

1-2B Interactive tools for visualizing quantitative data to promote statistical literacy among Social Science students: an example of the use of R-shiny

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Teaching in subjects across the university involves the use of statistics, numerical literacy and quantitative data, and there is a constant need for the development of teaching tools to promote this ability. The Q-Step Centre at the University of Glasgow promotes quantitative literacy among Social Science graduates and members at the Centre recently started using R-shiny as a tool to visualize quantitative data on education and political sciences topics in order to facilitate student learning.

R-shiny is a package implemented in the statistical software R to create web applications through which students can produce statistical graphs and tables through a graphical interface without having to interact with the coding part of R. R-shiny allows instructors to translate data analysis into web applications without requiring coding in Java or HTML. The student user can then conduct basic analyses of data sets on social science topics through interactive websites.

The students do not require statistical or coding knowledge to participate in these web-based activities. They explore distributions of variables such as school performance or party preference and relationships between variables on the basis of their interests and theoretical assumptions. With a few clicks they can produce tables and colourful graphs, which they can then interpret to answer research questions. The students independently investigate topics of interest to them, rather than passively following along as an instructor demonstrates an analysis. This encourages greater engagement on the students' parts. In this presentation we explain and demonstrate how we used R-shiny to facilitate student development of basic quantitative data literacy (in our applications, educational inequality and voting behaviour). We also present wider possibilities of using this tool in teaching and learning related to the interpretation of statistics. We place a focus on teaching and encouraging interest in students who have little or no quantitative literacy skills.