Engineering Professional Development Related to Sustainability of Quality

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ABSTRACT

The relationship between employability, professionalism and routes to chartered engineer for engineering graduates in relation to the sustainability of quality and standards is discussed in this paper. Different political and economic developments, set in the context of globalisation, like knowledge led economic policy and the political drift from neo-liberal to third way policies have impacted and shaped the current notion of employability, professionalism and standards. These concepts are outlined and considered in relation to sustaining quality assured formation of undergraduate engineers through routes to professional chartered engineer. Two routes, academic and work related are discussed using case studies to show how the necessary academic standards can be achieved for recognition as a chartered engineer and consideration given as to whether the same quality assured outcomes can be achieved by both routes. These two routes do not deliver similar profiles. A model and work related framework is proposed, which needs to be government led within a global context to achieve the solution to many of the tensions discussed and provide a common global system of professional formation.

Keywords: Academic and Work Related Learning, Chartered Engineering Status, Employability, Professionalism, Sustainable Quality

INTRODUCTION

Historically the notion of profession has its roots in law, medicine (human and animal) and education. Each of these professions has developed a particular approach to training that requires the mastery of a body of knowledge associated with the performance of the duties of the profession, leading to acceptance as a member of the profession. The law, (Law Society Scotland, 2010) its practice and implementation can be traced from the earliest civilisation through history to the more formal structures that currently are in place for its practice. It’s interesting to note that only relatively recently has formal training and qualification involved a university education followed by a period as a “pupil” or intern whereas previously training could be completed by a “pupilage” with an approved mentor. Medicine (British Medical Association, 2010) like law can be traced from the earliest civilisations. However for the last

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two or three hundred years some form of formal training has been required before a person could become a medical practitioner and currently on completion of this training new practitioners are required to undergo a period of supervised practice as a final stage of acceptance as “novice” professional (Eraut, 2001, p. 125).

Education and teaching (GTC Scotland, 2010), like law and medicine, can be traced from earliest history where “men of learning” such as Aristotle, Socrates and others through history have provided opportunities for students to learn. Professionalism has also changed over time with the introduction of specific teaching qualifications (Bachelor of Education) and a probationary period of practice that all new teachers must complete successfully. Evolving knowledge in for example engineering and nursing progressed to the point where specific bodies of knowledge could be identified along with the need to master them before entering professional practice.

The key feature of all claims to professional status resides in defining a unique body of knowledge associated with the activity and the exclusiveness of that to members of the profession. Engineering is now a profession where to underpin global practice a broadly agreed range of equivalences in academic qualifications has been attempted but when it comes to professional development significant differences exist on a worldwide basis. In the UK, while chartered status requires a period of practice which is attested and hence quality assured it is possible for a candidate to fail to achieve this standard but still use the term engineer. This situation is quite different in many other countries. In the USA for example a candidate has to satisfy state set requirements in professional practice before they can use the term engineer, while in Germany aspiring engineers have to satisfy set academic and professional requirements to be able to use the title engineer. In addition, codes of ethical behaviour have been rapidly evolving to provide guidance regarding professional performance of the duties associated with the profession. Consideration is given to the tensions which have been generated by political and economic systems and their interpretation regarding the ongoing evolution of engineering professional development which needs to be set within a global context. A common framework will only evolve when countries seriously consider agreeing a common formation system with common agreed systems of quality assurance. This presents real challenge for 21st-century engineering professional development. The situation is usefully described by Cruess, Cruess and Johnston (2000) who noted:

“The core elements of a profession are possession of a specialised body of knowledge and commitment to service.”

POLITICAL AND ECONOMIC PRESSURES AND THEIR EFFECT ON PROFESSIONAL DEVELOPMENT

In the latter part of the 20th century the development of electronic communication systems such as the Internet have had a profound impact on the way people view national and global politics and economics (HM Treasury, 2003; OECD, 1996a,b, 1997; Stiglitz, 1998, 2002; Peters & Humes, 2003). Knowledge is seen as an ever increasingly important element in the strategic thinking of organisation and governments in relation to policy allied to the ability of the national economic structure to compete on a global scale (HM Treasury, 2002; Burton-Jones, 2001). The concept of knowledge led economic progress is firmly routed in the collective psyche of governments and industrial organisations leading to policies that place quality education firmly at the nexus of governments attempts to produce a workforce that can support knowledge led wealth producing activity. The concept of the knowledge worker (Drucker, 1994, 2000) is not new but underpins many of the ideas associated with knowledge led organisations. Professional engineering development needs to be continuously evolved taking into account these aspects alongside
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