

Science Education Without Research is History

Kampala, May 21, 2007 (New Vision/All Africa Global Media via COMTEX) -- The Government recently announced that it is stopping sponsorship of Arts students in public universities in favour of Sciences. But, creating a pool of scientists without research is unlikely to achieve the desired result, writes Nick Twinamatsiko

A UGANDAN who went to Australia for his masters degree in Structural Engineering, and then to the UK for his PhD, recently confided in me that he experienced a cultural shock when he realised that in those countries, engineering students were not considered brilliant.

This side of the world, the best performing students at A'level usually enrol for civil, electrical and telecommunications engineering.

Indeed, it is most probable that if Isaac Newton or Albert Einstein were cast into our educational culture, they would end up as engineers, rather than physicists.

Whether, as engineers they would make the same mark they made as scientists, is highly doubtful.

While scientists typically investigate to discover the universal laws of nature, engineers typically harness the universal laws of science, to find local solutions to local problems.

When engineers do research, it is mostly applied research, rather than the basic research that scientists engage in. Engineering can only be as accurate as the science on which it is based.

It takes genius to become a great scientist, but an average mind, without much originality, can make a great engineer.

The reason for this is that scientists must extend frontiers of knowledge about nature, whereas engineers often simply refer to design codes, laws and established formulae to find solutions.

So, how come our brightest students opt for courses that neither require their level of intelligence, nor offer them opportunity to realise universal influence? An interesting side of the explanation is in the motives that drive their choices.

Blaise Pascal, Leonardo Da Vinci, Albert Einstein, etc, were driven by an insatiable thirst for truth.

This explains why, besides being great scientists, they were great philosophers. But we Ugandans, driven, as the economy dictates, by the need for employment, must opt for marketable courses. Few will spend time in the laboratory, if doing so will not help them put bread on the table.

The other part of the reason is that we have distorted the meaning of science. We take them to be scientists, rather than the science historians, who only know the names of the great scientists and their theories.

Because some students have picked this misconception about what it really means to be a scientist, it is not a wonder if they are not excited about careers in pure science.

This misconception would wane if some scientists stood out and practised the meaning of their titles. But then again, they must make ends meet and so they end up in classrooms, as science historians.

There is also the argument made by some, that whatever there was to discover has already been discovered.

Scientific discoveries, like geographical ones, can only be made once and the more that are made, the less that remain to be made.

But, while we can draw a comprehensive geographical map of the universe, it is evident that we cannot, as yet, draw a full and comprehensive map of nature.

Even the general international magazines - let alone science journals - such as Newsweek and Time, always carry reports of new science frontiers being reached overseas.

A century ago, science was already many centuries old, but it is then that Einstein published the theory that a council of prominent scientists later declared the greatest discovery of all time.

As we survey the diversity of the nature that we like to parade as our gift, we should ask ourselves whether we have pursued all the research opportunities that this gift presents.

The Government's financial commitment to science education is commendable, but unless it is accompanied by the same commitment to research - both basic and applied - we may only make false progress.

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