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# Knowledge transfer partnerships, environmental management systems and masters level teaching

Colin Trier

Senior Lecturer, School of Earth Ocean & Environmental Sciences, University of Plymouth

## Abstract

I have been working as a supervisor on two Knowledge Transfer Partnerships (KTP) with local companies that have led to the implementation of the Environmental Management System (EMS) ISO14001 standard. With the help of the second company I have developed an EMS case study which was delivered for the first time to students on our MSc Sustainable Environmental Management at a workshop this year. Case studies like this bridge a gap where various issues, including Health & Safety, distance, cost and large group sizes, increasingly preclude student visits to industrial sites.

## Introduction

The KTP scheme is a three-way partnership between a university and a local business (small or medium size enterprises or SME) with funding mediated through a Government department, such as the Department of Environment, Food and Rural Affairs (DEFRA) or a Regional Development Agency. It enables the two-year employment of a Research Associate, working for the university, but based in the company and engaged with a previously agreed priority research agenda.

Often, the focus for a KTP has been on improving the environmental performance of a company. Environmental concerns are rarely the core business focus and have historically often been ignored by SMEs. However, the recent exponential rise in environmental costs (e.g. for waste), and increasing burdens imposed by EU/UK environmental legislation and regulation, (e.g. the Integrated Pollution Prevention and Control Directive (IPPC)), have given these matters a higher profile. There is a formal process for improving environmental performance: an Environmental Management System accredited to the ISO14001 standard. Many companies are interested in gaining this standard, but lack the necessary expertise; hence KTPs have been used to fill this gap.

From the University perspective, there are several benefits for both staff and students. There is constantly the need for staff to update their knowledge and experience. When their expertise overlaps with the needs of local industry there is the

potential for a fruitful two-way learning experience. In a sense, this is the best continual professional development opportunity (CPD) - real life problems in the real world - the meeting of theory and practice. This process usually has a strong beneficial impact on teaching, injecting the taught subject with relevance and topicality, along with the value of real life examples to stimulate student learning.

Masters students represent the higher achievers amongst graduates and are motivated, for a range of reasons, to continue their engagement with the academic community. Many of them come directly from undergraduate courses. Others may have some work experience, although this is often office based. Undergraduate courses have had constant pressure to limit fieldwork, although this has been successfully resisted in Environmental Science and other degree courses at Plymouth. However, field visits to industrial sites, particularly to the most polluting industries, have become increasingly rare. In the early 1980s, the Environmental Science course at Plymouth ran an extended fieldtrip to the West Midlands, in which steel works, coal-fired power stations, foundries, chemical and car manufacturers and other similar sites were all subjects for in-depth student visits. This trend had ended by the 1990's for various reasons, including a growing Health and Safety culture preventing visits by groups of over 10, commercial sensitivities about revealing 'dirty washing' in public (i.e. owning up to bad practice) and the costs. In addition, student perceptions were showing a marked preference for more exotic overseas field trips. As a consequence, many Masters students nowadays have much theoretical, but little practical experience of the most polluting industries and how potential environmental impacts can be minimised.

The challenge has been to bridge the gap between student experience and the wider world of industry, without having site visits. The in-depth involvement as a KTP supervisor on two partnerships with local businesses, over a two year period, has yielded a rich experience from which to develop a case study on the practical implementation of EMS. This and other similar case studies based on local companies can engage the student interest at a deeper level than is achieved with the more usual lecture-style approach, based on generalised examples.

## A brief explanation of EMS focusing on significant aspects

ISO 14001 defines an EMS as:

*The part of the overall management system that includes organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy*

International Standards Organisation (2004' para. 3.5)

It is beyond the scope of this brief article to give a detailed description of the EMS approach. Suffice to say that it is a systematic approach to mapping and managing all potential environmental impacts. It covers the same ground as that of environmental regulations, such as IPPC, but goes further to include a comprehensive review of all the activities of the company, so as to identify any aspects of those activities that might have an impact on the environment. Once these aspects have been listed, they can then be ranked in terms of significance. This ranking is based on the sum of several parameters, usually made up of the magnitude of hazard and frequency of occurrence in normal, abnormal and emergency circumstances.

After some years as a Chartered Environmentalist with a professional interest in EMS, I find that when I walk around an industrial site, for whatever reason, at one level I am constantly making observations and identifying potentially significant environmental aspects. This is almost second nature to an environmental scientist working in this field. Indeed, I would highlight it as a key skill for the professional. This raises the question how one can develop this skill in students? My experience has been that many students have great difficulty in this process, without considerable prompting. Therefore, the case study was developed with the primary objective to develop student skills in indentifying and ranking environmental aspects of a business.

### The case study – Bandvulc

The case study used was based on a local company called Bandvulc, which specialises in producing retread truck tyres. The company manages the tyre performance and replacement for almost 65% of all the grocery deliveries within the UK. Their most recent newsletter and a copy of their environmental policy can be found on their website (Bandvulc, 2008).

At this stage what kind of aspects of the business suggest to you potential environmental impacts? I would hazard a guess that, for most of us, there is insufficient detail as yet to answer in any comprehensive way.



*Bandvulc before retread*



*Bandvulc being retreaded*



*Finished tyres*

This then is the starting point of the workshop case study. When we run it, I invite the ex-KTP associate (who now works for the company) plus an engineer friend who co-supervised the KTP with me, to join the workshop. This additional multi perspective input from external professionals is a great help in bringing the case study to life. The pedagogy of so many current teaching agendas, e.g. ESD, emphasises the importance of process as much as content, and this is nowhere more true than in a case study approach like the one described here.

One advantage for this case study was permission by the company for the use of photography to record the key activities on the site. This helped to bring the issue to life for the students. For instance, to talk about the storage of old truck tyres prior to retreading as a potential hazard only comes to life in a photo of a thousand tyres stacked in a yard. This is also the case in illustrating key manufacturing processes which would be quite unfamiliar to most of us.

Using local companies to add to the professional exposure of Masters students can be achieved without necessitating site visits, if close relationships developed over two year KTP partnerships are drawn upon effectively. This very definitely has great benefits to the students, the University and the company involved.

## References

**Bandvulc.** Online at <http://www.bandvulc.com/>. Viewed 2008.

**International Standards Organisation (2004)** *ISO14001: Environmental management systems -- Requirements with guidance for use*. ISO, Geneva

**Knowledge Transfer Partnership.** Online at <http://www.ktponline.org.uk/>. Viewed 2008.

**Colin Trier**

c.trier@plymouth.ac.uk



### **New and Aspiring Lecturers Workshop** **18-19 May 2009 at the University of Birmingham Conference Park** (Please note the change of date for this event)

This two-day residential workshop is designed for recently-appointed teaching staff and postgraduates/GTAs who are aspiring to be lecturers in Geography, Earth and Environmental Sciences (GEES).

The aim is to help participants learn about, evaluate and discuss a range of approaches, methods and resources for learning, teaching and assessment in these disciplines.

By being discipline-specific the event will complement any generic-based institutional courses that delegates are attending or have taken. It will also provide an informal opportunity for delegates to meet and share experiences with new GEES staff from other institutions.

Registration will be opening in February/March 2009.  
For more information, please visit [www.gees.ac.uk](http://www.gees.ac.uk) or contact [events@gees.ac.uk](mailto:events@gees.ac.uk).