



Universidad de Jaén



D. Cruz Cano<sup>1</sup>, V. Dueñas Cano<sup>1</sup>, L. Martínez Pastor<sup>1</sup>, M. Pereira Ruíz<sup>1</sup>, D. Pérez Peña<sup>1</sup>, L. Rodríguez Melero<sup>1</sup>, A. Vega González<sup>1</sup>.  
M. Aguilar González<sup>1</sup>, A. García García<sup>1</sup>, M. Lopera Cantero<sup>1</sup>.  
M.J. Hermoso Orzáez<sup>2</sup>, J.A. Lozano Miralles<sup>2</sup>.



<sup>1</sup>Colegio Monseñor Miguel Castillejo Fund. Vera-Cruz, Principado de Asturias 6, 23009, Jaén, Spain

<sup>2</sup>Departamento de Ingeniería Gráfica, Diseño y Proyectos, Universidad de Jaén, Campus Las Lagunillas s/n, 23071 Jaén, Spain

# PROJECT PLAYING.

## INLOGY TO 2D AND 3D BIM PROJECTS

### A sustainable corner in our school.

## INTRODUCTION

### BIM

Building Information Modeling is an intelligent 3D model-based process that gives architecture, engineering, and construction (AEC) professionals the insight and tools to more efficiently plan, design, construct, and manage buildings and infrastructures.



We have decided to use this model to build something useful for our High School, sustainable, efficient and not very expensive. To make our greenhouse we used low polluting materials and renewable sources of energy, including solar power (with solar panels) and drip irrigation.

### INNOVATION OF THE PROJECT

### PROCESS

1. First, we decide the location

2. Then, we measure and dimension

3. We got acquainted with sketchup



Sketchup is a 3D modeling software that's easy to use and has an extensive database of user-created models

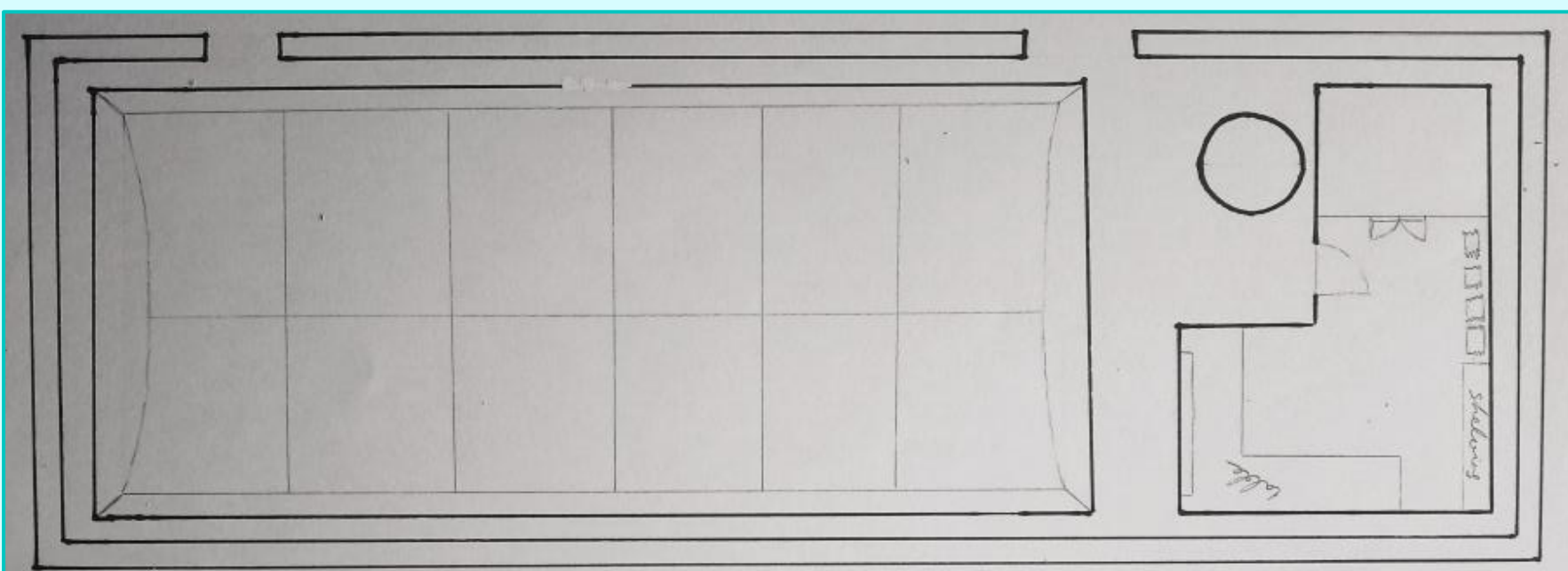
## METHODOLOGY

### PROBLEMS

1. Orientation
2. Materials
3. Type of crop
4. Care
5. Sustainable resources
6. Organization of the terrain

## RESULTS

### INITIAL BLUEPRINTS



### FINAL DISTRIBUTION



### OUR SUSTAINABLE GREENHOUSE



### THE INTERIOR OF THE WAREHOUSE

## CONCLUSIONS

This project is very interesting and we have learned. But we have also found new problems that, after considering them carefully, we solved.

1. & 6. When we studied the orientation, the path of the sun and the climate, we put the solar panel and the water bottle on top of the tool house and reorient the greenhouse.
2. & 5. To help the environment, we use renewable, sustainable and efficient materials.
3. By studying the climate of Jaén, the growing seasons and what is used in greenhouses, we decided to plant ...
4. We propose more developed greenhouses, but for this, more care would be needed and we could only use it when we are at school. So, we had to change it and apply the possible care.

## BIBLIOGRAPHY

- <https://www.buildingsmart.es/bim/>
- <https://www.sketchup.com/es>
- <https://maps.google.es/>
- <https://www.ujaen.es>
- <https://grupomsc.com/blog/invernadero/que-es-y-como-funciona-un-invernadero>
- <https://www.novagric.com/es/venta-invernaderos-novedades/tipos-de-invernaderos/>
- <https://www.experimenta.es/noticias/industrial/globe-hedron-invernadero-portatil-conceptual-devices-3607/>

## THANKS

We would like to thank the University of Jaen, specially the organizing committee of ScienceIES, the vice-chancellor of students and the Department of graphic engineering and designs. We also want to thank Manuel Orzáez and José Adolfo Lozano for being our guides in this adventure.



Universidad de Jaén



FUNDACIÓN ESPAÑOLA PARA LA CIENCIA Y LA TECNOLOGÍA

