Stop teaching Indians to copy and paste

Major reform of education in India should encourage original thinking to boost the nation's research, argues **Anurag Chaurasia**.

My eight-year-old son came home from school disappointed last week. When asked the test question "How can we save the environment from pollution?", he had tried to write the answer in his own way. This did not go down well with his teacher, who cut his mark and asked why he had not repeated the answer as it was printed in the textbook. That's common practice in India. To get top marks, school children must learn and regurgitate answers presented to them. With such a culture, is it any wonder that plagiarism and unoriginal thinking are so prevalent in Indian science and research?

We should all be disappointed with my son's experience at his school. And India currently has a rare, possibly once-in-a-lifetime opportunity to sort it out. A major review of the nation's education system has made several recommendations to the government, which has so far not published them. Scientists and others are now waiting for the government to say what it will do.

The education system is the best place to start to improve Indian science. Many of the problems that hold back Indian research are set in motion when researchers are in school and university. Science, they are told and shown, is about answering questions, not asking them. Even at university level, we are taught to learn from the class notes written by the teachers on the board, who themselves copy it from a book, and to answer in the same way in the examination.

This slack attitude goes right to the top. Successful Indian grant applications often copy text from grants submitted in other countries. And a 2010 report on genetically modified crops prepared by officials from six Indian science academies simply cut-and-pasted text from a previous publication. India doesn't take the offence seriously. Researchers who are shown to have committed plagiarism — which is serious misconduct, and enough in many countries to end a career — are typically given only a note of instruction not to do it again.

India had a rich education system in the past, which gave the world many influential thinkers and writers. The coming school reform must attempt to reinstate the once-prized qualities of innovation and discovery. Perhaps this change will also help to kick-start interest in the fundamental sciences, which have become less popular in recent years as students switch to applied sciences, medicine and commerce.

Higher-education institutions can make changes that will have a more immediate impact on Indian science. They must take a harder line on plagiarism by setting and enforcing rules and by introducing ethics classes to show students that the practices that they learned in school are no longer acceptable. And the government must demand that universities introduce more and stricter measures to guarantee the standard of the degrees, and especially the postgraduate qualifications they issue.

Poor standards explain why Indian universities rarely feature, and sometimes aren't included at all, in league tables of international institutions. (The 2015–16 Times Higher Education World University Rankings do not include a single Indian university in the top 200.) This is unacceptable for a nation of India's size and ambition.

Some of the best institutions in the country have taken a few steps to improve quality — they insist that a PhD project must produce two papers in international journals, and that a thesis is reviewed by a foreign expert. But these measures are too easily circumvented. PhD students simply pay to publish in a low-quality, open-access journal and send their thesis to a friend. We need stricter definitions of who can publish and review work that will grant a young Indian scientist a ticket to academia.

This is especially true for the private education institutions and publishers that are rapidly emerging, and that are polluting Indian science and scientific literature just to make money. These institutions charge students to complete low-grade PhDs and to publish poor work — a move encouraged by government officials who want to give private education more autonomy. Moves to allow foreign institutions to establish campuses in India must be closely regulated if they are not to make the situation worse.

There are at least some welcome attempts under way to improve journal quality. The University Grants Commission has asked experts to produce a list of approved journals in which academics must publish to earn points in the Indian system that is used to judge performance and award promotions. This idea should be extended to include papers that are published as part of a PhD programme.

The final change that the education reform can bring about for Indian science is to alter the selection and attitudes of scientists who make it to tenured positions. At present, too many see science as a route to a stable career in administration. They want to leave the laboratory at the earliest possible opportunity — perhaps because they have never learned the true nature and satisfaction of a research job well done. In my 20-year scientific career, I have rarely seen any researchers who wish to work in the lab instead of opting for a desk job. Most of the best Indian scientists initially did very well at the bench but soon went into administration, losing their talent in the office files.

I don't know whether my son will want to be a scientist. But if he does, I want him to be a true scientist — and in India, that will demand big changes in the way that he is taught. ■

MANY OF THE PROBLEMS THAT **HOLD BACK** INDIAN RESEARCH ARE SET IN MOTION WHEN RESEARCHERS **ARE IN SCHOOL** AND UNIVERSITY.

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