The Needs and Expectations of the Employers and Students for Quantitative Subjects in Business

Mehryar Nooriafshar
University of Southern Queensland, Toowoomba, Australia
mehryar@usq.edu.au

1. Introduction

Model building applications using mathematics and Statistics are discussed widely in many textbooks. For instance, Linear Programming and Regression Analysis are applied to a variety of situations which range from manufacturing to health and education. The employers' needs and expectations in terms of these techniques need to be investigated. Teaching approaches would obviously have a significant effect on students' learning which consequently meets the employers' needs. Feedback from the employers and students will certainly help with making improvements to the teaching materials and training.

2. Employers' Needs and Expectations

It can be argued that the employers are the ultimate customers of the educational institutes. Hence, their needs and expectations should be taken into consideration in designing course materials. As an initial study, a sample of 50 organisations representing both goods producing and service providing industries were randomly selected from the Darling Downs Region (in and around Toowoomba) of Queensland in Australia. Most (90%) of these industries employ less than 100 employees. Data collection was carried out by telephone and a specially designed brief questionnaire was completed during each call. The questions aimed to identify the applicability of quantitative and statistical techniques favoured and utilized by these industries. Around 15% of the surveyed employers have rated the applicability of these approaches to decision making as reasonably high (4 or 5 on a sale 1 to 5). See Figure 1.

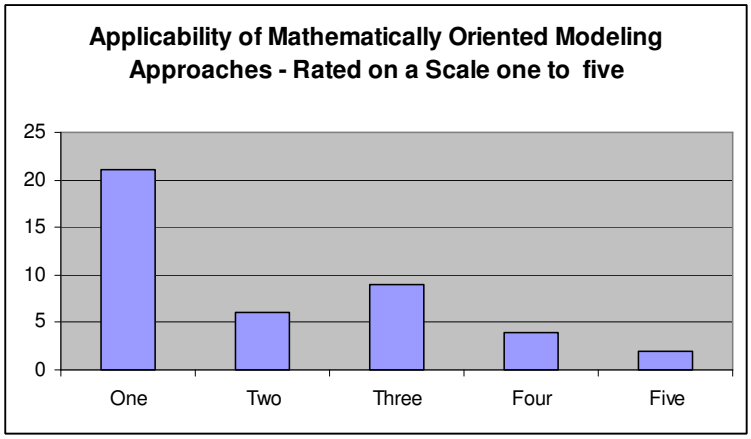

Figure 1 – Employers' Rating of the Applicability of Mathematically Oriented Modeling Approaches

It is interesting to note that 50% of the surveyed employers believe that university graduates do not posses the necessary practical skills to undertake tasks within industries. The next section investigates students learning needs and preferences with a view to linking them with the employers' requirements.

3. Identifying Students Learning Needs and Preferences

A group of twenty first-year undergraduate students were selected for the purposes of an experiment on the effectiveness of teaching basic mathematics concepts via practical teaching aids. These students were from different mathematical backgrounds and the majority did not have a very strong background in quantitative fields. As Figure 2 illustrates, a large proportion of these students have reported that they would have a preference for seeing relationships and patters demonstrated to them visually. This finding is compatible with recent research findings that students prefer and benefit from visually rich methods of teaching. For details see Nooriafshar and Todhunter (2004). It is interesting to note that the use of analogies and visuals in teaching materials are identified as ways of encouraging learners to become "whole-brained", see Funderstanding (n.d.). In other words right brain is invoked through creative activities such as the visual features. Hence, we would not just use the part of the brain which is referred to as "50% of brain's mighty toolkit" by Buzon (2002).

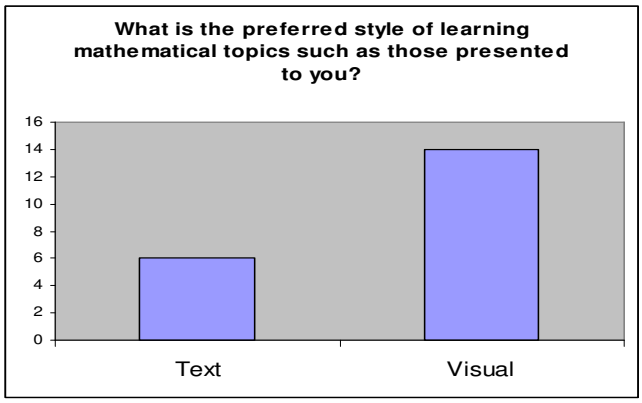

Figure 2 – Students' Preference for Learning Styles

Finally, it should be noted that methods of teaching quantitative subjects have certainly been influenced by modern computing (multimedia and online). They will change even more dramatically in the years to come. One thing however remains the same; and that is the ability of the teacher to convey the underlying concepts to the learner. The ability to adapt and adjust in response to needs of the modern world will certainly help with meeting the employers' needs. A future work will involve a comparative study of a metropolitan data with this regional data.

4. References

Buzon T. (2002), *How to Mind Map*, Thorsons, London

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Nooriafshar M. and Todhunter B. (2004), "Designing a Web Enhanced Multimedia Learning Environment (WEMLE) for Project Management ", *Journal of Interactive Learning Research (JILR),* (2004) **15**(1), 33-41.