

Comment on the papers of James B. Ramsey. Gilbert Saporta and Deborah Nolan

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In this session we have heard three excellent papers on 'Statistical education using flexible learning approaches'

Deborah Nolan: 'A toolkit for an interactive learning environment'

In the statistical multimedia I have seen unfortunately the technology dominates the context. The clever effects override the statistical contribution.

Multimedia Statistical Labs & Toolkit seems to be more ambitious project.

"Observational studies" example contains good ideas; reminds of an adventure or a computer game. Just like 'Sherlock Holmes and the case of low birth weight.'

The different scenarios give the student a good reason to play the game over and over again.

I hope that this multimedia has enough theory to give the students support in their decision making.

Gilbert Saporta: 'Teaching statistics with internet: a survey of available recourses and the StatNet project'.

Gilbert Saporta's comprehensive survey of the educational material gives a good starting point for everyone who starts surfing.

The web is still developing, it is still in experimental state, we do not yet know what is the best way to use web for teaching statistics. Surfing around in the net gives us both good and bad models. I hope that everyone can avoid the bad ones and develop new and better methods for teaching.

In his paper Saporta wonders why the distance learning Universities are not using Internet resources.

Usually the distance learning Universities are using CD-roms for to distribute their educational material. CD-rom is independent of the net connection and is fast and cheap. Some of them do have their own WWW-pages, but those are hidden behind usernames and passwords, so they cannot be found on any list of links.

James B. Ramsey 'Why Do Students Find Statistics So Difficult'.

James B. Ramsey has collected the main problems in teaching statistics, and he gives some good advice to the teachers.

In theory he is right, but the practice is more complicated.

The unique characteristics of statistics is only one of the many reasons why the students find statistics difficult.

It is easy to find many other reasons:

Student

The attitude is a strong reason, of my students 8% have very negative and 30% negative attitude toward statistics.

They have had difficulties in mathematics in the high school and they think that statistics equal mathematics. To teach statistics to these students is a challenge.

Teacher

At the high school level statistics is usually taught by the mathematics teacher.

For the mathematician the formulas and proofs or computation of probabilities or test statistics are the essence, not the extraction of facts from the figures.

The end result of this type of teaching was highlighted to me by a student saying 'I did statistics in high school, but I never got the idea; what does the term statistical inference really stand for?'

Teaching computational formulas is no problem. The problem is how to teach statistical thinking. The best feedback I have ever had was from a university student who said 'On your course I have learned a new way of thinking.'

Syllabus

The problem with the syllabus is, that the demands include all the known statistical tricks, but the time allocated is hardly enough to cover the introduction. The theory that unites the tricks is completely forgotten.

Textbook

It is difficult to give students with varying background and knowledge the same books. It is like telling everybody to wear shoes of the same size.

There are many good statistical textbooks, but the cookbooks that teach the tricks without theory are the most popular ones.

Statistics

Statistics is a wide and challenging discipline. It took many years for me to learn statistics, and I should still learn more.

So what to do?

I think the best way is to teach the teachers to teach statistics. To give them

- good models on teaching statistics
- good new ideas
- good teaching material
- good examples for the students.

For this the Web is the best media.