# Chapter 1
# Making Sense of Science:
## A Review in Scottish Further Education

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## EXECUTIVE SUMMARY

*This review outlines a research-informed teaching case study based on adult learners of chemistry within the Scottish Further Education (FE) sector. It provides some strategies for success in supporting non-major chemistry students and provides some practical ways forward for improving attitudes to learning chemistry and in studying the subject further. An overview of why science, and in particular chemistry, may be perceived to be difficult to learn is discussed, as well as links to the evidence base that outlines the facilitation of meaningful and relevant learning. Through a chemistry curriculum redesign, discussions on the shift of attitudes, perceptions of learning, difficulties, and preferred topics in lessons are discussed. In addition, a general overview of the science education scene in Further Education is presented. Based on research evidence and educational neuroscience, there are suggested implications for educators in supporting adult students learning non-major science courses.*

## ORGANIZATIONAL BACKGROUND

### Scottish Further Education

The Scottish educational landscape is distinct from the rest of the UK (Humes & Bryce, 2003), with Further Education (FE) having a long and distinguished history (Paterson, 2003). FE colleges are highly diverse in the nature and range of courses they offer; and subsequently, the students they attract are also diverse in nature. Some students enter FE to embark on courses with strong vocational emphases. Others may study to fill gaps left from school education, whilst some enter FE as adults after a gap of many years of formal learning. FE can also be used as a stepping stone for those wishing entry into formal Higher Education (HE). The emphasis is largely placed on the notion of lifelong learning that is accessible to everyone (Scottish Executive, 2003).

### Political and Strategic Background

The Scottish Government considers lifelong learning to be one of its top priorities, and its vision is that all individuals will be able to access education that is flexible and relevant to their needs and aspirations (Canning, 1999; Scottish Executive, 2003; Scottish Government, 2007, 2011). It is widely understood that the role of FE is to provide post-16 education and vocational training, which offers learners the opportunity to gain more skills and greater employment options (Scottish Government, 2011).

The Scottish Further and Higher Education Funding Council (The Scottish Funding Council, SFC) is a Non-Departmental Public Body (NDPB), with the sponsor department being the Scottish Government Employability, Skills and Lifelong Learning Directorate (SGESLLD). The SFC is responsible for funding teaching, learning provision and research over Scotland's colleges and universities and each year, announces the allocation of public funds to support these areas. This funding also includes costs related to staff, infrastructure, buildings, and equipment. Over the academic year 2011-2012 for instance, a total of £577.6m was administered to the college sector (Scottish Funding Council, 2012). In addition to the allocation of funds, the SFC, under the Further and Higher Education (Scotland) Act 2005 (Crown Copyright, 2005), needs to ensure that each of the 'fundable bodies' have accountable officers, arrangements for student support needs, and other systematic provisions. Furthermore, the SFC promotes a 'widening participation' agenda to Further and Higher Education via its national annual conference 'Learning for All' (Scottish Funding Council, 2013c).

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