Promoting Computer Science and the benefits for the field and individuals of a Postgraduate Degree

Since the 1960's, when the Computer Science discipline first came into its own, technology has evolved to become a fundamental part of our everyday social and working lives. The core principles of Computer Science remain the same with an ever-changing landscape of IT requirements from cloud and virtualisation, varied programming languages and advanced security. Fundamentally, it gives a broad and solid understanding of hardware, programming concepts and how they interact to meet the needs of modern society, enterprise organisations and business. This report highlights trends that have led to the decline in enrolments and the attempts to increase and retain students within higher education. Educational institutions are reversing the trend with the adoption of Computer Science in high school STEM subjects and other initiatives. It will discuss some of the negative thoughts and opinions on the field but also how promotion and encouraging early learners, academics and professionals to enter Postgraduate study benefits the field. Additionally, it will highlight how individuals from both academic and work experience backgrounds will benefit from Postgraduate study.

Over time, interest and enrolment in Computer Science has experienced a decline. Ali & Shubra (2010) shows that contributing reasons include the perceived demands on Information Technology professionals, outsourcing and the selection of a singular programming language. Analysis also shows evidence of sharper declines and difficulties retaining women in Computer Science. Women may not choose to pursue Computer Science with an assumption it is a male dominated field. Some choose to change majors even after enrolment with questions raised of academic ability. However, the performance and engagement of women in the field is comparable to males in the same programs.

These trends are some of the possible reasons for the decline of Computer Science over time. The Information Technology field offers a much broader and diverse range of Undergraduate and Postgraduate study which may influence the individuals chosen pathway. These cover specifics such as programming, networking, data science and cyber security among others, as well as professional certifications. This demonstrates there are many alternatives for continued professional and academic learning which do not necessarily fit into the traditional Computer Science principles. For instance, the introduction and evolution of cloud computing services offers the opportunity for Computer Science curriculums to adapt to the latest current trends.

Furthermore, the decline of enrolment and perceived lack of interest in Computer Science is supported in studies detailing the efforts to increase interest of the field

and enrolment. Smith & Ali (2018) reported on the efforts to increase enrolment and growth in the Computer Science field. Miller, Raghavachary & Goodney (2018) discuss the many benefits of introducing aspects of Computer Science in high school, summer camps and boot camps. They expressed the opinion that the introduction of STEM learning, working with peers, relatable work and projects would be influential. Positive reasons for young students to consider Computer Science as a viable area of study. One could surmise that if the field remains relevant that students will progress onto Undergraduate and Postgraduate study. Highlighting that while there were trends in the decline of interest in Computer Science, educational institutions now appear to be adapting their curriculums to promote interest and reverse the trend.

In contrast to academic learning, there is also great value in the skills and experience of individuals gained through work. This group may not have studied at Postgraduate levels, many have developed valuable skills and knowledge through years of experience becoming valued and active contributors to the field. Many of these skills sit within the core principles of Computer Science. Professionals will apply a variety of hardware and software technologies with proficiency to deliver practical solutions and solve real problems. Consequently, raising the question around the ability of non-academic individuals to study at Postgraduate levels and how they will apply themselves to succeed. These individuals would benefit substantially by receiving peer and professional recognition, academic credentials at Postgraduate level and validation of their skills and knowledge.

Importantly, the Computer Science field is not at risk, however the evidence suggests there is scope to change. In conclusion, the subsequent actions of educational institutions and contributors within the field to reverse this decline provides a clearer path to Postgraduate study. By providing the relevant and higher level of technical theory and practice of Computer Science at Postgraduate level, individuals can answer the challenges and fulfil the expectations of what could be perceived as a stagnant subject area. The benefit of Postgraduate study is to provide individuals with higher levels of education and technical skills, regardless of their educational and development path. Additionally, valuable and desirable skills in communication and collaboration are gained at Postgraduate level. These benefits offer reassurance and validation to the field, industry and society that those individuals who study at Postgraduate level will continue to contribute to and evolve the field.

References:

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