Interdisciplinarity at the service of society: Interpreting the evolution of COVID-19

Enlightening Interdisciplinarity in **STEM** for Teaching

1st interdisciplinary line of inquiry

Analyse data to understand the evolution and formulate hypotheses

INTRODUCTION

The emergence of the COVID-19 pandemic has put the scientific community in the spotlight of society as a whole. Their studies have been one of the main tools for establishing measures to address the situation and have had a direct impact on daily life. Good examples are *statistical analyses* to extract relevant information from data, the development of *mathematical models* to make predictions, and *computational simulations* to understand virus diffusion.

In this second submodule we will focus on the first topic: **data analysis to extract relevant information from data**. The idea of this submodule is to make some questions about COVID-19 you would like to answer. Then you will have the opportunity to analyse data and some analysis done by experts about the pandemic in order to answer the initial questions (if possible).

The generative question of the module that will guide your investigation as students in this interdisciplinary line is the following:

What can data reveal about COVID-19's evolution?

PART 1: Presentation of the interdisciplinary line of research

To start, we suggest you consult the [COVID-19 Dashboard of John Hopkins University](#) that contains data and graphics about the pandemic worldwide, seeing what information they embed and their potential. Once you have made your first contact with the data and have seen what they offer, we suggest you compile a list of questions that you would like to answer with these data. We report here three as an example:

What was the evolution of COVID-19 in Asia in 2020?

What differences can be found between different countries?

Which has been the effect of the vaccination process?

PART 2: Research development

Now, discuss in group and decide which are the most interesting questions you have found and use the data to try to answer them. You have two main options:

1. **Analysing some of the databases used by this website**. Here you have some of them containing the global confirmed cases and deaths ([source](#)).
    a. *CONVENIENT_global_confirmed_cases:*
       https://identitiesproject.eu/wp-content/uploads/2022/10/CONVENIENT_global_confirmed_cases.xlsx.ods
    b. *CONVENIENT_global_deaths:*
       https://identitiesproject.eu/wp-content/uploads/2022/10/CONVENIENT_global_deaths.xlsx.ods

2. **Visualising analysis done by experts**. The following webpages report many graphics and data analyses that can be useful to make sense of the time evolution.
    a. https://www.kaggle.com/imdevskp/covid-19-analysis-visualization-comparisons/
    b. https://www.kaggle.com/tarunkr/covid-19-case-study-analysis-viz-comparisons

Do not hesitate to consult external material when necessary: news, scientific studies, other data sources, etc. The links attached contain many information you can use and other useful references where you can find more datasets and analysis.

Surely once you start researching your main question, new ones will come up that will also be useful to research. Research as much as you want, and as much as you can, the questions asked using the data. Moreover, think of possible explanations and formulate some hypothesis for what you have found.

PART 3: Preparing the presentation of results

To share your work, prepare **three slides** to show the rest of the groups the work you have done, each slide needs to focus on one of the following aspects:

1. What were the main questions you investigated about?
2. Which data have you used? What research have you done? How have you used the data to provide answers to the aforementioned questions?
3. What answers have you obtained?