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Blog post

Analysing Design and Technology as an educational construct; an investigation into its curriculum position and pedagogical identity

Dawne Bell • David Wooff • Matt McLain • David Morrison-Love • 2 Mar 2017

The hierarchal status of academic disciplines, what defines valuable or legitimate knowledge and what should we teach our children is a topic of much debate. Amidst concerns of an academic decline, tackling the culture of low expectation and anti-intellectualism, the need to address social justice, and its by-product of cultural reproduction, is arguably the focus of current education policy.

Set within the UK, this paper presents a critical review of the literature relating to disciplinary knowledge and teaching and learning regimes influencing design and technology. Specifically, we seek to explore the subcultures which exist between design and technology and its associated curricula counterparts that combine to produce 'STEM'.

In his controversial review of design and technology, Miller (2011), provides a piercing account of 'what' is wrong with design and technology. Although thought provoking, his work stops short of offering an explanation that supports an understanding as to 'why' he has determined the state of design and technology to be in such an unfavourable position.

Drawing on preparatory work in the field, (Bell 2015) this study sought to establish the position of design and technology as a curriculum subject of value within STEM education.

Adopting the ontological premise that created virtually overnight from a heterogeneous amalgam of hitherto individual subject disciplines, design and technology is an 'educational construct', theoretical framing is utilised to support an understanding as to why, as a curriculum subject integral to the development of STEM education, the seemingly persistent marginalisation of design and technology occurs.

Through a critical review of literature, work seeks to explore the significance of design and technology from the perspective of its own disciplinary and interdisciplinary subject subcultures. Situated within a functionalist approach to STEM education policy, findings are discussed in relation to design and technology, which as a subject is caught between the identities of being an academic and/or vocational subject. The notion that skills somehow exist independently of knowledge, and are in opposition to each other is a notion rebuffed by Reiss and Oates (2014). This study shows that the dominant discourse does little to support their theory, rather it facilitates the continued perception that the study of vocational, skills based subjects is *worthless* which contributes to the view that design and technology is of less value than its counterparts.

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In conclusion, findings suggest that it is design and technology itself, a subject characterised by perpetually shifting curriculum content, and a fluctuating knowledge and skills base that manifests and perpetuates

economic change, perhaps more so than ever before, in order to help prepare our children for the 21st Century, there is a need to ensure that all are equipped with skills which are transferable. In practice, this means redefining subject boundaries and exploring the development of a truly interdisciplinary curriculum.

In viewing the individual STEM disciplines of mathematics and science as building blocks, only when they are assembled is something of true value constructed. From this perspective, where learners are provided with the opportunity to apply knowledge through practical skills, they are able to cultivate their ability to solve problems, and in doing so become adept in thinking across subject boundaries (Saunders 2006).

Within this context, design and technology offers real curricular value. Rooted in an effective and accessible pedagogy, design and technology, presents an effectual way for all pupils to access the STEM curriculum and apply theoretical knowledge. This is achieved through the provision of opportunity for the application of theoretical knowledge in an educational context, and supports equitable access for all learners.

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About the authors



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Dawne Bell is a SOLSTICE Fellow within the Centre for Learning and Teaching at Edge Hill University. She has extensive experience of working in secondary, further and Higher Education settings. Her research interests focus mainly upon pedagogical approaches to learning and teaching within STEM subjects. Dawne is a Senior Fellow of the Higher Education Academy and in her current post teaches predominantly within the faculty of Education within her institution.

David Wooff is a Senior Lecturer and SOLSTICE Fellow at Edge Hill University, a Senior Fellow of the Higher Education Academy and a Fellow of the Royal Society of Arts. His research interests include investigating the identity that Technology has in STEM and the determination of assessment

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Matt McLain is a teacher educator at Liverpool John Moores University, where he currently leads the secondary ITE programmes. Before this, he taught Design & Technology (D&T) in secondary schools and was an advanced skills teacher. He is a member of the Design and Technology Association's subject advisory group and has recently been involved with the redrafting the National Curriculum, as well as the development of subject content for GCSE and A Level D&T.

David Morrison-Love, PhD, is a member of the Curriculum, Assessment & Pedagogy research and teaching group in the School of Education at the University of Glasgow, Scotland. His research interests focus mainly upon the nature and philosophy of technology and engineering education as well as classroom level learning and teaching in technology and STEM subjects. David is a fellow of the Higher Education Academy and is involved in a number of funded projects in both research and consultancy roles.

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