



Lecturing and innovation

by Pieter de Villiers

Whenever we need to stay in touch with a moving object, the speed of that moving object determines the difficulties we experience in keeping up with it. This very simple statement holds extensive implications for the reality of our current world of business, research, lecturing and learning.

In a changing world, the simple principle that the speed of an object determines the difficulties in keeping up is applicable in such a way that it has become a serious threat to the sustainability of industries and many companies that are unable to keep up with the changes we experience. Universities are not free from such risks and challenges.

What do we lecture?

Universities usually teach the principles of science as a primary focus and the practical application of these principles as a secondary focus. Many principles of science have a history of stability. This is especially the case in natural sciences like physics and mathematics. In the social sciences, these principles are not as stable because of the nature and complexity of the human mind. The fact remains that universities should teach the fixed principles of science, as well as their application in real-life situations.

Let's look at two very simple examples. The law of gravity is known, well documented and described. This law is fixed. It does not change. We apply the principles of this law when we build an aeroplane or a bridge. Universities must teach both scientific laws and their applications. They cannot just teach students to design buildings, they must also teach them to use modern computer technologies instead of pencil and paper as instruments of work.

The challenge

If we agree to the fact that proper training must teach both the principles of science and the practical applications of these principles, we must also agree to the fact that lecturing should teach the most recent practical applications of science as used in the real world of business and life in general. This brings us to a critical focus point. Should a university

teach the most recent practical applications of science? If they don't teach the most recent applications of science, universities will run the risk of delivering graduates with such outdated knowledge and skills that business will not be able to fully utilise the knowledge of these graduates. The reason is that the gap between what has been taught and the real world of applied science will be so big that young graduates will not have sufficient knowledge and experience when they enter the world of modern business.

The challenge is how a university should stay in sync with the changes in applied sciences, given the current pace of development. In simple terms, how do we ensure that our lecturing content reflects the most recent developments?

Some criticism

Consultants in many industries across many disciplines of science experience a serious gap between the scientific knowledge of newly trained students and the way in which scientific knowledge is applied in futuristic developments. In fact, it is the experience of industry that young graduates are very uncomfortable with anything that does not fit the (sometimes outdated) ideas being taught by universities.

Sophisticated consultants no longer investigate the strategic and operational design of a business by means of a process of personal engagement through interviews, questionnaires, data gathering and data processing. This is an outdated way of consulting. They use sophisticated artificial intelligence systems to map the strategic and operational design of a business. These systems are quick, efficient and delivered at a very low cost relative to the old methods. When doing this, industry experiences

young graduates to be totally out of their depth, consistently saying that a system-based analysis is not possible, reliable or complete. They do not know how these tools work or how they are developed and used. This is not an isolated case. Let us look at the arguments for not training students in the most recent innovations in business:

- Some new concepts, systems and products have not been tested properly and should only become part of training material once they have been tested and validated. The fact is that the process of testing and validating is so cumbersome and old-minded that futuristic companies do not have the time for it. If the thing works and makes sense, use it!
- There must be proper peer-group reviews and well-published research on the topic. This can happen in an academic environment, but not in business. The reasons are multiple. Losing your innovative edge by sharing critical intellectual property, wasting critical time to market and having to spend time and energy convincing meaningless critics are just some of the reasons.
- Universities do not have access to the most recent developments. This is most probably the best argument of all. Consultants are often faced with a situation where business leaders need help in the form of research and critical intellectual understanding of some of the challenges they face. They tend to refer these companies to their nearest university where such academics work. In the vast majority of cases, consultants realise that they either have no relationship with such a university or they show an unwillingness to work with the universities for fear of the access they have to grant these universities to their intellectual property. This is a serious

challenge that deprives the economy of innovation to grow. (Consultants would prefer business to be much closer to academic institutions in order to prevent this. It will also be an important contribution to the capabilities of universities to lecture in collaboration with innovative development in industry and business.)

Is there a solution?

It must be emphasised that the predicament of “his master’s voice” is fully understood. This predicament resides in the fact that lecturers tend to teach predominantly what their masters taught them. They will always be on good ground in terms of a responsible approach to their work if they stick to what is known and what has been tested.

Unfortunately, this is not good enough.

Consider the following:

- Get the innovators to lecture. Invite the innovators of new systems, products and applications to lecture on what they have done and teach the students to validate and test the innovators’ products.
- Use students for research. Students should be used for research, even during their undergraduate years. Various assignments should be given with the outcome of finding the most recent ways in which things are being done against specific scientific underlying principles. These research results could, in turn, be used to inform faculties who to invite to present their innovations as part of a lecturing programme.
- Use innovative systems internally. Universities should use modern technologies and applications in order to demonstrate how innovative systems, processes and products are being utilised in business. Most universities will obviously

think they do this. They do not. Some universities follow the most outdated methods and use old technologies when it comes to running the university as a business.

All the above are to be addressed by universities. The fact is that business has a critical role to play in this challenge. Business has to move much closer to the work being done by universities and use all the known methods of securing critical information as intellectual property and allow universities to work with them. If business does not take a much greater initiative in this regard, innovative success will never be optimal.

Any form of lecturing and teaching that does not stay in touch with innovation and progressive developments in our world is not worth the paper on which the learning material has been printed. For consultants, it will always be a thrill to experience areas where learning institutions have successfully trained their students on the most recent developments in the world of applied science, where business and the principles of science meet in order to take our world into the future. To all lecturers, faculties and universities making this an active strategy of their role in our world, congratulations and well done! 📌



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