**Introduction**

In a biology curriculum at the University of Mons (UMONS, Belgium), the traditional biostatistics course are replaced by data science courses with modern and interactive tools. Furthermore, the teachers become guides and they help students to achieve self-study.

**Data science in a biology curriculum**

The biology curriculum includes 5 courses on 4 consecutive years. The complete formation includes 200 hours of in-class practical work.

- Bachelor’s Degree in Biology
  - 180 credits
  - Bloc 1: 60 credits
  - Bloc 2: 50 credits
  - Bloc 3: 70 credits

- Master’s Degree in Biology
  - 120 credits
  - Bloc 1: 50 credits
  - Bloc 2: 70 credits

**Mandatory hours**
- Data Science I: visualisation and inference
  - 70 hours
- Data Science II: analysis and modelling
  - 40 hours
- Data Science III: exploration and prediction
  - 30 hours
- Data Science IV: practice
  - 30 hours
- Data Science V: reproducible research
  - 30 hours

**Optional hours**
- 200 hours total

**Pedagogical approach & tools**

- **Students**
  - [http://biodatascience-course.sciviews.org](http://biodatascience-course.sciviews.org)
  - Work with a fully configured virtual machine in class and at home
  - yearly update: SciViews Box 2019 (last version)
  - Have access to self-study materials (online, in French)
  - Self-assess with interactive quizzes (learnr)
  - Activities and answers collected in a database
  - Work collaboratively to apply the knowledge
  - Assessments managed

**Attendence of students in data sciences I**

The figure below shows the participation rate of students during their self-assessment for each quiz (score is the ratio of the submitted responses on the number of questions). Similar interactive quizzes (learnr) and the 187 GitHub repositories created by the students (GitHub Classroom) are used for summative assessments.

**Diagnostic tools**

We have collected more than 41 000 entries with 18 interactive quizzes and 43 students. A shiny app is developed to reveal the quality of learning and to improve the quizzes. For instance, the figure shows that the student 2 is better that average for quiz 'sdd1.02b'.

**Conclusion**

This pedagogical approach shows a particularly large participation rate and excellent overall result. We never got such a high success rate in the previous traditional biostatistics courses. The students are clearly more motivated to use a computer.

Continuous and self learning is the key to acquire data science skills. This is possible thanks to the SciViews Box usable both in class and at home and to the self-evaluation quizzes. Student activity monitoring in a database provides useful and detailed information on the learning process.