



**ERASMUS+ 2017-1-ES01-KA219-038074\_1**

## **OUT OF THE DARK: ASTRONOMY AS UNIFYING THREAD FOR CULTURES.**



### ***To the conquest of Mars***

#### ***Introduction***

On the occasion of the Science Fair celebrated in Mars in Madrid, and directly related to our Erasmus project *Out of the dark*, a good number of students from 3<sup>th</sup> and 4<sup>th</sup> level in the Spanish school participated in a wide and rewarding experience named *To the conquest of Mars*. This interesting project, led by Technology teachers, together with the departments of Physics and chemistry, and Biology and Geology, made a research that supposed an approach to the current works in Astronomy.

The groups of 4<sup>th</sup> studying Biology and Geology and Applied Sciences to the Professional Activity (CAAP) to prepared the theoretical part of their exhibition at the Fair, while the whole group of 3<sup>th</sup> expanded their knowledge of technology, programming and robotics in a wonderful interdisciplinary work.

It consists of 3 models about the subject:

- Planetology
- Journey from Earth to Mars
- Possible life on Mars (current and future)

The technological part of the project consist of:

- 3D print
- Construction of robots and space exploration vehicles
- Virtual reality
- Hydroponic crops to make life possible on Mars

All this products were included in the final meeting of our Erasmus, in May 2019, and showed also to the community during our IV Science Fair in Fuenlabrada.

## Materials

- Word documents with the instructions developed by teachers.
- Computer with internet connection
- Projector
- Cellulars
- Virtual reality glasses
- Cardboard panels
- LEGO pieces to build the robots



## Procedure/Method

Students are divided into groups of 4 or 5 people and assigned one of the themes on Mars, so that the contents are worked in the class as a whole.

They use the computer rooms looking for the information.

Subsequently each group prepared a presentation of power point and a poster, and explained in class to share their knowledge with their colleagues before going to the Science Fair.



## Results

A theoretical research project is obtained for each team, as well as a summary presentation to expose in class and in the Science Fairs.



Our Erasmus international team had also the opportunity to share all these contents and to build their own robot.



### Conclusions

Through research, technological teamwork and collaborative methodology especially during the Fairs, the students themselves have enriched their knowledge about astronomy but have also improved their ability to express themselves and their self-esteem.

It is noteworthy that this has been the most important activity in terms of the integration and participation of a greater number of students and visitors with fewer opportunities due to academic, economic or socio-family difficulties. Both during the development of the research in the center itself, and later in the Science Fair of Madrid and in Fuenlabrada it was very important for us to open our project and to offer our results.





## *Bibliography*

<https://www.youtube.com/watch?v=8d6SBn183QM>

<https://www.nationalgeographic.com.es/temas/marte>

<https://www.astromia.com/solar/marte.htm>

[https://www.nationalgeographic.com.es/ciencia/grandes-reportajes/conquista-marte\\_10848/1](https://www.nationalgeographic.com.es/ciencia/grandes-reportajes/conquista-marte_10848/1)

[https://es.wikipedia.org/wiki/Viaje\\_tripulado\\_a\\_Marte](https://es.wikipedia.org/wiki/Viaje_tripulado_a_Marte)

<https://www.lanasa.net/misiones/marte>

<https://www.eltiempo.com/vida/ciencia/proyecto-para-construir-ciudad-en-marte-con-plastico-de-los-oceanos-214190>

<https://www.iagua.es/blogs/laura-f-zarza/agua-y-vida-marte-conquista-sueno>

[https://www.arquitecturaydiseno.es/disenio/alumnos-de-ied-madrid-triunfan-con-su-plan-de-vida-en-marte\\_1550](https://www.arquitecturaydiseno.es/disenio/alumnos-de-ied-madrid-triunfan-con-su-plan-de-vida-en-marte_1550)

[https://elpais.com/elpais/2018/07/27/ciencia/1532683414\\_211648.html](https://elpais.com/elpais/2018/07/27/ciencia/1532683414_211648.html)

[https://www.abc.es/ciencia/abci-y-si-somos-nosotros-quienes-acabamos-vida-marte-201811122131\\_noticia.html](https://www.abc.es/ciencia/abci-y-si-somos-nosotros-quienes-acabamos-vida-marte-201811122131_noticia.html)

[https://www.lasexta.com/noticias/ciencia-tecnologia/vida-marte-estudio-sugiere-que-planeta-rojo-puede-contener-oxigeno-suficiente\\_201810235bceb4d40cf2c9e95f1c6628.html](https://www.lasexta.com/noticias/ciencia-tecnologia/vida-marte-estudio-sugiere-que-planeta-rojo-puede-contener-oxigeno-suficiente_201810235bceb4d40cf2c9e95f1c6628.html)

<https://ecoinventos.com/mars-greenhouse/>

<https://lahuertadigital.es/agricultura-espacial-como-conquistaremos-marte/>

<https://www.youtube.com/watch?v=IQ5EH73cw2U>

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