**Data Skills module: Interactive learning using R**

This proposal outlines the characteristics of an interactive learning tutorial as a possibility to be implemented into the development of the Data skills Training modules.

**1. Packages:**

The R package used to create the interactive tutorials is “[learnr](https://cran.r-project.org/web/packages/learnr/index.html)”

Other R packages are also added, depending on the interactive activity being developed, such as: “ggplot2” for graphs

**2. Functionality**

The learnr package works along R Markdown documents, allowing to turn any markdown file into an interactive tutorial. Each document can include

* Text
* Figures
* R code exercises
* Quiz (questions)
* Videos (including YouTube and Vimeo)
* Interactive “shiny” components

Tutorials automatically preserve work done within them, so if a user works on a few exercises or questions and returns to the tutorial later they can pick up right where they left off

**3. Two alternatives**

**3.1. Creating the whole DSM using R markdown using interactive tutorials from learnR (as per example below)**

- This would be relatively simple in terms of setting up the text, the content and the interactive tutorial for anyone with experience in R and R Markdown.

**-** This would involve creating the interactive tutorial as standalone apps (saved on the “shinyapps” server)

- Each interactive window is saved in a different app. These apps can be added to the R Markdown code as part of the webpage content.

- The set-up of the website requires knowledge on html and java script. This can be done within R Markdown as well.

- This implies to a have a team with experience in both R Markdown and html/java. Ideally someone who knows both, but it is not that important.

- There is an example of a website with interactive tutorials and the code used to create the website and the content (the modules’ text and interactive activities)

Website: [Teacup, giraffe and statistics](https://tinystats.github.io/teacups-giraffes-and-statistics/index.html)

Code: [Github repository of Teacup, giraffe and statistics](https://github.com/tinystats/teacups-giraffes-and-statistics)

**3.2. Creating interactive tutorial windows that can be added to a webpage for the DSM.**

**-** This would involve creating the interactive tutorial as standalone apps (saved on the “shinyapps” server), the question exercise is an example of this, but it can also be an interactive R window

- Each interactive window is saved in a different app. These apps could be added/embedded as part of the webpage content (I don’t know if it is possible)

- The interactive tutorial can also be saved as html files, without the need of publishing (a local copy).

**4. Example**

The first example is a test in which I set an exercise in R. This can be embedded onto another R markdown page. These set up for these examples were taken from [here](http://desiree.rbind.io/post/2020/learnr-iframes/).

I have managed to create an app with some exercises:

* An activity with a “solution” tab:

Available [here](https://a-mora.shinyapps.io/ex1_solution/)

* An activity with a “hint” tab:

Available [here](https://a-mora.shinyapps.io/ex2-hint/)

* A question

Available [here](https://a-mora.shinyapps.io/ex3-question/)

**5. Examples from the developers of the package**

Setting up R <https://learnr-examples.shinyapps.io/ex-setup-r/#section-welcome>

**Further references**

Learnr: A tutorial<https://rstudio.github.io/learnr/index.html>