The Pedagogy of Creativity: Understanding higher order capability development in design and arts education

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Abstract

This paper address the question of '…what pedagogies are required … to establish an education that is grounded in complexity, with an interdisciplinary and transdisciplinary character… that contributes to sustainable human and societal development' (Taylor, 2008 unpublished).

The importance of human creativity is widely recognised as a catalyst for innovation, adaptability and survival in an increasingly unpredictable and rapidly changing world. However, surprisingly little educational attention is traditionally afforded to identifying, analysing and promoting teaching strategies that actively stimulate and nurture individual creativity in learners.

This is perhaps most apparent in institutions and faculties that focus primarily on the efficient transmission of content information, mastery of academic or technical procedures and the relevance of accurate and timely application of existing knowledge within prescribed disciplinary, commercial, industrial, cultural or social contexts. Hence, understanding of and opportunities for generating new and unexpected insights about transdisciplinary knowledge tend to be neglected while support for the personal acquisition of a fully embodied understanding of how such hybrid knowledge may be productively used is often overtly discouraged – except in the arts where

unconventional learning and the crossing of disciplinary boundaries are better tolerated.

This paper draws on recent doctoral research, and thirty years experience as a design practitioner, educator and academic director responsible for curriculum and staff development, to examine the multidimensional relevance and operational roles of human creativity in education. The discussion draws on very wide ranging research into the holistic nature of human creativity as 'lived experience' for design practitioners, teachers and students. It explores the situated dynamics impacting self-knowledge and identity formation in creative disciplines in terms of integrated creative embodiment and the growth of confidence in personal innovative capabilities, which both determine and sustain creative 'performativity' in relation to pedagogy and ongoing professional practice throughout life.

In this respect the paper moves beyond the cognitive preoccupation with 'creative thinking' and procedural 'problem solving' processes. Instead it correlates previously unrelated research in search of deeper philosophical, physiological, psychological and sociological insights into what it means and feels like to knowingly 'be creative' and to actively teach for creativity in professional design and arts education.

The discussion has pedagogical relevance in universities, other higher education institutions and professional development contexts including teacher education. Emphasis on design education necessitates a primary focus on visual experience, perception and communication. Nevertheless, many underlying pedagogic principles for better appreciating the nature of creativity as a fully embodied higher order capability are also pertinent to informing teaching and learning practices in other creative non-visual arts fields and associated professional domains.

This qualitative inquiry into creativity as a higher order capability focuses on 'how' creativity is made teachable in design education. It diverts pedagogical attention away from the specifics of course content, activities and assessment. Instead it highlights the important role of qualitative human attitudes, values and beliefs, which contribute the indispensable emotive underpinning needed for individual learners to acquire meaningfully enacted design knowledge, skills and processes through specialised educational practices. Pertinent avenues of educational theory that

support this pedagogical approach include the work of Lev Semenovich Vygotsky (1995) on 'productive' versus 'reproductive' learning, the culturally pragmatic perspectives of John Dewey (1933, 1934 & 1938), the design oriented investigations of Donald Schon (1985) and the socially situated learning principles espoused by Etienne Wenger (1998) among others.

A weight of interdisciplinary research evidence lends support to the proposition that creativity is not a rare, idiosyncratic, indeterminate, undisciplined, unitary or linear consideration that is educationally irrelevant, inaccessible or unreliable, as may have once been presumed. Rather, it suggests that from a pedagogical viewpoint creativity is best understood and approached holistically as a fully physical, emotional and cognitive, as well as iterative and generative, human capability of a high order. As such, creativity is readily available and potentially shared between all teachers and learners working within overlapping communities of practice that value inquisitiveness, ingenuity and inventiveness as legitimate and productive ways of dealing with both simple and complex challenges. Perplexity is particularly useful as a motivational ingredient to engender creative interest, engagement and judicious risk taking, especially where the goal is to develop some form of innovation in response to need or other agreed or self developed criteria.

Such a pedagogical proposition is based on the realisation that creative learning is primarily about 'how' all people need to find and devise holistic ways of coming to terms with their world through 'felt experience' and 'intuition'. Where situations are unfamiliar, this gives primacy to the quality of their relationships with the physical, emotional, interpersonal and intellectual environments in which people of all ages must exist from day to day. Promoting creativity through education involves people in (re)learning how to learn differently from that normally expected of them in institutional contexts. Consequently, creative learning has somewhat less to do with 'what' specific curriculum knowledge students may be required to digest and regurgitate at any give time.

The cultivation of creative self confidence in heart, body and mind through targeted teaching strategies requires development of multidimensional, highly interactive and participatory educational approaches in which the teacher actively engages in creative exchanges with learners. Such pedagogical approaches must

begin with an awareness of the characteristically adaptive and fluid nature of creativity in response to change and the particularities of specific tasks, opportunities and circumstances governing each and every application. Innovative teaching strategies may then be developed to prompt creative questioning and encourage creative action and analysis that sustains the affective engagement by students with what it means and feels like to 'be' intentionally creative in a given field. This is the foundation of professional 'experience' and the basis of self motivated creativity.

In conclusion, this paper argues that facilitating creativity in learners can most readily be achieved when teachers are creatively self-aware and learners are knowingly engaged in a proactive manner with investigating 'potentialities' via the production of future-oriented modes of learning. Creative modes of learning in design and the arts deal not so much with 'what is' but with 'what-might-be'. This provides the means of conscientiously operationalising creativity as an end in itself in education by stimulating curiosity and promoting exploration in both teachers and learners, which guides praxis in design and arts education or indeed in any other field of endeavour where creativity is considered advantageous.

The ideas and research findings discussed here were first aired in 2005 at an international mini-summit convened by the Australia Council for the Arts in Melbourne. This mini-summit was held in preparation for the UNESCO World Conference on *Arts Education: Building Creative Capacities for the 21st Century*, in Lisbon in March 2006. The UNESCO World Conference affirmed the need:

> … to build creative capacities in the young generations of the 21st Century and to establish the importance of Arts Education in all societies … (via) a theoretical and practical framework… which provides advocacy and guidance for strengthening of Arts Education (MBUYAMBA, 2006: 2-3).

Keynote speaker at the Australian mini-summit was Sir Ken Robinson, senior advisor on culture, creativity and education to the British Government who is now working with the J. Paul Getty Trust in Los Angeles. Suggesting three core objectives for education should include, '… ways of living together, cultivating self-identity and fostering mutual understanding', Robinson argued that, '… personal capability, confidence and creativity will be key factors'.

Within a thematic examination of higher education in relation to arts and creativity, this paper explores 'how' personal capability, confidence and creativity are best engendered through arts education by drawing attention to often taken-for-granted pedagogical foundations of holistic and embodied learning. This addresses an enabling question for the GUNI Conference on *Higher Education: New Challenges and Emerging Roles for Human and Social Development,* namely:

'… what pedagogies are required to establish an education … grounded in complexity, with an interdisciplinary and transdisciplinary character … that contributes to sustainable human and societal development?' (TAYLOR: 2008).

Understanding the pedagogy of creativity

The importance of human creativity is widely recognised. Creativity is seen as a catalyst for innovation, adaptability and survival in an increasingly unpredictable and rapidly changing world. However, surprisingly little educational attention is traditionally afforded to identifying, analysing and promoting teaching styles and learning strategies that are actively designed to stimulate and nurture individual creativity in learners.

This is perhaps most apparent at undergraduate level in higher education institutions and university faculties that focus primarily on the efficient transmission of content information. Here, priority is given to digesting approved academic information or mastering technical procedures by manipulating relevant data and applying existing knowledge within prescribed disciplinary, commercial, industrial, social or cultural contexts. Teachers, who are preoccupied with delivering set curriculum content, are prone to overlook or take-for-granted the nature of the learning as it is being 'experienced' by their students. Overly didactic lecture-based approaches to teaching provide limited opportunities for conscientiously generating unexpected insights through new types of learner experiences, which therefore tend to be neglected or avoided in mass education.

This is especially so when a quest for new knowledge and experience invites excursions into the realm of transdisciplinary knowledge where specialist teachers may feel less confident about their ability to lead others. Hodge (1998: 113-128) has described transdisciplinary knowledge as 'monstrous knowledge' situated in the fertile, but often

dangerously unexplored, territory between professional domains - such as occurs at the intersection of psychology, philosophy, art, design and education for example. Hence, the personal and individual acquisition of a fully embodied understanding of how new or hybrid knowledge can be generated, accessed and used creatively is often dismissed by teachers as unnecessarily contentious, irrelevant or potentially disruptive to mainstream considerations. So, transdisciplinary avenues of creative learning are under employed when investigating complex problems, multifaceted conflicts of social or political interest or other critical challenges emerging in the world. Such a broad generalisation applies, except perhaps in the arts where individual difference, unconventional learning and the crossing of disciplinary boundaries are somewhat better tolerated.

But even in arts education, creativity is often assumed to be a haphazard by-product of certain course content delivery that focuses on conceptual or factual knowledge and technical skill development in the creative disciplines. For example over recent decades, in creative arts and design fields, there has been a marked tendency in higher education to place increasing emphasis on students' command of specified theoretical content, academic language and research practices. This is especially prevalent in the history and theory of art and design.

As educators, we can agree that theoretical knowledge is essential for a reflective practitioner (SCHON: 1983). Certainly, acquiring textual knowledge is invaluable as a critical communication tool for an aspiring artist or design practitioner when explaining the intention and substantiating the relevance of their creative work. However many teachers will also recognise that such academic ability alone is insufficient to denote creativity in arts practice. Without complementary development of the sensory awareness gained from experiential learning, and exposure to the inherent physical, mental and emotional engagement with tactile and material aspects of non-verbal modes of communication, many students struggle to locate and tap into their own wellspring of creativity. They struggle to find motivation and express meaning from a personal perspective.

When actively attempting to 'create' art and design work, it is worth noting that visual and other non-verbal forms of aesthetic appreciation and communication rely very heavily on bodily perception and related interpretation. This includes 'feelings' of familiarity, empathy and intuition. Creative effort calls upon the attitudinal components of 'felt-experience'. This is what Lakoff and Johnson (1990: 102-104) have referred to in their work on *Philosophy of the flesh: The embodied mind and challenges to Western thought* as 'neural embodiment', which:

… consists of everything we can be aware of, especially our own mental states, our bodies, our environment, and our physical and social interactions. This is the level at which we speak of the 'feel' of experience, of the way things appear to us, and the qualia, that is the distinctive qualities of experience such as… the taste of dark chocolate, the sound of a violin, or the redness of a ripe cherry…

Teaching students to understand aesthetic subtlety, cultural nuance and creative judgement in the arts will, by necessity, entail appreciation of the visceral, as well as the psychological, aspects of individual art making and collaborative design practice. It is widely accepted that students need both cognitive knowledge and applied skills to make the transition from studies in higher education into professional arts practice in the workplace. This is why traditional arts education curricula combine both abstract theory and applied practice in a simulated studio context.

Nevertheless, many arts educators seeking to inspire independent creativity in students are frustrated when confronted with the physical and emotional reticence or bodily and attitudinal ineptitude of novice learners who sometimes find it extremely difficult to understand what the teacher is expecting of them. Similarly, teachers struggle to find ways to encourage those students with creative potential who lack the discipline, motivation, personal confidence and the intuitive grasp of their chosen medium or field that characterises successful creative arts practitioners after graduation.

Such students may be willing, intelligent, knowledgeable and functionally competent, but they nevertheless give every indication of being creatively inhibited. Typically, these students do reasonably well in class but under-perform in assessment because they remain heavily dependent on teacher instruction or imitation of others. They balk on the threshold of creativity and resist stepping outside the comfort zones of established norms in fields such as architecture or design, visual art or music performance, drama, dance or the literary arts. What such students struggle to develop is the free, conscious and 'felt' awareness of, and belief in their own personal potential to 'be' independently creative. Poor self-esteem presents a formidable emotional barrier that creates a psychological shortfall, which contributes to ongoing technical or conceptual weakness. This sort of situation is common. It invokes feelings of embarrassment linked to fear of failure. Physical awkwardness and self-consciousness are

very often compounded in the company of fellow students who seem more blasé or innately talented or creatively confident and therefore professionally capable.

At the height of a long career, educational philosopher John Dewey argued that all people have creative potential and should therefore have the opportunity and encouragement to actively engage in creative arts, not just in education but throughout life. Well before the late twentieth century rise of Postmodern relativism, Dewey (1934) advocated a pragmatic view of truth in education, or what he called 'warranted assertability', as a contingent process of individually constructed knowledge based on prior experience. He asserted that aesthetic pursuits involved in the creative arts provided opportunities for 'doing' and 'making' that awaken the intellect and cultivate the senses as vital means of enriching enjoyment and enhancing the fully 'embodied' experiences of life. This inclusive approach to education and social development concurs with what has since been called 'lifelong learning'.

Dewey's theory of practical reasoning presented an overarching educational vision for developing heightened self-esteem and encouraging learners to be inventive in order to contribute to shaping and improving the world in which they live. He asserted that creative fulfilment leads to personal satisfaction and better appreciation of the worth of self and others, which in turn is said to promote a more peaceful, prosperous and tolerant democratic society. Examining Dewey's stance on practical reasoning Garrison (1999: 291-293) concludes:

> For John Dewey, the pattern of practical reasoning is central to all inquiry… The philosophical fallacy involves failing to understand that we cannot have cognitive products without the artistic process… Inquiry, reasoning, feelings, imagining and creating are all moments and continuations of action.

Using this line of argument, creativity can be understood as a particular way of dealing with the world that involves a whole-of-person and whole-of-life approach. The crux of Dewey's philosophical and educational argument turns not on the acquisition of knowledge and skills, but rather on the question of attitudes towards self-knowledge, including emotional as well as intellectual engagement with a commitment to creative values and holistic modes of embodied action in education. Garrison then (1999: 303) invites educators to:

Recall that for Dewey habits are embodied dispositions to act evincing emotion. He rejected the dualism between mind and body… thought blends with feelings within the body, or more exactly, within the context of action… to motivate the agent to act… In teacher education… the most important tool, the most momentous means, in any context of practice is the practical wisdom and (holistic) knowledge of the practitioner… Values… are ideals that guide conduct… Judging values… involve(s) active experimentation that require(s) creatively constructing value'.

Pedagogically, this is a very different and much more expansive notion of creativity than past views of the topic have implied. Historically, teaching and learning in the arts and other disciplines have seen persistent attempts to over-simplify and reduce human creativity to an applied process or a systems-based strategy for solving contrived problems. Indeed the most widespread assumption about creativity is that it involves not much more than a clever but aberrant or arbitrary method of 'thinking', with no reference to the enabling analytical, emotional, physical or interpersonal capabilities and actions of people working self-consciously to generate tangible creative outcomes.

How is creativity made teachable in design and arts education?

Interdisciplinary research in education, philosophy, psychology and neuro-science strongly suggests that teachers can intentionally and reliably stimulate creativity in students if they focus pedagogical attention onto developing an educational approach and learning environment that are conscientiously 'situated' and 'sensate'. Placing emphasis on the creative journey and achieving one's 'personal best' can draw on the richness, insight and satisfaction of individual 'felt' experience. Such teaching and learning strategies need to overtly build and value creative beliefs, attitudes and actions, rather than concentrating unduly on assessment of academic or technical skill sets.

Most importantly, educators need to be prepared to conscientiously model creative priorities and behaviours in their own teaching practice. This can be achieved by enacting, as well as encouraging, conceptual exploration and contextual freedom in students. Recognising that the naivete, innocence and ignorance associated with not-yet-knowing or coming-to-understanding something is empowering as a starting point for meaningful investigation. The

absence of pre-supposition or misconception offers distinct advantages when dealing with perplexity (RUSSELL: 1999: 1-9).

To guide almost any investigation onto a creative path, it helps to ask oneself and others, *'What if?'* and *'Why not?.* These two key questions can be posed at virtually any stage in an open-minded exploration. Hypothetical contemplation of what might be possible (or not) provides very useful stimuli for engaging or redirecting student interest and promoting increased curiosity. Very often this helps to initiate self-motivation by encouraging a deeper examination of the learning tasks. Iterative questioning, which challenges assumptions invites an inventive teaching approach that supports student achievement of a range of relevant, but potentially different, learning outcomes inside the classroom or studio and outside the lecture hall in community or industry contexts.

Creative teaching and learning must welcome opportunities for judicious risk-taking, while embracing contingency planning and failure-recovery strategies that deploy the constructive principles of reflective practice. This allows students to meaningfully test the limits of their understanding and learn from false starts and mistakes made by them and by others. Throughout the process, teachers must actively promote the growth of perceptual awareness, observation and sensitivity. Individual and collective intuition must be teased and tested, trusted and respected if it is to be nurtured. Intuition is the core of personal confidence that informs creative judgement and decision-making.

Creative confidence noticeably begins to emerge when students voluntarily start engaging in a fully embodied and experiential way with individual tasks and group projects that are designed to target subjective self-awareness and encourage self-determination. Students learn how to intuit and judge situations by making decisions about relevant actions and intentionally choosing to do things differently. In this way, teachers and students can share autonomy in order to plan and facilitate creative endeavour in life, learning and teaching that is mutually beneficial. For design and arts education to genuinely embrace creativity, these affective and higher order pedagogic considerations must consistently take precedence over the imbibing of content knowledge and the mechanistic exercising of skills. Issues of academic conformity and technical precision, success in assessment and standards measurement must be very carefully managed and adapted to recognise and value creativity. This is best done by accepting multiple or differentiated student achievements against a given

range of qualitative criteria, rather than always feeling compelled to narrowly prescribe, moderate or standardise specific student outcomes in the name of quality assurance.

Theoretical evidence supporting the pedagogy of creativity

Creativity is conscientiously about human self-actualisation. Expertise gained along the way in particular disciplinary studies serves to define and shape commitment to an evolving world-view, which influences the identity, aspirations and community of practice within which professional practitioners choose to work creatively. Social contexts and cultural interpretations of the scope and relative merit of creative action and outcomes will inevitably vary within and between disciplines according to competing priorities in the 'domain' or professional discipline, the 'field' or official body of knowledge or expertise and the goals of each individual 'person' (CSIKSZENTMIHALY:1996).

Wenger (1998: 3-15) described how this operates in his social theory of learning where creative understanding, creative participation and creative confidence may be seen as essential aspects of 'becoming' an arts practitioner. For arts education, this encourages teachers to see their interaction with students as both socially enabling and culturally 'situated' in time and place. Creative education occurs at the nexus of four competing influences exerted by the arts 'community', rapidly evolving arts 'identity' in creative disciplines, the various forms of arts 'meaning' as well as different types and applications of arts 'practices'. Hence, according to Wenger, student participation in creative studies in any professional field can be understood in terms of learning as `experience', learning as 'doing', learning as 'belonging' and learning as 'becoming'.

Educational support for the iterative and socially situated nature of creativity as a higher order human capability can also be found in the 'Cycle of Imagination' proposed by Vygotsky (LINDQVIST: 2003: 8-12). This notion of creativity involves an intentionally generative form of 'productive' learning that actively seeks out new knowledge. This is readily distinguished from traditional forms of 'reproductive' learning that aim to merely replicate established knowledge and skills. Vygotsky's view of creativity highlighted human resourcefulness and focused on the speculative human capacity to envisage the future. This includes anticipating and pre-empting change whilst concurrently engaging in the present while drawing on the past for guidance and inspiration.

Vygotsky, '… viewed imagination and creativity as equal parts of all aspects of cultural life including artistic, scientific and technical creativity' (GAJDAMASCHKO: 1999: 695). His 'prospective' theory of creativity posited a cycle of imagination that begins with learners identifying and selecting out fragments of lived experience taken from reality that are assimilated, reinterpreted and translated into new ideas. In turn new ideas evolve to re-enter and reshape reality, presenting new possibilities. Vygotsky also advocated a theory of teacher assisted learning or 'scaffolding' that actively challenges and facilitates the raising of learners from one level of experience to another that is initially just beyond their present ability. In this way students strive to progressively gain knowledge, confidence and enhanced physical, mental and emotional capabilities that boost their self-esteem and confirm belief in their own capacity to 'be' independently creative.

Many philosophers have contemplated the nature of human creativity in relation to contested ideas about the unity or separation of mind and body. Of particular interest is the work of French theorist Merleau-Ponty (1960) who wrote a series of insightful essays drawing on the art, interviews and writing of modernist painters like Paul Cezanne, Paul Klee and others. In these essays and other published works Merleau-Ponty expounded his conviction that physical embodiment and intentional attitudes are fundamentally inseparable aspects of aesthetic experience, perception and imagination. Furthermore, he argued that creative judgement, decision making and intentional gestures of hand and eye constitute an integrated and holistic creative act that is overtly corporeal in nature.

This led some theorists to re-evaluate the importance of the 'body in education' as a means of enriching our understanding of the subjective nature of human learning. We are reminded, '… of the 'lived engagement' of the embodied subjects of education'. Our attention is directed to the '… complex realities of students' and teachers' embodiment', indicating that:

> ...returning the notion of embodiment to centre stage is crucial to education…. There is, it seems, a creative power in the body which we fail to do justice when we persist in seeing it as the handmaiden of consciousness, or when we ignore the body's intelligent connections with the world at hand… Merleau-Ponty's account of body-subject …. demand(s) attention to the connectedness… and of the immersion-in-world that is the reality of human existence (O'LOUGHLIN: 1997: 20-27).

Heidegger is another twentieth century philosopher who examined complex metaphysical ideas about 'being-in-the-world'. He described a holistic notion of 'functionality' in terms of knowledge, skill, action and purpose. In an attempt to explain the relationship between thinking and doing in the practical context of using tools, Heidegger identified two mind/body states that he called 'present to hand' and 'ready to hand'. This distinction warrants close attention by anyone charged with the responsibility of teaching students how to perform complex and demanding practical tasks creatively.

Heidegger asserted that when a person first picks up a tool the tool becomes an inseparable part of the skilful and intentional human activity. However, at first the novice cannot help but handle the tool clumsily. In this case, the tool is considered only 'present to hand' while ever it remains an awkward appendage diverting attention and creative concentration away from the purpose of the task. With guidance, familiarisation, application and practise the learner will eventually cease to focus on the alien object or idea they are wielding and shift their creative attention to holistically performing the desired intellectual, organisational, visual and more broadly practical activities. Eventually, the tool becomes an almost automatic extension of the learner's body, eye and mind. In some strange way the tool becomes part of the student's 'being', described by Heidegger as 'ready to hand'. In higher education teaching contexts, the attitudinal, physiological and intellectual transition from novice to increasing levels of expertise is what the arts educator must be able to manage - always remembering to leave room for accommodating differences in creative interest, awareness, confidence and capability to grow, often at differential rates amongst individuals or different groups of learners.

Damasio (2001: 67:68) has provided an intriguing neuro-scientific explanation that goes a long way to substantiating the indivisible embodied nature of human creativity. He refers to the 'associative responses and reactions', which are learned and remembered. Most significantly for this discussion of the pedagogy of creativity, Damasio notes:

In the context of art and creativity… The emotional responses, which are the ingredient of the aesthetic experience, are first triggered by those stimuli which lend themselves

naturally to emotional response. Later however, by means of an associative process, individuals learn to extend such emotional responses to many other stimuli.

Damasio described a 'body loop' that operates behind the mind and body functioning in concert. The learning gained from repeated associative processes that link emotion with reaction and reflection can be stored as remembered experiences or feelings. In creative endeavours, repeated perceptual or aesthetic or other experiences recall, refine and increasingly come to rely upon mind/body relationships that bypass actual somatic responses to achieve what Damasio called the 'as-if body loop'. The 'as-if body loop' can be intentionally exercised through design and arts practice until it becomes almost but not quite instinctive.

This is a state of 'knowing' where practitioners learn to anticipate and 'feel' what is likely to be most creatively useful, before intellectually reflecting on whether the gesture or action actually 'works' as well as expected. Instinctive or intuitive creative action can and often does come in advance of considered intellectual contemplation. This denotes creativity as a higher order adaptive capability. The heightened experiential learning gained from doing and refining creative responsiveness, can be honed and assisted by informed teaching strategies. Therefore, creativity should be able to be reliably targeted and successfully taught, provided that the underpinning associative mind/body processes involved in creativity are well understood by teachers. Teachers can acquire this quality of self-knowledge and apply it to their educational practice provided they have felt the lived experience of being personally and instinctively creative themselves. Damasio concluded:

> Creativity itself – the ability to generate new ideas and artifacts – requires more than consciousness can ever provide. It requires abundant fact and skill memory, abundant working memory, fine reasoning ability, language. But consciousness is ever present in the process of creativity… inventions have an effect on existence as revealed… There is a cycle of influence (involving) – existence, consciousness, creativity – and the cycle closes.

Pivotal in all the preceding discussion of creativity is a strengthening appreciation of the crucial influence of lived experience informed by individual intuition and interpersonal

relations, shared values, emotion and motivation that is boosted by an increasingly confident inclination to explore the unknown. Where sensate experience is coupled with psychological and practical confidence, along with opportunities for creative engagement and action, various transdisciplinary avenues of research confirm that creativity exists as a general human potentiality and a context-dependent behavioural attribute.

Thus creativity can be learned informally from life experience, or indeed broadly enhanced, or specifically engendered and facilitated through targeted teaching. Of core educational concern is the realisation that creativity is not merely a happy accident of birth, or random cluster of personality traits or habits to be mimicked. Rather a commitment to creativity must be understood as holistically integrated and mutually reliant on conscious and unconscious attributes of the human body working in tandem with the conscious and subconscious mind. Creativity operates in a largely intuitive and iterative manner to progressively expand learning and performance of each individual student when attention is focused on creatively applying specialist disciplinary knowledge and skills in the arts.

Observations from design education

Adopting a creative pedagogy demands commitment to an educational approach that is focused on deep rather than surface learning (RAMSDEN: 1992: 42-43). This is especially important if the educational aim is to achieve what Schon (1985: 63-82) referred to in his discussion of design education as 'coaching artistry'. Schon drew attention to the need for educators to move beyond cognitive and practical competency into the realm of higher order intentional and holistic embodied capability development. He described the interaction of design teacher and learner in terms of a constructed:

> … dialogue in the media of words and performance… (where) there is a language of appreciation… a language of performance… (and) a language *about* design'.

Central to Schon's analysis, of what occurs between protagonists in the design teaching studio for example, is acknowledgement that in learning how to 'do design' the processes of creative engagement involve significant psychological risk - for both the novice learner and for the novice or even the experienced teacher.

From the outset design students are acutely aware of their own ignorance and vulnerability. The sense of personal challenge and potential inadequacy is high because creativity in design is less about self expression and more about satisfying client and community needs. Acute anxiety is often associated with a crisis of confidence when exposed are first exposed to the unfamiliar and more liberal learning environment of a studio where they are asked to begin work, '… without competence, without control, and indeed, without understanding'. Acting as creative 'coach', the design teacher is equally prone to feel personally vulnerable with respect to his or her ability to quickly win the creative confidence of a new group of students. This cooperation needs to be sufficient to elicit from each individual student the necessary trust and attitudinal 'leap of faith' required to set off on a creative journey into unknown territory with design deadlines pending.

This predicament calls for what Schon (1985: 63-82) described as a 'willing suspension of disbelief'. Before students can begin to design, teachers must first model collaborative teaching and learning strategies that are markedly different from the didactic approaches generally used in traditional classrooms at school, college and university. Design teachers in higher education make direct and immediate appeal to the hands, hearts and minds of learners. They must also apply creative attitudes and demonstrate professional design behaviours in order to lead students to a position where they can begin to 'envisage' something different, something creative. In many cases, students need to be convinced, cajoled, coaxed and in some cases coerced to step beyond the status quo if they are to discover and devise creative options that capture the interest and imagination and spark the enthusiasm of the client or broader community.

Conclusion

Creative self-knowledge leverages a 'mindful' empathy and appreciation of the richness and variety of human experiences, which are the core of innovation and change management.

If, '… people are the real wealth of nations' (UNDP: 2006), then educational strategies for marshalling and releasing untapped human creativity promise increased access to a renewable and sustainable human resource. This paper has briefly examined how the wealth of human creative potential can be conscientiously mined and refined by teachers who embrace a qualitative understanding of the pedagogy of creativity. Teaching for creativity requires a fundamental shift of focus and educational priorities from the traditional

transmission of disembodied content information and routine technical skills onto conscientiously nurturing the creative people they teach to develop their higher order, holistic and embodied capabilities in design and arts education.

One way of achieving this, is to focus on whole-of-person values and attitudes that promote whole-of-life strategies for envisioning and enacting a more environmentally equitable and socially sustainable global future. However, ensuring that any such explosion of creative effort is channelled toward a positive egalitarian enhancement of the human condition, through constructive implementation of social change, presents a moral and ethical challenge for higher education. This is a matter of educational 'ends' rather than 'means', which is a concurrent but not identical question to what might constitute the pedagogy of creativity.

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