Blurring the Boundaries

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In the call for papers for this special edition, we noted that '…times suggest that the notion of the 'subject' is under pressure and that it is the demands of the education of the whole person, that is, general education rather than specialist education to which attention is being directed, developing successful learners, confident individuals and responsible citizens.'

There is an irony in the expectation that something called a 'subject' (with, by definition, some kind of boundaries to it) should also be capable of providing for such a rich education. If one seeks to explain the term 'subject' in its schooling sense the answer is sometimes found in terms of a body of knowledge (which D&T can't readily present) or in terms of activities (which D&T can readily present). It isn't that D&T doesn't require knowledge to pursue its activities, quite the reverse but that knowledge has to be acquired and constructed in response to the task in hand. But as D&T practitioners well know, some subjects are, to borrow from George Orwell, more equal than others; some are established and dominant in the curriculum (and in the public psyche) and some not.

D&T, for its part, has travelled a long and interesting journey and continues to do so. Clearly, in name, it is a subject but how *is* it faring in the bigger curriculum picture and what are the possibilities, challenges and opportunities for it in the future? We suggest that two key dimensions of any analysis of a curriculum area such as D&T are those of identity and integrity. D&T needs its name and its profile (in many forms) to be recognised. Visibility and 'brand' are currencies of the moment. But identity is not enough as the identity will surely be probed for substance and rigour and this is where D&T's *integrity* comes into play.

Not only does D&T present itself as a worthy enabler of quality specialist education but it also scores well on its general education potential too. When the demands are made for education in civics and citizenship, creativity, sustainability, thinking dispositions and other priorities, D&T *can* deliver. However, such demands are often (ironically) set against a backdrop of calls for 'back to basics' which, when probed, include notions of basics being the 'old subjects'.

Interestingly, D&T has a great capacity to give many forms to its identity and this can be both an advantage and a disadvantage in educational discourse. As Layton's (1994) landmark research showed, D&T can be shaped anywhere along a spectrum from craft to applied science, it can be driven by multiple competing stakeholders and the debates around the nature and meaning of technological literacy are ever-vibrant.

Today, D&T tries to adapt its practice to rapidly emerging technologies and to educating for increasingly technology-shaped living. It is to its credit that it has embraced change, challenge and – significantly – scholarship and research into its practice. It seems somehow at once both vulnerable yet highly resilient and this seeming antithesis is borne out in the fascinating collection of papers that have come together in this special edition of the journal.

Scrutiny of the broad curriculum in countries around the world shows how D&T still plays, at best, a second rank to the 'big three' of English (or equivalent language), maths and science and is seemingly in a continuous struggle to prove its credentials. Yet, put D&T under scrutiny for its capacity to deliver on current general education needs, to support specialised education and to work across the curriculum with other subjects and areas, and it proves its resilience. It would seem that the emergent integrity is not matched by the historical identity.

Kimbell in his reflections revisits his previous work in revealing the reliability of holistic assessment made by teachers and relates this to his most recent work in the e-scape project which allows learners to create real time e-portfolios that enable teachers to make balanced judgements about the work presented. He notes that this approach, developed for D&T, is now of considerable interest to those teaching geography and science. A case perhaps of the integrity beginning to challenge and influence the perceived historical identity. (Further evidence of D&T's assessment research and practice is borne out in the review of recent work by Moreland, Jones and Barlex later in the journal.)

All of the papers here present research-based change in action – some is emergent research, some theoretical and some presents evidence of exciting curriculum debate and practice-in-action. Through the papers one can trace the respective merits of blurring boundaries and sharpening focus and, interestingly, this leads to reflection on the chicken and egg nature of the relationship of the two.

Sharkawy, Barlex, Welch, McDuff and Craig articulate the beginnings of their research project exploring relationships between technology, maths and science and they conclude that '…blurring the boundaries between subjects through interaction requires, first and foremost…clarity about the subject disciplines and what is to be gained from their study…'. Thus, perhaps, know thyself and others well is required to generate the 'fruitfulness' they anticipate from respectful interplay of these subjects. We say respectful because the authors caution against notions of one subject being the servant of any other. Importantly

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too, these authors articulate the rationale underpinning their carefully-chosen term of 'interaction' between subjects.

Some educational jurisdictions have made deliberate policy decisions (or may be contemplating them) which facilitate boundary-blurring for subjects. For about fifteen years, New Zealand and Australia have had curricula based on the learning area concept and, as Compton reports, while this offers opportunities for new curriculum possibilities there has been no mandate to do so. Thus, as has been the particular case for D&T, much curriculum innovation has been teacher driven and much potential remains under-acknowledged.

Compton's presentation of rich pedagogical practice delivering required curriculum 'values' and 'key competencies' models D&T's capacity to contribute successfully to the general education of New Zealand students. However, as we know, such curriculum development cannot occur without the engagement of the hearts and minds of practising teachers who, in own their way, push the boundaries of the field.

Thus, the papers also touch on the commitment and values of teachers themselves. For some, curriculum change comes slowly and in response perhaps to policy or to social trends. For others, personal values positions lead to the trialling of new ideas, explorations of the boundaries of their practice or the affirmation of their interpretation of what D&T should be. So as Pitt explores the issues in relation to STEM and education for sustainable development (the latter now a global curriculum driver) he cautions strongly on the competing interests that seek voice at times of co-operative innovation and he gives particular warning on the varied values interests held amongst teachers.

On the question of personal boundary-pushing, Hope talks of crossing the boundary in her own D&T curriculum theorising and engagement with the fascinating field of cognitive archaeology. In presenting the case of teacher-as-learner she, by implication, invites us to reflect on how we might sharpen our personal subject focus by exploring new territory or how we might redefine our boundaries in new ways. Her explorations lead her to share ways of better understanding D&T and reinforce the necessity of seeing the achievement of design capability as a crucial component of education for all with a significance far beyond narrow utilitarian ends. In its way, such research strengthens D&T's integrity.

Modelling matters in curriculum design as much as in any technological development. Both Pitt and Hope offer exploratory taxonomies – the former of styles of teacher engagement with curriculum change and the latter of 'generic human capacities that underlie design capability'. Hope illustrates her taxonomy with examples of children's designing drawn from her own extensive research. (The book based on this work is also reviewed in this journal.) Inevitably, one class of her taxonomy is that of creativity and this topic is addressed comprehensively by Rutland for its subject-crossing, boundary-blurring role in the areas of Art and Design and D&T. Here, Rutland presents a case for boundary blurring for the benefit of creativity and she offers a three-feature model for use in 'analysing creativity in the educational context'.

As with the paper by Sharkawy et al, Rutland recognises the need for respective subject identities to be respected in order to facilitate collaboration between subject teachers (across blurring boundaries) to take place. This is clear in Aston and Jackson's paper on initial teacher education initiatives in cross-curricular work. They, too, advocate blurring boundaries to sharpen subject focus and, in line with all the authors, they foreground the practice of authentic contextualisation of issues and topics for students (whether in schools or university teacher education programs). There discussion, embracing the Rose report on the primary curriculum, models just how status can be raised while emerging policy might also be met (and even colonised) by a ready-to-act D&T team.

This collection of papers reports works in progress, exemplary practices, differing curriculum constructions and initiatives, and, as a collection of pieces affirming the integrity of D&T it illuminates the richness of the field and its willingness (and success) in continuously sharpening its focus *by* blurring and crossing its boundaries. If education is a reflection of the dynamic of society then D&T is a responsive component of such an education, indeed a model, offering multiple – and educationally legitimate – scenarios. As Compton says, we can do it, but we must be careful how much we take on. That said, these papers offer testimony to *both* the growing identity of the field and to its strengthening integrity.

Reference
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