Designerly well-being: Can mainstream schooling offer a curriculum that provides a foundation for developing the lifelong design and technological capability of individuals and societies?

Abstract
This paper is presented as a position paper that introduces the idea of designerly well-being as the underpinning concept for the development of the Design and Technology (D&T) and Technology Education curricula to be more fit for purpose in the 21st Century. It starts by unpacking the concept of design capability and designerly well-being and then reviews the current turmoil around the D&T curriculum in England as a way of exploring the potential of the subject, reasons why it is seen to have 'underachieved' and ways in which the curriculum could be re-thought. Examples of initiatives outside of the formal curriculum are provided to illustrate the value of educational activity that isn't driven by a formal, prescribed curriculum and a case is made for a radical change to the curriculum that re-prioritises the curriculum away from prescribed knowledge and skill and towards developing attributes of designerly well-being such as passion, curiosity, enthusiasm, risk taking, competence and confidence – all developed through the activity of designing and making.

Key words
Design: Capability: Designerly well-being; Curriculum change.

Introduction
In England, recent months have seen turmoil for D&T as we await the out-turn of the latest Government review of the National Curriculum. Over the last 25 years, curriculum review has presented eras of instability in the curriculum, but the current concerns, panic, discussions, meetings and general professional soul searching has been equaled only by the introduction of the original National Curriculum in 1990. This current situation may be mainly of local interest, but there is evidence, not least through papers presented over the years at PATT conferences (de Vries, & Mottier, 2006; de Vries, 2011) that curricula world-wide are subject to equivalent threats, upheavals and reviews. The outcome of such reviews and the resulting revisions are rarely based on full consensus, even within the profession. This raises questions about the level of satisfaction anyone in the international Technology Education community has with their prescribed curricula. Is the reality that, globally, we are all working in a context of compromise?

The current English situation is causing the profession to ask fundamental questions. Is it better to be within the National Curriculum or to be left out, leaving decisions about what is taught, and to whom it is taught, to individual schools and teachers? Should D&T be in the curriculum of all learners? Should D&T specify distinct areas such as electronics and control, resistant materials, textiles, food or graphics, or take a more interdisciplinary approach? Does sub-division provide breadth or create unhelpful and unrealistic boundaries? Should the subject align itself more with STEM or take on the nomenclature of engineering? Is the subject over-specified, over-laden with content? Is the product-focused basis of the subject as currently taught 'fit for purpose' in a world challenged by historic dangers of the designerly thinking (Baynes, 2009) and the chronic consumerism and 'affluenza' (James, 2007) that has taken a stranglehold on societies across the globe?

Behind all of these questions and the professional views expressed in response, lies an implicit belief that society is a better place when young people have experienced design and technological learning - that the *designerly well-being* of the individual makes for the designerly well-being of society. In this paper I explore the concept of designerly well-being (of the satisfaction, pride, confidence and competence of being able to engage designerly thinking and action with criticality and capability) and the potential of utilising this concept as the radical foundation for future curricula in D&T, or Technology, Education.

What is designerly well-being - or what might it be?

In a joint presentation to the Technological Learning and Thinking conference in Vancouver in June 2010 I introduced the concept of 'designerly well-being' in a discussion on the importance of nurturing designerly thinking through education. This nascent concept is the starting point for this paper and so deserves a little unpacking to provide some clarity about how I conceive this concept and why I consider it to be of importance at a time when there appears to be a level of disquiet with the curriculum in England (and possibly elsewhere in the world) in general and most specifically in D&T.

Behind this concept is a strongly held view that all humans have the potential to be designers – not just professional designers who make their living by designing, but to bring designerly thinking and action to the way that all humans operate on a daily basis. This is a view of design capability a key element of human capability – one of the defining characteristics of being human. This idea is not one of my own making, but is one that implicitly underpins the original (and continuing) vision for Design and Technology as a curriculum subject in England (DES/WO. 1988; DCSF/QCA, 2007; Design Commission, 2011). Embedded in the idea of design capability is the way humans are innovative by envisioning new and (hopefully) better ways of creating the 'made' world of the future through the development of products, systems, environments and services. An important word here is 'capability'. Together with Richard Kimbell I have put down elsewhere why a capability view of Design and Technology is critical (Kimbell & Stables, 2007). But in a nutshell the word captures the *motivation* and *ability* to bring future possibilities into reality through an *intentional* iterative process of *thought and action*; designing and making.

In our previous writing about capability, a broader view was highlighted and a link made with the Capabilities Approach that signifies the work of the Nobel prize-winning economist Amartya Sen and his seemingly simple definition of capability as being what a person can be, and what they can do (Sen, 1992). In the context of designerly well-being, reference to Sen's Capabilities Approach has even greater resonance. Indeed his whole thesis and its further development with Martha Nussbaum (2000) has a direct link to the concept of well-being – not just physical well-being, but also emotional, social and psychological well-being that comes from taking active decisions about living life with dignity, within a set of personal values and in a manner that brings both freedom and agency. While neither Sen or Nussbaum explicitly refer to design capability (although in Nussbaum's expansion into a categorisation of types of capability she does include "Being able to use the senses, to imagine, think and reason" and "Being able to form a conception of the good and to engage in critical reflection about the planning of one's life", Nussbaum, 2000, pp78-9), the sense of individual well-being engendered by being an active participant in creating future ideas and actively and responsibly bringing them into reality, captures some of the essence of what I am calling designerly well-being and in my view sits well with the broader view the Capabilities Approach promotes.

But there is a danger in the above, in that what I am presenting is a romantic view of human satisfaction engendered by engaging in designing and making activities, as if by definition such activities are wholesome, rewarding and 'do-able' by all. A key point here is that design capability is about potential – it needs to be nurtured and developed. And so a key ingredient is education.

There is also a sense in the above that all design is for the good and yet we know that this is not true – in anything newly designed there are likely to be winners and losers – as the extreme example of designing a machine gun starkly illustrates. Ken Baynes goes further than this and describes designerly thinking as "one of the most dangerous of all human characteristics" (Baynes, 2009, p.5). Reflecting on the extreme consumer culture of recent years, the role of designers in fuelling the fire of this culture and the disastrous impact of the creation of consumer products on the environment shows only too clearly how true his statement is. So, designerly well-being of individuals needs to have a cumulative effect of designerly well-being of communities and society, highlighting the importance of design capability having a thoughtful, critical edge that provides opportunity for responsible designing.

Is designerly well-being a vague, romantic notion? Or can it be articulated as a valuable and sustainable concept and can it be nurtured by developing design capability potential in us all through effective design education?

Dissatisfaction with current curriculum

What is apparent is that there is some dissatisfaction with the current state of play of English design education, including the D&T school curriculum. There is also a suspicion that England may not be alone in this. Papers at previous PATT conferences indicate a more viral dissatisfaction with Technology Education in a range of national and provincial settings (de Vries, & Mottier, 2006; de Vries, 2011). The reasons for the dissatisfaction vary – lack of resources, mismatch between policy and practice, conflicting views about priorities, negative impacts of audit and assessment practices, but the over-riding sense is that there is very little evidence globally of a utopian Design, D&T or Technology Education curriculum in mainstream schooling.

In England we are now at a watershed – there has not been so much and such varied interest and anguish about the D&T curriculum than since the preparation to introduce a National Curriculum nearly 25 years ago – a curriculum that not only changed radically how schooling operated in England, but that also had significant impact on the development of Technology Education in many other parts of the world. The question now is should D&T continue to be included in the National Curriculum. And how might this inform, and be informed by, the concept of designerly well-being.

The terrain is thick with critiques, opinions and reviews that provide a series of lenses to explore the current context. A major contribution is being made by the D&T Association through extensive lobbying, advocacy and promotional work, including the production of a manifesto supported by an impressive array of the great and the good from the world of the UK Design industry and a 'Believe in D&T' campaign (http://www.believeindandt.org.uk/). There has also been considerable informal discussions via blogs, working groups and organised seminars and in addition we have had a series of reports to inform on the topic, including

- *Meeting Technological Challenges? Design and technology in schools 2007-10* – a report from Ofsted (the national education inspection service) on the D&T curriculum (Ofsted 2011)
- *Making a mark: art, craft and design education 2008-2011* – a report from Ofsted on Art and Design curriculum (Ofsted 2012)
- *The Framework for the National Curriculum. A report by the Expert Panel for the National Curriculum review*. – An independent report for the Department for Education, (DfE, 2011).
- *RSA Design & Society. What's Wrong with DT?* (Miller, 2011)
- *Cultural Education in England*: An independent review by Darren Henley for the Department for Culture, Media and Sport and the Department for Education (Henley, 2012)
- Restarting Britain: Design education and Growth – a report by the Design Commission (A group established by the Associate Parliamentary Design and Innovation Group (Design Commission, 2011).

While the scope and nature of these reports all differ, by-and-large all offer support for the value and contribution of D&T. It is acknowledged that learners of all ages enjoy the subject - it continues to maintain a high level of popularity as a 16+ (GCSE) examination subject. Where it is seen to be in good shape, teachers have high expectations of learners, there is 'palpable excitement' in engaging with work, projects are ambitious, take on Big Design challenges (a current phrase capturing Design's increasing engagement with major human issues, such as dignity in healthcare, entitlement to clean water and so on), involve group work, are set in relevant contexts, fascinate and intrigue learners,

But since its introduction as a National Curriculum subject in 1990, it is seen to have 'underachieved' (Miller, 2011, p. 3).

> "the original ambition of Design & Technology – to be a subject that breaks down boundaries between disciplines, synthesises and builds on learning in other areas, turns out individuals who are three-dimensionally capable and critical appreciators of the 'made world' – has not yet been fully achieved. This is in part due to the milieu in which it has been tasked to operate" (Design Commission, 2011, p. 12)

Across the reports there is criticism that where D&T isn't good it lacks challenge, is narrowly focused, too formulaic and spends considerable time on "worthless tasks" producing "undemanding and unfinished work" , (Miller, 2011, p.7) There is also a suggestion that, particularly towards the later years of schooling, there is too much focus on inappropriate assessment – the sort that leads to 'teaching to the test'.

Opinion is generally clear that D&T needs to be maintained within the curriculum in some form, but that it needs re-thinking, re-habilitating. Suggestions include closer links with art and/or with STEM possibly allowing it to be a genuine bridge between art and science. There is a strong message about a greater focus on design – and by this meaning the broader view of design that has developed in recent years that is interdisciplinary and addresses big human and societal issues. There is also clear support for what are seen as 'enrichment' activities – working with professionals, working in outside school settings, after school clubs and other extra-curricular initiatives.

Across the reports there is a strong message of support for what design (and D&T) does for young people's lives - their individual designerly well-being – when it is taught in an enlightening, inspiring, challenging, innovative way that sparks enthusiasm, passion, competence, confidence and pride – shaping the future as well as meeting current needs. Also there is a tendency towards highlighting an instrumental view – design is good for society, the economy etc – and this indicates its role in the well-being of the nation albeit largely from an economics standpoint. But this is territory for a further paper.

With all this (albeit constructively critical) support, the question still remains – should D&T maintain its position as a 'foundation' subject in the National Curriculum, should it be moved to the 'basic curriculum' – where the subject will be compulsory but the content will not be legislated, or should it be removed from the curriculum altogether? On this the jury is still out.

A cluttered curriculum?

A further view that emerges from current debate is that the D&T curriculum is overloaded. Despite the fact that since the introduction of the original National Curriculum in 1990 each revision has aimed at reducing the specified content – to the point that the current curriculum for 11-14 year olds is structured around a set of key concepts (Design and making; Cultural understanding; Creativity; and Critical Awareness), schools are still largely organizing the curriculum around the different specified material areas and teaching these as if they were subjects in their own right – each bringing a long list of content that seems to be considered necessary and often taught on a 'carousel' that brings with it a 'silo' mentality. This is particularly so in secondary schools where there is such a strong emphasis on the impact of GCSE (16+) assessment on league tables – and a 'teaching to the test' mentality leads to well-intentioned focus on knowledge and technical skills. The issue of assessment and the impact this has had on the curriculum has been raised across the various reports listed above – and an overarching impact is summed up neatly by David Miller through his comment "There seems to be too much in the DT curriculum to have time to reflect on the broader picture of Big Design." (Miller, 2011, p.9)

The prioritising of knowledge and technical skills has become so ingrained in the culture of D&T (again, especially at secondary level) that it may seem heresy to challenge it, but the question needs to be asked – are we prioritising the right things? In the context of my concept of designerly well-being I would say that we aren't – and some clues about an alternative lie in the list of attributes that emerge from the current debate – the ability of D&T to *spark enthusiasm, passion, competence, confidence*

and pride – shaping the future as well as meeting current needs. As far back as the publication of the framework we used for the APU D&T project (Kelly et al., 1987; Kimbell et al., 1991) we promoted the importance of 'need to know' as the driver for acquiring knowledge and skill. Even further back, in an essay originally written in 1916, A. N. Whitehead was declaring (in his characteristic straightforward manner) that in education we should teach a small number of important things, and teach them 'properly' by which he means in a way that the learner can "make them his own, and should understand their application here and now in the circumstances of his actual life" (Whitehead, 1929, p.14). His view is that by teaching what he calls inert ideas – "ideas that are merely received into the mind without being utilized, or tested, or thrown into fresh combinations" (p.13) we create an education "radically infected" with mental dry rot. He describes inert ideas as both useless and harmful. To bring home his point (and in reading this it is important to remember the context of 1916) he declares that

"uneducated clever women, who have seen much of the world, are in middle life so much the most cultured part of the community. They have been saved from this horrible burden of inert ideas" (p.13)

The ability to operate effectively on the basis of a less cluttered curriculum is dependent on learning on a 'need to know' basis, which, in turn, is dependent on the learner's ability to find out – both through careful scaffolding by a teacher and independently. The latter course of action requires a certain level of competence but an even higher level of both confidence and risk taking – all of which I would include as attributes of designerly well-being. Further than this, I believe we need a curriculum that truly focuses on 'heads, hands and hearts' – intellectually challenging, focused on the first hand experience of the creative act of designing and making and motivating in every respect, a curriculum that, again drawing from Whitehead's view of 'technical' education promotes

> *creative experience while you think, experience which realises your thought, experience which teaches you to coordinate act and thought, experience leading you to associate thought with foresight and foresight with achievement. (*Whitehead, 1929, p. 64)

Turning the curriculum outside in

From evidence in the series of reports considered here and from other sources such as previous Ofsted reports, it is clear that the very best examples of teaching in D&T can engender such attributes. There are also examples of other curricula that provide important models – and key amongst these would be the historic Sloyd curriculum, even more so with the recent emphasis on design and 'holistic craft' in Sloyd (Pöllänen, 2009; Sjöberg, 2009). Interestingly, in raising the issue of the misunderstanding of design within the general population in the UK, the Design Commission report (2011) highlights the example of Finland as having a good understanding of design, drawing a causal link to Finland's long history of craft education.

But if we look more widely for evidence of initiatives that develop design and technological capability, and alongside this the attributes of curiosity, pride, an "ethic of excellence" (Berger, 2003), ambition, risk taking, passion, competence and confidence, they are more typically found beyond the curriculum. Examples of this are becoming somewhat ubiquitous, but some that have achieved high exposure (not least through TED talks) and that illustrate my point would include

- The Sorrell Foundation National Art&Design Saturday Club – where 14-16 year olds have the unique opportunity of attending their local art and design college on a Saturday, experiencing 'master classes' with highly acclaimed professional artists and designers, and create their own summer exhibition in central London. (http://thesorrellfoundation.com/saturday-club.php)
- Gever Tully's "Tinkering School" that started as a series of summer programmes for children in which they learned to do 'dangerous' things that sparked curiosity and imagination and has now developed to 'Brightworks' – a small number of independent K-12 schools that take the Tinkering School philosophy and apply it to the whole curriculum. (http://gevertulley.com/)

- MIT 'Fablabs' "digital fabrication labs that allow you to make (almost) anything" (http://fab.cba.mit.edu/) that have been taken all over the world to allow children and adults to create inspirational 'made' projects in informal education settings and have led to school-focused projects such as the Fab@schools project – taking fablabs into elementary schools as part of STEM education, or Sparklab, a Kickstarter project by Stanford D School students who are passionate about making, education and technology who have created a portable workshop to take to schools to fill the gap that lack of funding has created in preventing resource provision for hands-on making and learning. (http://www.kickstarter.com/projects/107975578/sparklab-an-educational-build-mobile)
- Emily Pilliton's Project H that brings volunteer designers together to work with disadvantaged communities on design projects. (http://www.projecthdesign.org/)

All of these projects run on passion and enthusiasm for design and technology. All have track records in motivating and inspiring young people to achieve more than they ever thought they could. All operate without the stucture of a prescribed curriculum, but by ideas driven by curiosity and innovation and resourced by a 'need to know' mentality.

So, here is the paradox. In school we get to do the worthy but often un-inspirational stuff – that meets the needs of a curriculum full of content and monitored by an assessment regime that is stifling it. Out of school we get to do the inspirational, exciting, challenging stuff that (in my view) nurtures designerly well-being. Now this is a massive overstatement, but it is one that begs the question, what if we turned the curriculum outside in? What if we took the outside the curriculum initiatives and brought them inside the curriculum? What if we focused on projects that addressed Big Design questions, that utlised teamwork, critical thinking, that inspired curiosity, promoted creativity, innovation, autonomy, but that didn't obsess about the content that had been covered. And if we don't take this risk, what might happen? Will the school subject become obsolete as young people overtake what is offered in school, happily taking on their own challenges outside of school, resourced by Internet sites such as hackerspace and opendesign?

It could be argued that this route would lead to more democratic designing, but what of democratic design education? In my experience, both as a teacher and as a teacher educator, people become D&T teachers because they are passionate about designing and making and the qualitative effect it has had on them as people – the sense of designerly well-being they feel. And they are equally passionate about supporting and developing young people to develop their own capability – along with the pride, competence and confidence this brings. So is it such a fanciful idea to suggest that we prioritise the very things that brought us to the subject in the first place?

As I stated at the outset, this is a position paper, exploring a concept rather than looking at a well-researched and optimized solution. The proposal has flaws, but as a starting point it seems better than where we are at the moment.

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