Co-funded by the Erasmus+ programme of the European Union

ERASMUS+ 2017-1-ES01-KA219-038074_1
OUT OF THE DARK: ASTRONOMY AS UNIFYING THREAD FOR CULTURES.

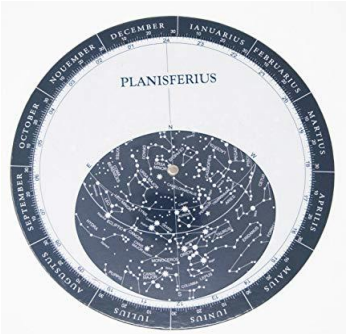
Star Maps, Using the Stellarium

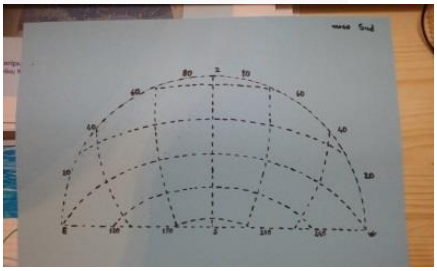
Introduction

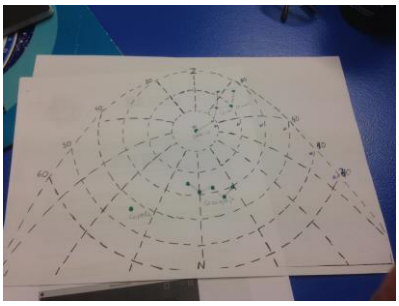
All students studied the sky before the international meeting in Sweden, and made star maps to learn the most common stars, given that at the meeting in Sweden, the students work in transnational groups exhanging methodoly and knowledge.
In this practice we learn to draw a star map following several methods. This will help us to know the main constellations visible in the northern hemisphere, and some of the southern hemisphere, as well as to understand how these constellations guided our ancestors in their travels.
Among this methods we use Stellarium, a program that allows us to compare the relative positions of the stars at different times of the year for the same place on Earth, as well as compare the map of stars at the same time in different places on the planet.

Materials

Templates with the grid to located the stars.
Computer and Stellarium installed.
Compass, protractor of angles, rules, pens and the template with the map of stars according to the planisphere in 40º N of latitude.







Procedure/Method

All countries had used different methods drawing the star maps.

When drawing the star maps together we decided to do it the way the Spanish students had done it earlier.

The students sat in transnational groups around the tables. A couple of students explained the work for the whole group, together with their teachers. At each table there was a Spanish student helping those how needed further help.

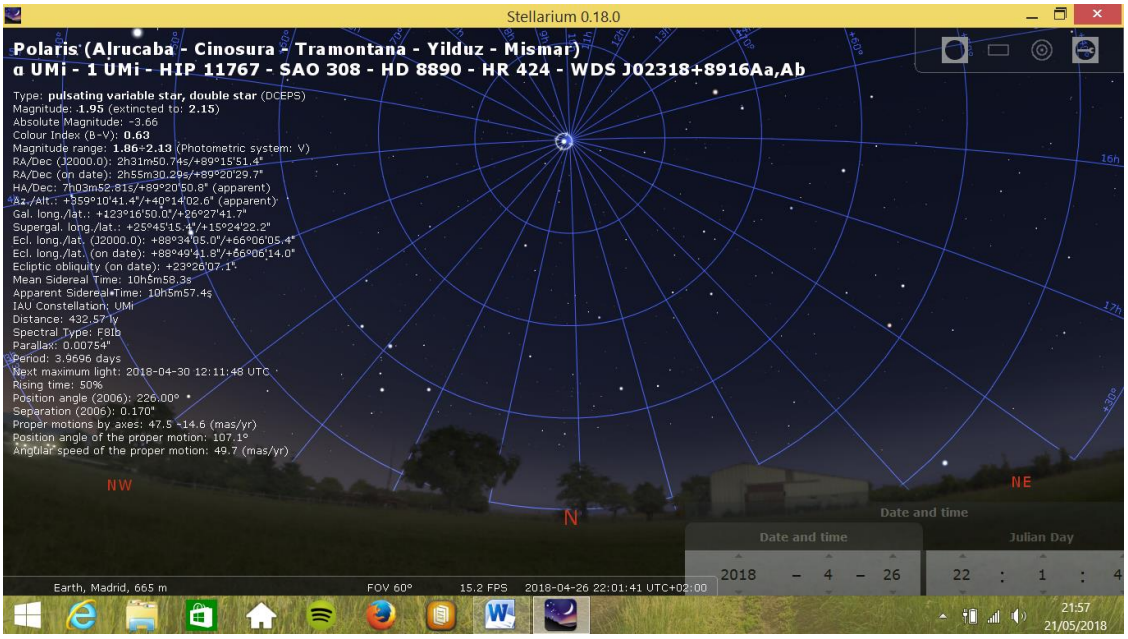
Using a compass, protractor and a template for the sky, the Spanish students, guided step by step, how the star map should be drawn.

We divided the activity in two parts.

Activity 1. Using Stellarium

Once you have installed the program, go to Madrid on April, the 26th. How do we do?
Click on the button location window(on the left of the screen) and then look for Madrid, Spain information.

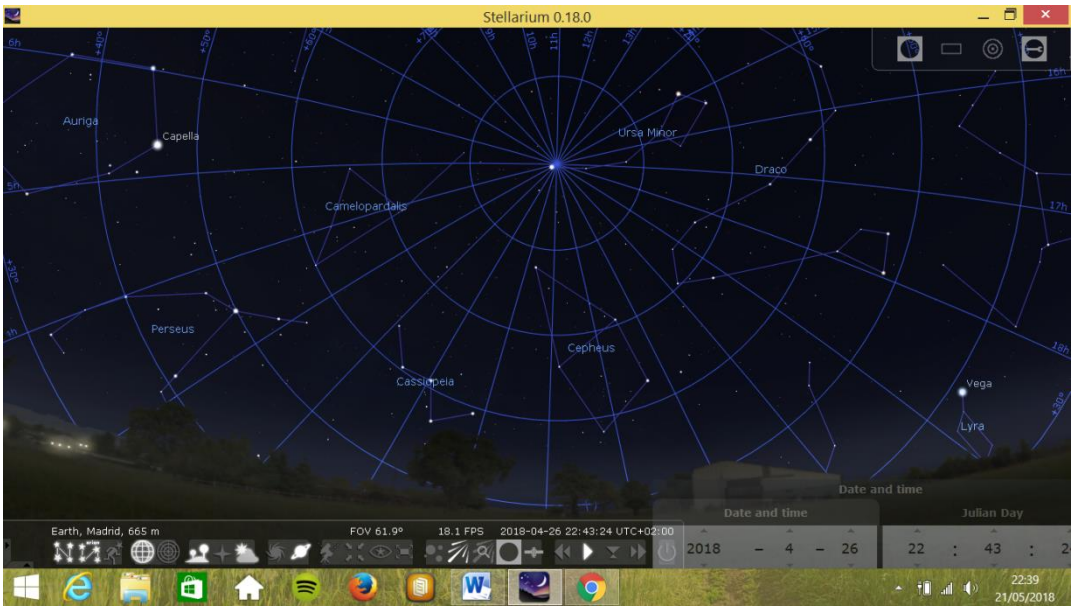
Now fit the hour, for example, 22:00, and select the equatorial grid (on the bottom of the screen).Now look for the Polaris. →



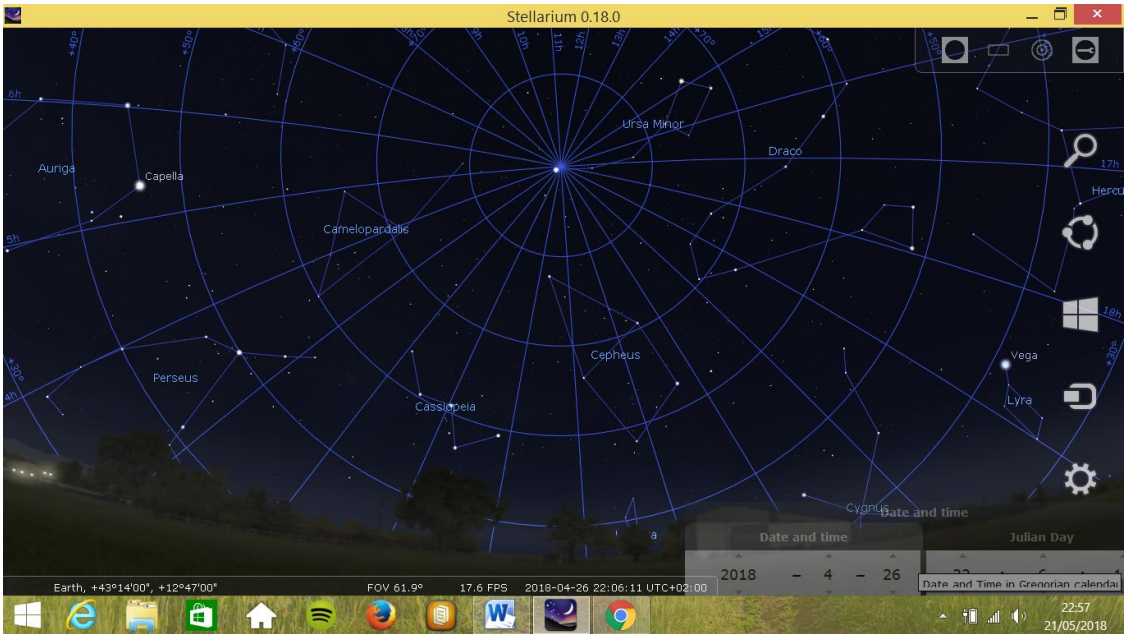
Once you have located the Polaris, try to find as many constellations as you can. For example, Ursa minor, Cassiopeia, Cepheus, Ursa major, Orion. Try also to keep the number of some of the most brilliant stars, for example Capella.

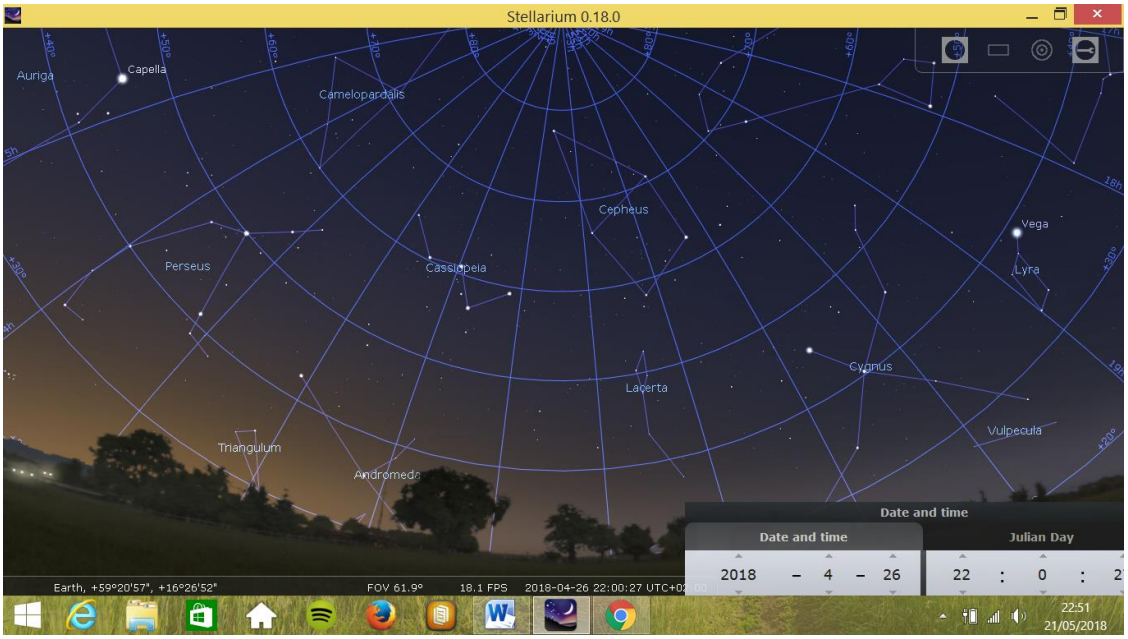
You can click on the button that shows the constellations.

Then, once you became familiar with the shape of the main circumpolar constellations we can continue our task putting them in our mute star map.

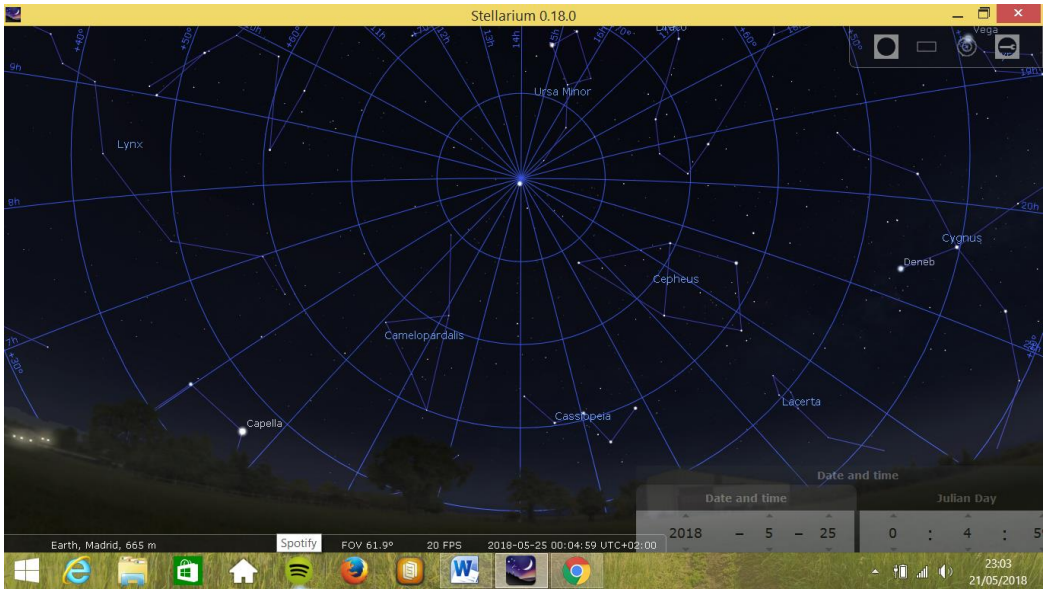


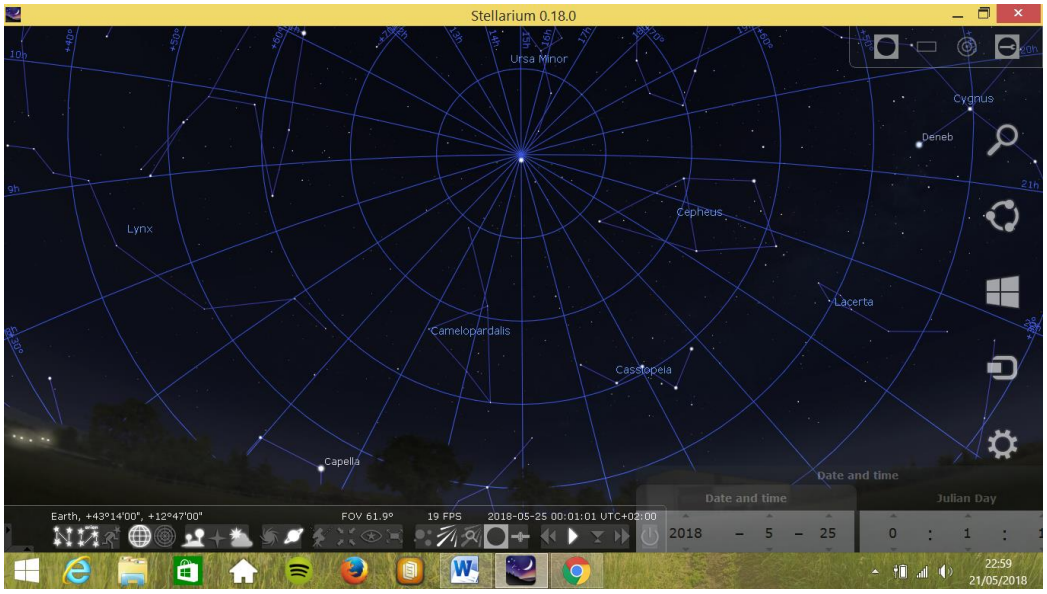
Now, do the same for Gualdo Tadino and for Eskilstuna.

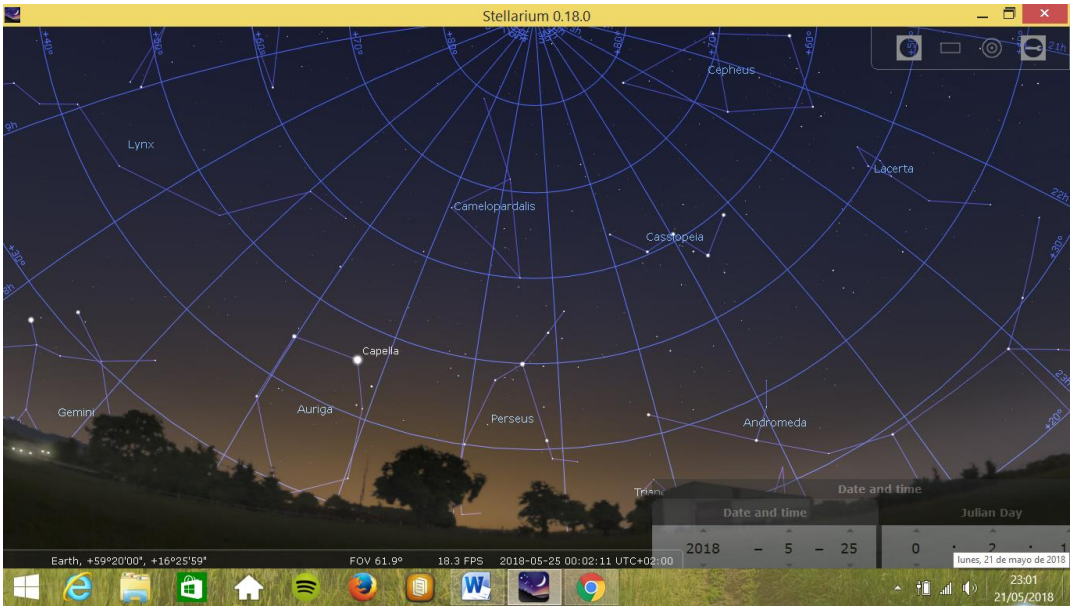




Now, we can compare with the sky on May, the 25th .


Stellarium 0.18.0
Ursa Minor
Lynx
Cygnus
Deneb
Cepheus
Camelopardalis
Lacerta
Cassiopeia
Capella
Date and time
Julian Day
2018 – 5 – 25
0 : 4 : 5
Earth, Madrid, 665 m
Spotify
FOV 61.9°
20 FPS
2018-05-25 00:04:59 UTC+02:00
23:03
21/05/2018


Stellarium 0.18.0
Ursa Minor
Cygnus
Deneb
Lynx
Cepheus
Lacerta
Camelopardalis
Cassiopeia
Capella
Date and time
Julian Day
2018 – 5 – 25
0 : 1 :
Earth, +43°14'00", +12°47'00"
FOV 61.9°
19 FPS
2018-05-25 00:01:01 UTC+02:00
22:59
21/05/2018


Stellarium 0.18.0
Cepheus
Lynx
Lacerta
Camelopardalis
Cassiopeia
Capella
Gemini
Auriga
Perseus
Andromeda
Date and time
Julian Day
2018 – 5 – 25
0
Earth, +59°20'00", +16°25'59"
FOV 61.9°
18.3 FPS
2018-05-25 00:02:11 UTC+02:00
lunes, 21 de mayo de 2018
23:01
21/05/2018

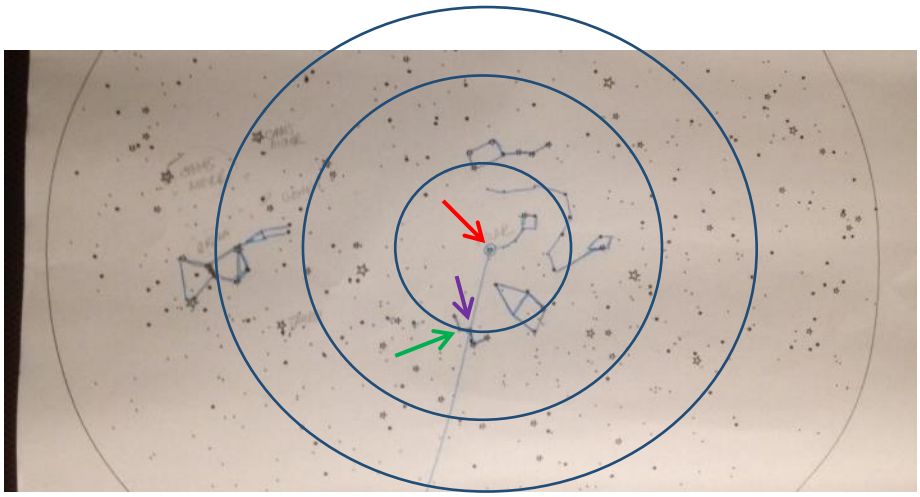
Activity 2.

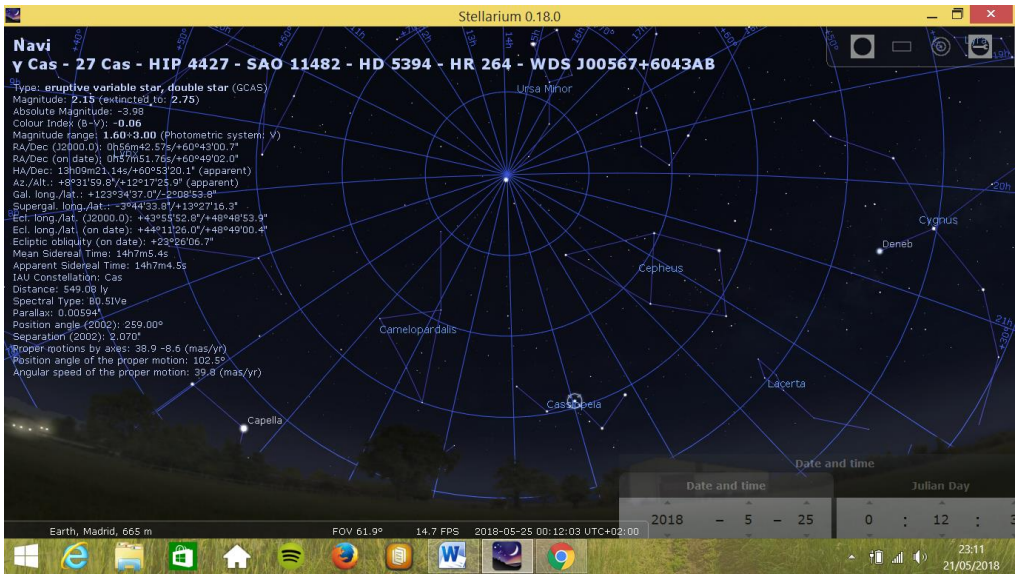
First of all, we made a line that join the Polaris, just in the center of the map, with Navy and Cas, the central double star of Cassiopeia and we follow it till the border of our map.

With the help of a protractor of angles, we make divisions in sectors of 15 degrees to 24 terrestrial meridians (15 degrees are equivalent to an hour). You can do this also taking into account that 90º can be divided in three sectors of 30º and then, each one of them in two sectors of 15º.

After that, we can divide our sky with a compass in concentric circles, whose center is the Polaris.
The correct way is to take the second star of Cassiopeia (ksora) just in the latitude 60º N.

So, if you start in the Polaris (90º N), and Ksora is 60º N (Eskilstuna), you can divide the distance in three parts (each one with 10º latitude).
Moreover, if you double the distance, you have 30º N, then you can divide once again in three to have 40º (Madrid for example), just to Equator.



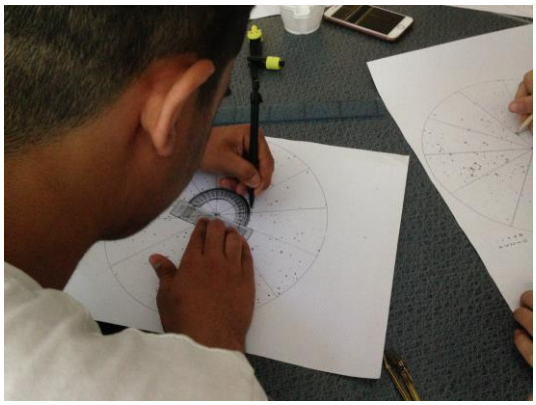


Results

After having used the program it is easier to locate in the star map the main stars of the better known constellations as Cassiopeia, Ursa, Cepheus, Orion, etc.

Conclusions

The second activity allows students to handle traditional instruments such as rules, protractor of angles, compass, while improving their spatial vision. With the use of the planisphere and the program, they can verify its results and discuss the difficulties encountered with the different methods.



Due to knowledge of English in the project, we chose to let younger Swedish students participate. In a task like this, which demanded quite a bit of knowledge, it was a bit difficult for them. But with good help from the Spanish team, all questions were answered and everybody could finish the task.

Bibliography

https://outofthedarkerasmus.blogspot.com/2018/05/using-stellarium-and-star-maps.html

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https://outofthedarkerasmus.blogspot.com/2018/03/that-is-from-italy-logo-contest-and.html