

# Chapter 20

## Effectiveness of Interactivity for Enhanced Undergraduate Learning

**Luis Palacios**

*Brunel University, UK*

**Chris Evans**

*Brunel University, UK*

### **ABSTRACT**

*This study focuses on how Technology Enhanced Learning (TEL) can best be used by Brunel University students to enhance their learning. The study considers the impact that different levels of interactivity have on the memory and understanding of the students. In particular, it considers the use of interactive self-assessment questions (ISAQs) as a mechanism to help them learn from an eLearning system. One mechanism that has been employed for over four years is the use of a bespoke multimedia eLearning system available over the Web to first-year undergraduates. A common feature of many eLearning systems is the use of ISAQs to allow students to evaluate their grasp of the material with a view to revisiting it if they feel it necessary. However, ISAQs are time-consuming to develop and implement. This case study considers whether the incorporation of ISAQs has a measurable impact on learning as indicated by their performance in tests.*

### **ORGANIZATION BACKGROUND**

Brunel's distinctive mission has always been to combine academic rigour with the practical, entrepreneurial and imaginative approach pioneered by its namesake Isambard Kingdom "Brunel". The name of Brunel University has become as well-known and respected in engineering circles as was the name of Isambard Kingdom Brunel a hundred years ago for

British engineers who were famous for the creation of the Great Western Railway, a series of famous steamships, including the first with a propeller, and numerous important bridges and tunnels.

Brunel is one of a number of British universities created in the 1960s following the Robbins Report on higher education that recommended immediate expansion of universities, and that all Colleges of Advanced Technology should be given the status of universities (Wikipedia, 2009). Originally Acton Technical College, based in Acton on the outskirts

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of London, it was decided in 1957 that the college should split into two sections – Acton Technical College continued to cater to technicians and craftsmen, whereas Brunel College of Technology was dedicated to the education of chartered engineers.

In 1961 it was awarded the status of College of Advanced Technology, and it was decided that Brunel College should expand at another site in order to accommodate the extra buildings that would be needed. Uxbridge, Hillingdon was chosen to house the new buildings. From April 1, 1962 it was officially named Brunel College of Advanced Technology – it was only the 10th Advanced Technology College in the country, and the last to be awarded this title. The first buildings were due to be finished in 1967. However, in 1963 it was decided that the College should become a technological university, and the Royal Charter was awarded on the June 9, 1966 giving university status. In 1980, the University merged with Shoreditch College of Education, which was located at Cooper's Hill, Runnymede since 1951.

In 1995 the University expanded again, integrating the West London Institute of Higher Education, and adding campuses in Osterley and Twickenham. This increased the number of courses that Brunel University was able to offer – traditionally its strengths had been engineering, science, technology and social sciences. With the addition of the West London Institute, departments such as arts, humanities, geography & earth science, health and sports science were added, and the size of the student body increased to over 12,000. Then Brunel put together a £250 million master plan, to sell off the sites at Runnymede, Osterley and Twickenham, using the revenue to renovate and update the buildings and facilities at Uxbridge. Works already carried out include the library extension, a state-of-the-art sports complex, renovated students' union facilities, a new Heath Sciences teaching centre, and many more halls of residence.

In the late 1990s, the Departments of Physics, Chemistry, and Materials Engineering were closed. In 2004, the then Vice-Chancellor Steven Schwartz, initiated the reorganisation of the university's faculties and departments into schools, and announced the closure of the Department of Geography and Earth Sciences. The present Vice-Chancellor, the sociologist Christopher Jenks who took office in 2006, may be developing a less rankings-driven approach.

This long succession of developments and mergers has brought the University from modest beginnings to a major force on the UK higher education scene. However, today, Brunel University's influence extends far beyond the fields of engineering, science and technology, which were its traditional strengths.

Brunel University has undergone a dramatic expansion in recent years, partly in response to the UK Government's objective of having 50% of school leavers to enter Higher Education. Moreover, today's students have increased demands on their time due to other social and work commitments. This makes it increasingly difficult for all students to physically attend a lecture, at a particular time and place; as a consequence an alternative to teaching using technology has been seen as an appropriate methodology.

## **THEORETICAL BACKGROUND**

TEL is forecast to be the mechanism by which future students and organizations can facilitate learning practices that are independent of time, place and pace. Learners can select the educational material and study in the style and pace that suits them as individuals, enabling them to be active learners. In general, it involves the support of any learning activity by means of technology. These learning activities should be organised with the intention to improve students' knowledge, skills and competence.

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