

# Chapter 1

## Using Innovations Effectively in a Distance Learning Programme: Case Study at Loughborough University

**Richard Blanchard**  
Loughborough University, UK

**Sheryl Williams**  
Loughborough University, UK

### ABSTRACT

*Distance education is not new. Correspondence courses date back over 150 years. Advances in information and communication technologies, particularly the Internet, open up a host of possibilities to study at a distance, making use of the latest advances in e-learning tools. However, it must be stressed that e-learning has to focus on the learning pedagogy and not just the technology. This chapter examines the role of learning in e-learning by reviewing state-of-the-art developments and innovations to support distance learning students and academics. It identifies strategies for successful learning through the evaluation of student experiences and considers methods and practices that can be employed for delivering a successful learning programme.*

### INTRODUCTION

Over the last 10 years, the Loughborough University MSc in Renewable Energy Systems Technology (REST) by distance learning programme, has delivered and maintained high quality due to

continuous innovation in programme development and delivery. This chapter presents a case study on the REST programme and its innovation in curriculum design, development and delivery that has the potential to be reused and transferred to other courses. The main objective of the chapter is to describe the framework in which the REST programme operates to fulfil the requirements

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in higher education for learning and teaching in distance learning, whilst supporting a cohort of over 300 students around the world. The chapter will be divided into seven main sections. These sections review how the REST programme:

1. Guarantees that engineering education standards are met and maintained
2. Designs and develops an engineering distance learning programme
3. Uses Information and Communication Technology (ICT) innovatively
4. Uses these innovations to support the distance learning lecturers and students
5. Evaluates student participation and feedback
6. Uses administrative processes to support student learning
7. Evaluates methodologies and practices to provide a best practice guide

The overall outcome of this chapter will be to provide a working model on how to use innovations effectively in a higher education engineering programme through distance learning.

## **MAINTAINING ENGINEERING EDUCATION STANDARDS**

According to Steuer and Marks (2008) the UK higher education system prides itself on its reputation for high quality and they ask ‘But high quality for whom, and for what purpose?’ This section describes how the REST programme meets the standards for higher education in distance learning. This is accomplished by reference to a range of Standards and analyses how the programme addresses these requirements. Also included in this section is a review of how the REST programme maintains the accreditation of the Engineering Council through the Institute of Engineering and Technology, the Institute of Mechanical Engineers and the Energy Institute.

In the UK, higher education institutes have degree awarding powers. Standards of higher education are controlled by the Quality Assurance Agency who produce codes of practice and monitor university procedures. For example the design, approval, monitoring and review of higher education programmes (Quality Assurance Agency for Higher Education, 2006). Universities themselves develop robust quality regulations to ensure as much as possible that processes work effectively and fairly.

With respect to distance and e-learning a number of organisations and consortia have developed standards and guidance in this field so that stakeholders in the activity are able to provide a quality learning experience for example, The Quality Assurance Agency for Higher Education (QAA, 2010) outlines good practice guidance for e-learning with respect to programme delivery, student support and the assessment of students. With regards to the technical aspects required for the delivery of e-learning, standards development has taken place that examine elements of the system, such as learning objects (IEEE LTSC, 2002) assessment (BSI, 2002; IMS Global Learning Consortium, 2005) or take a whole systems approach as in the case of the sharable courseware object reference model SCORM (Advanced Distributed Learning, 2004). In contrast a particularly important standard, referred to in QAA (2010) is BS8426:2003 which outlines the need for effective e-support in e-learning systems with a particular focus on the interface between e-support and learners. (British Standards Institute, 2003). For example, students should be able to access suitable learning activities and have a clear understanding of what they need to do without need for remedial intervention. They should be able to follow learning processes, obtain performance support through feedback, and communicate with e-support tutors and peers.

In addition, The UK Engineering Council, the regulatory body that sets and maintains internationally recognised standards of competence and ethics for engineering professionals, produces criteria by which programmes are assessed to

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