Open online self-study modules to learn R

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Being able to use a programming environment such as R is a valuable skill for our students. R provides opportunities for using larger and more complex datasets in practicals, case studies and theses than e.g. Excel. Compared to other programming languages, it is relatively easy to learn, which makes it suitable for education. Because R is open access, graduates can keep using it when they can no longer use the university's software licences.

Several years ago, we wrote "A (very) short introduction to R", a document which teaches the basics in 1-2 hours with explanations and short exercises. This tutorial is used by lecturers worldwide. We expanded this tutorial to a series of 8 self-study modules of 1-2 hours each.

Module 1 is the (very) short introduction to R. Modules 2-3 contain elements of Coursera's "R Programming" (the credits go to its developers). Modules 1-3 make use of the swirl R package. Swirl contains an algorithm which provides targeted feedback when students enter wrong code. In modules 4-8 students learn to set up scripts themselves to read and write data files and make figures. The examples are from hydrology, but with small adaptations the modules can be tailored to any field.

The modules can be used by:

1. Lecturers who would like to use R in their computer practicals, but are afraid that learning R will consume time from the course content. The self-study modules enable these lecturers to use R with little time investment, since they can simply assign students to do (some of) the modules as preparation for their own computer practical.

2. Students who lag behind in programming skills. The background of students in courses becomes increasingly diverse, which sometimes leads to discontent between advanced and less advanced students. With these modules the less advanced students can mend their deficits independently before they come to class, thereby levelling the differences between students and improving the learning experience of all.

3. Students who are writing their BSc, MSc or PhD thesis. Without programming skills, students often fall back on Excel for processing and analysing data (which is often not suitable for the task) and their supervisors spend much time teaching them how to deal with the data. With the self-study modules, the supervisor's time can be used more effectively to interact with the student about the scientific question to be tackled.

4. Researchers and professionals who want to start using R. The modules are short and free of charge, which lowers the threshold for beginners.

All modules are freely available from:
`www.github.com/ClaudiaBrauer/A-very-short-introduction-to-R.`