

COLUMN

Unleash your inner dummy

There is something to be said for letting go of the mantle of expert, argues **Peter Fiske**.

In science, intellect and intelligence are valued above all else. Scientists spend years in graduate programmes, studying, teaching and researching, to become experts in their fields. Having invested so many years in developing our expertise, we naturally assume that it is the main thing that we can offer the world. Some assume that where we lack expertise, we cannot add any value.

The structure and culture of research tends to reinforce this idea. In papers, scientists reference only the leading experts. It is next to impossible for someone who is not recognized to get funding — no matter how good their grant application. Fear of failure causes many of us to avoid environments in which we are not experts. There may be no such thing as a stupid question in primary school, but in graduate school one can be made to feel quite uneasy about asking a basic question.

Ironically, always playing the expert can be limiting, in terms of both contributions to science and career options. Sometimes, playing the dummy can be liberating and help to reveal opportunities that would otherwise have been overlooked. Dummies ask questions that experts assume were answered long ago. Dummies explore subject areas in which they lack knowledge. Dummies listen more and talk less.

Becoming a dummy frees you from dogma. Developing expertise can often mean ingesting unquestioned assumptions and accepted facts. Such received beliefs can lead to unchallenged group decision-making and prevent a community from recognizing a path-breaking discovery — especially when it comes from someone outside the discipline.

In fact, many exciting scientific discoveries have arisen from a non-expert asking a basic question — consider, for example, the connection between the extinction of the dinosaurs and a meteorite impact, which was the brainchild of an experimental physicist, not a palaeontologist. Not coincidentally, experts in a field often meet these basic questions with a fair degree of hostility.

Embracing your inner dummy is also a powerful tool for communicating science. Many scientists assume that public hostility toward science stems from ignorance of



the facts, and that science education is the remedy. But perhaps the answer is also more human engagement by scientists; sometimes they need to step out of the role of expert and seek to understand the audience's cultural and ethical perspectives.

Scientists' preoccupation with being an expert as they consider career options can be enormously limiting. Newly minted PhD holders can have a hard time seeing themselves as anything but researchers. The idea that they are experts in their subjects is familiar and comfortable. Less familiar is the notion that the transferable skills they have developed — such as analysis, research and model testing — may also make them adaptable problem-solvers, able to contribute in a wide range of career environments. As a result, many PhD holders limit their ambitions to a job within their discipline.

In reality, doing original scientific research in a graduate programme can prepare you for a variety of environments and roles. The years spent developing and testing a hypothesis, coping with limited resources and learning to use an array of complicated tools for gathering and analysing scientific data are excellent preparation for being innovative, resourceful and effective wherever you work. By letting go of the need to be an expert, you can approach unfamiliar problems and recognize the underlying connections with what you have already done. ■

Peter Fiske is chief executive of PAX Water Technologies in Richmond, California, and author of *Put Your Science to Work* (American Geophysical Union, 2001).

UNITED STATES

Doctorate awards drop

The number of science doctorates awarded in the United States has declined for the first time in eight years, according to a report by the US National Science Foundation (NSF). The NSF's annual survey, out in late November, revealed that US institutions conferred 25,820 science doctorates in 2009, but only 25,589 in 2010, a decrease of 0.89%. Between 2002 and 2009, the number climbed by 32%. However, 2009–10 saw small drops in agricultural sciences, molecular biology, neuroscience, Earth sciences and chemistry. Report author Mark Fiegenger, a statistician at the NSF in Arlington, Virginia, says that the fall might have been caused by the uncertain economy, which is prompting science graduate students to stay in their programmes for longer, rather than claiming their degrees. "They may be staying in school until the economy looks better and they can get a position," says Fiegenger.

UNITED KINGDOM

Manchester hiring

Despite austerity measures across Britain, the University of Manchester is creating more than 30 science faculty posts as part of a £20-million (US\$31-million) recruitment campaign. It hopes to boost its performance in the Research Excellence Framework (REF) used to assess UK universities. The positions include 23 professorships and 7 lectureships, and are part of a move to establish more than 100 posts across all fields. A spokesperson says that the scheme will put Manchester ahead of institutions that are cutting back, so that it will score well in the 2014 REF and receive more funding. Manchester has a £40-million budget surplus this year as a result of cost-saving measures.

FUNDING

Gift system for science

An innovative website lets the public donate to scientific projects. SciFlies (<http://sciflies.org>), publicly launched on 22 November, lists and promotes peer-reviewed projects, giving researchers 6 months to reach funding targets. Creator David Fries, a marine scientist at the University of South Florida in St Petersburg, says that the site lets scientists raise money and build a community of supporters. Donations are free from university contract and overhead rates, says Fries, so researchers get a large share.