

Diversity and Resolving the Digital Skills Crisis



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According to the *Government Response to the Digital Skills Crisis Report* (HoC-STC, 2017), 12.6 million adults in the UK lack basic digital skills, and this skills gap is costing the UK economy £63 billion a year in lost GDP. Chakravorti and Chaturvedi (2015) warn of the global consequences of the digital skills shortage for the digital economy and the entire workforce. The lack of takeup of STEM subjects by female students at secondary schools and A-levels continues to widen the diversity gap in digital careers. The BERA BCF Curriculum Investigation Grant undertaken by researchers at University of West London explored the barriers and enablers of gender diversity in digital skills delivery at schools (KS3–KS4) and colleges in order to open up a wider range of careers paths in technology. Raising awareness of career and entrepreneurship opportunities in the digital economy among female students is essential. The timeliness of the project was manifested in its alignment with Mayor of London Sadiq Khan’s launch of the women’s equality campaign, #BehindEveryGreatCity, in 2018.

MOTIVATION FOR ACQUISITION: DIGITAL SKILLS

The growing investment in digital skills education and curriculum development over recent years has not resulted in the narrowing of the skills gap. We started our research based on Sharpe and Beetham’s (2010) ‘pyramid’ of digital literacy development model. The work of Belshaw (2011) identified eight elements of digital literacy: cognitive, constructive, communication, civic, critical, creative, confident and cultural; this has been useful, and it guided our initial inquiry. Furthermore, recent research indicated barriers to the development of digital skills, including school culture, lack of funds, lack of strategy and lack of commitment (Walker et al, 2016). The misconception that learners are ‘digital natives’ and therefore digitally fluent has generated

assumptions around pedagogy and led to inconsistent implementation of the digital skills curriculum. These considerations created patchy approaches to digital skills teaching (Hall et al, 2014), which have been significantly influenced by idiosyncratic environments in schools.

The project team gathered pupils’ insights into the barriers to developing skills in problem-based activities conducted at secondary schools. The research revealed that girls in KS3 to KS4 had negative perceptions of their digital skills. Focus group discussions with students showed that technology careers, and STEM in general, were perceived as being out of scope for girls; this was instilled long before the GCSE level. Technology careers and entrepreneurship are perceived as too hard to pursue, and risk avoidance (particularly financial risk) is still high on the list of their perceived barriers. The good news is that female students are highly competitive and excel at problem solving. The discussions with teaching and careers staff at schools helped to construct curriculum interventions needed at school and college level to inspire female students to choose STEM subjects.

EFFECTIVE ENGAGEMENT WITH INDUSTRY LEADERS IS KEY

As part of the project dissemination strategy, a full-day workshop entitled ‘Women in Digital Innovation’ invited digital economy leaders and technology entrepreneurs to share their ideas with educators. Elena Spinel, CEO of Acorn Aspirations, presented her work on developing tech skills for 10–18-year-olds through hackathons, encouraging problem-solving and innovation. Through the panel discussion, it emerged that framing the digital skills curriculum as ‘problem solving’ helps to overcome the preconceived idea of technology being a ‘boys’ subject’, and could make digital skills more appealing to female students.

DISCUSSION

There is a relationship between diversity and digital skills, and the ways in which these are embedded in the curriculum. The factors influencing effectiveness of the digital curriculum that emerged from this project were diversity, inclusiveness and innovation. These three factors determine both teaching effectiveness and which pedagogical approach is chosen. They are particularly important given that the skills shortage that digital skills education must address also affects the professionals who are charged with delivering that education. For example, Hargittai and Shafer (2006) argue that even qualified professionals often fail to demonstrate a robust relevant background, while only 35% of computer science teachers in schools have a relevant degree. But where the resources are scarce, innovation in teaching practices and the involvement of industry professionals in generating new curriculum ideas are essential.

The Royal Society Science Policy Centre (2014) describes the role of school education in preparing a digitally-skilled UK workforce as nurturing students with strong information literacy and a mindset that is flexible, creative and adaptive. According to 2015 survey data, 60% of 12-year-old girls in the UK perceived digital technology as too difficult to learn, “boring and techie” and suited for boys, while only 14% of parents said they understood career opportunities for their daughters in STEM, and much less in digital entrepreneurship (HoC-STC, 2017). Addressing diversity in the student body is a challenging goal and compels teachers to be aware of the variety of forms that digital skills acquisition can take, as well as to become able to deal with related issues in practice (Dettori, 2013). Curriculum approaches should be geared towards embedding digital skills that encompass diversity.

Diversity, inclusiveness and innovation could shape our thinking of digital skills and how these can improve equity of participation of learners engaged in technology-enhanced learning. Inclusiveness and the debate surrounding that term in an educational context (that is, rejecting the use of means to separate students with special needs) acquire further significance when it encourages the use of technologies to support learning. Innovative practices across formal and informal contexts constitute a significant component of every successful approach to teaching digital skills.

As part of the project sustainability strategy, the team is engaging with schools in the London metropolitan area to further contribute to innovative curriculum development, such as taking part in the

Tolworth Girls' School Y9 curriculum day. The project aligns with Mayor Sadiq Khan's aim “to remove barriers to women's success and level the playing field”.¹ The team is also extending their support for the campaign and engaging with organisations sharing their commitment to the fight for gender equality.²

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¹ <https://www.london.gov.uk/press-releases/mayoral/mayor-of-london-launches-behindeverygreatcity>.

² Project website: <http://www.uwl.ac.uk/research/research-degrees-graduate-school/integrating-digital-competencies>.