

Draft of article by Michael Wood published as “I’ll make it simple” in *The Times Higher*, August 30, 2002, page 12.

I remember reading that, at some stage, only two people understood Einstein's theory of general relativity. I think there may now be more than two, but there certainly aren't many. The theory is too difficult to be widely understood.

The same is true of other things we teach. The work turns out to be too difficult or time consuming, and many students end up with a woefully inadequate grasp of their subject. Pass marks of 40% implicitly acknowledge this. At all levels, the number of people who can make good use of academic knowledge is far fewer than it would be in an ideal world.

In addition, we have far more knowledge to learn than previous generations. And there are obviously limits to the amount we can take in - due to the limited time available, as well as our limited abilities.

The obvious solution to these problems is to try to simplify academic knowledge, so that it is easier and quicker to learn and understand. Then students could get away with spending less time on their studies, and either tackle more challenging topics, or do something else.

A student's failure to master something should be viewed as a failure of the epistemological and educational system, not as a failure of the student. Blame the product, not the customer!

Imagine that Einstein's general relativity were simplified so that I could understand it. Imagine that the contents of an undergraduate degree programme were simplified so that it could be learned by almost anyone in a few months.

This is, perhaps, impossible. But I think that considerable simplification is possible in many areas.

These days word processors are easy to use. When they were first invented, however, they were complicated beasts requiring considerable effort, and training, to master. The education problem has been solved by making the task easier.

Going back a few years to Roman times, the lack of the modern notation system for numbers meant that simple arithmetic was far from simple. More recently, the advent of calculators and computers makes arithmetic trivial.

Instead of the complicated methods taught in schools, quadratic equations can be solved by trial and error with a spreadsheet 'solver' - which is easy, entirely transparent, and works for many other equations besides quadratic ones.

There are similar opportunities in statistics. Much of mathematical statistics (t tests, chi square tests, analysis of variance) is probability theory - very complicated but, these days, easily replaced by far more transparent computer simulations.

These are just a few examples. There are many other possibilities. Some fields of learning are complex but useless; they can be simplified by the simple expedient of ignoring them.

We need to value simplicity. Otherwise we won't be able to cope, and intellectual evolution will slow down or even stop. Perhaps not every failing student will then be able to see further and become an Einstein, but it does seem likely that every Einstein will only succeed by taking every available opportunity to simplify things.

There is, however, little tradition of valuing simplicity in academia. Research which emphasises its user friendliness is not likely to be highly rated by the RAE. Simplicity is against the interests of researchers - who need to impress with their cleverness - and educationalists - who need hard subjects to create a market for teaching and assessment - and professional bodies - who need barriers to new entrants. As academics, we assume we must do our utmost to resist the decline in “standards”. In the words of a recent *Daily Telegraph* leader column, "maths should be hard".

It is tempting to speculate on what the old guard would have said when the Arabs swept the Roman numerals away. "They won't appreciate the difference between big and small numbers", perhaps, or simply "It'll make life too easy."

I'm not advocating dumbing down. It's more like dumbing up. To achieve more, we've got to strive for simplicity - which is certainly not a simple goal.

At the moment, this is not even on the agenda. I suspect no university has a Professor of simple learning. The trouble is simplicity doesn't have a professorial ring about it. Perhaps it should?
michael.wood@port.ac.uk