where the holographic film will be placed/stuck.	
Make sure that the holographic/plexiglass plates are clean	
Place the shutter between the laser beam and the plexiglass plates	
Make sure that you have identified a dark or almost dark room where you will open the holographic box	
Watch the video to learn how to deal with the holographic film https://youtu.be/4IwSLHOQpWM	
Make sure that you have identified a semi-dark place where you will operate and place the holographic film between the two plexiglass plates.	
Make sure that you will firstly remove the transparent (colourless) foil from the holographic film and not the green one.	
Make sure that you have pop out as many trapped air bubbles as possible.	
Before place the second plexiglass plate, make sure that you have remove the green foil from the holographic film.	
Make sure that you have understood the process.	
Have you check all the above steps? If yes…you are ready to go! Check the result after 3-5 minutes.	

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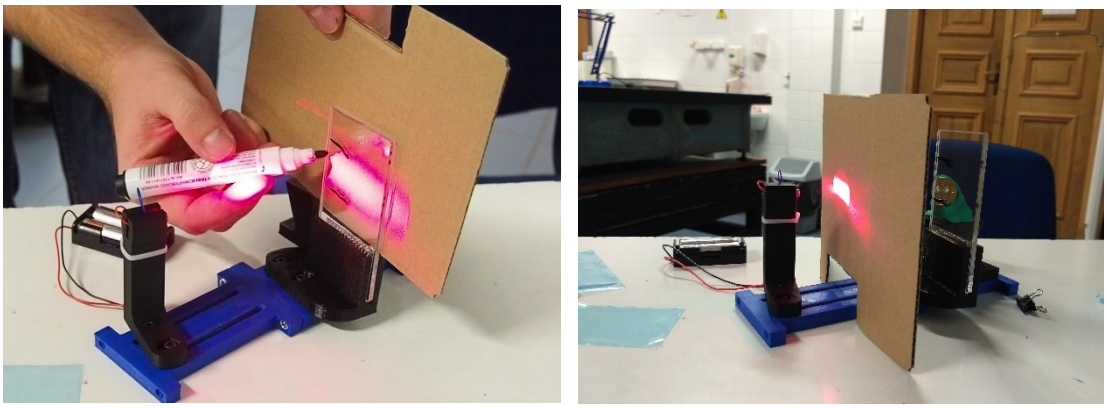

Figure 3 Marking the holographic/plexiglass plate (left), Placing the shutter (right)

Area for notes

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Declaration

This report has been prepared in the context of the HOLOMAKERS project. Where other published and unpublished source materials have been used, these have been acknowledged.

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