

Reestablishing new creativity and innovation as the most distinctive, characteristic of human wellbeing through approaches to creative idea generation in diverse disciplines

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ABSTRACT The Authors maintain that creativity is an important, even the most distinctive, characteristic of human wellbeing which, the authors argue in light of their experience in taking creative practice into a variety of non-design academic disciplines, often tends to be undermined by traditional educational approaches, based on knowledge acquisition and retention and the pressures of socialisation, institutional regulations, consumerism, and generally risk averse, conformity biased conservative thinking. This paper aims to establish that there are ways to re-establish ‘new creativity’, in Erica McWilliam’s words, which is community based, cross disciplinary, collaborative and is teachable, (or rather re-learnable), as established by the author’s workshops across a range of diverse disciplines, which have been based on design approaches to creative idea generation. Our methodology sets out the principles and practical approaches that have been successful in regenerating a creative approach in disciplines where a creative outcome it might be expected, but not always realised due to a lack of specific creative thinking methodologies in the curriculum often reflecting a lack of understanding re the definition and meaning of creativity and practice. As well the authors examine ways that these methodologies might be more widely put into practice, through approaches that include a re-valuation of creativity as a personal, community and collaborative quality; and pathways that might achieve it as a community value utilizing strategies to re-acknowledge it as a pre-eminent human characteristic. Our Results establish that creative learning is essential to establishing a ‘sense of wellbeing’ in learners and is essential to future durability. We argue that these creativity interventions are typically associated with outcomes that our review of the literature indicates are wellbeing related, whilst interventions associated with facets of wellbeing we contend are often creative in nature. In conclusion, the outcomes and feedback from our workshops indicate that in order to develop flexible thinkers in the current generation of students and into the future, who can confidently display resilience in the face of rapid change and the flexibility in dealing with the complexity of challenges that this presents through creative skills; then the learner’s sense of self confidence and wellbeing will be key

Keywords: creativity, innovation, wellbeing, humans, education

Introduction

It has frequently determined that the difference between humans and other animals that use language, tools and teamwork, is foresight, the ability to imagine the consequences of acts before they have been experienced. Other animals can learn from repeated experience that some actions or behavior will have certain outcomes and remember that before they perform them again, but they do not have the ability to determine those consequences before experiencing them a number of times (Fuentes, 2017). Essentially the ability to use imaginative capacities to change our world through a variety of design processes and thinking depends on the ability of the human mind to make coherent causal models of our experience and the world. Through this cognitive modelling we reflect on the past, interact with the present and conceptualize the possibility of alternative futures. Humans exhibit a natural characteristic to be creative and do better through a designerly way of thinking, which focuses on the future of material culture with the intention of providing a favourable environment for the evolution and wellbeing of human society. (Baynes 2013)

Foresight is necessary to imagine that things can be different, the essential quality of creativity. It is apparent, therefore, that creativity, based on foresight, the ability to see that things can be different *before experiencing them*, can be seen to be an essential human characteristic. (DeBono, 1995)

Why then do so many people regard themselves as not creative or be regarded by others as not creative, essentially denying the power of their imaginative capabilities, arguably at their own loss of self-worth, self-determination and wellbeing. Ken Robinson has documented in his report to the British National Advisory Committee on Creative and Cultural Education ‘All Our Futures, Creativity, Culture and Education’ (1998), that ninety five percent of young children display characteristics of creative behavior before they start school, but only five percent of them remain that way by the time they finish twelve years of schooling. This is of course only one aspect of our socialization, others which include family, immediate social circle, culture, the need to get on with each other in an increasingly crowded and complex world, media, marketing, religion, political institutions and so on with an overwhelming bias on conformity the latter of which is most likely to have detrimental effect on our personal and collective creativity, and, very importantly, our value of our own and others creativity and wellbeing (Stein, 2014; Christiano & Ramirez, 1993).

As an example of the powerful effect of education on creativity, some time ago when the authors ran a creativity workshop for the teachers at a small primary school in the Adelaide hills in South Australia, a quite elderly woman was doing quite extraordinarily creative things with the photocopier, much to her amazement. It turns out that an art lecturer many decades before had told her that she was terrible at art, and she hadn’t attempted anything imaginative *at all* in the intervening time, firmly believing that she didn’t have a ‘creative bone in her body’. This is a terrible but important reminder of the way that people are classified as either being creative – the tiny minority – or not – the vast majority, at a terrible cost to their potential wellbeing as humans.

The connection between socialization and uncreativity (if there is such a word – the spellchecker says not – but maybe it lacks a creative attribute – there would be hundreds of words fewer in the English language if Shakespeare had had a spellchecker) has been further indicated by medical instances of damage or disease to the frontal lobes of the brain, where out ‘socialization’ resides. Susan Greenfield (2001) documents a case in where a man who had a serious frontal lobe degenerative disease

who had never previously demonstrated any creative tendency at all became fabulously creative while he became exceedingly unsociable. Treffert & Rebedew (2015) document the story of a man who was little less than a violent low level unimaginative thug, which, we admit, is hardly an advertisement for good socialization unless you are aware that he was part of a poorly educated poverty stricken criminal mileau in a very large postindustrial city, had a double aneurism that effected his frontal lobes, and how he then became a became an exceptional artist, and worthwhile member of society.

It is perhaps unexpected that these examples of the relationship between creativity and mental illness are being highlighted, hardly adding to our argument that creativity is essentially a necessary part of our wellbeing. There has always been a popular impression that creativity is related to 'madness'. But the point might be that it is the kind of socialization, crowd control, power structures, constructs and definitions of 'normal' or 'sane' might be detrimental to our wellbeing by repressing the creativity essential to our potential levels of wellbeing. The relationship between creativity and some forms of mental illness such as schizophrenia and bipolar disorder have been documented previously as resulting from fearlessness of the consequences or ignorance of them respectively, in particular the social consequences. Perhaps this can be seen as an extreme example of the risk taking that can be seen to be an essential attribute for creative thinking. Indeed, schizophrenia is seen as such a socially dysfunctional affliction that some research has been undertaken to determine why it hasn't disappeared under evolutionary pressure (Crow, 2008; Meuser & Jeste, 2008). The reason emerged that the creative risk taking that resulted from this perceived 'social' dysfunction was essential to the survival of the group during times of hardship such as drought, plague or competition for resources during the competitive dispersion of humanity over the planet. Famously many historical leaders (and perhaps many of today's business leaders) have exhibited sociopathic or psychopathic characteristics.

However, we accept that while many aspects of socialization and conformity are beneficial to some aspects of wellbeing such as physical survival, safety, comfort; the lower levels of Maslow's hierarchy; high levels of socialization are detrimental to some of the highest levels of wellbeing. Significantly, these levels include some of the things that are our most distinguishing characteristics, and potentially our most human and exhilarating; imagination, originality, inventiveness; creativity. Ironically, the safer our existence becomes in terms of the lower levels of Maslow's hierarchy, food, shelter, safety, social relationships, prestige and so on, the more risk aversive we seem to be for the highest level 'self actualization', achieving our full potential, especially our creative potential, and therefore our full human potential.

Ironically, in some sense the most over-actively imaginative of our constructs, religion (Dawkins,2006), continues to be one of the most stultifying and regressive inhibitors to our creative potential, literally by putting the 'fear of god' into us for any divergent behavior or risk taking and the encouragement of continuing to accept illegitimate hierarchies which deny people a view of their worth, and their own imagination. So much for the age of enlightenment.

But even if creativity can be determined to be a main, if not distinguishing feature of humanity, that does not necessarily mean that it contributes to wellbeing – of the individual, mankind as a whole, or all of the other living things that cohabit with us on this small speck of dust floating in the abyss. Many of our human characteristics, our warlike manner, our inhumanity to our fellow man, our greed, superstition, arrogance as a race and individually, are clearly dysfunctional and may lead to us being one of the shortest evolutionary branches of living creatures, specially of the homo

genus, ever. Therefore, it remains for us to establish the worth of creativity as a basic human quality that has a major contribution to our wellbeing. In order for this argument to be meaningful, we need to determine in what way creativity contributes to wellbeing, and, indeed, what is wellbeing, and in respect to whom, the above-mentioned individual, fellow humans, biosphere, planet, heavens?

The simplest definitions of wellbeing describe it as the state of being *comfortable, healthy or happy* (not all of them?) Other more specialized disciplines define it variously as ‘happiness’, ‘flourishing’, ‘enjoying a good life’ and ‘life satisfaction’, a state of equilibrium or balance that can be affected by life events or challenges (Dodge, et al., 2012). These are not very demanding or inspiring, or the highest levels of human achievements, Maslow’s self-actualization, where creativity is intrinsic. Many of us are prepared to be happy to have enough to eat, to be safe, to be part of a group who value us, in other words, to know our place, to be ‘blissfully ignorant’, to look for ‘strong leadership’ and other cultural morés that limit our expectations and make us content to sacrifice our ‘self-actualization’. Is this wellbeing, or more pertinently, is it wellbeing enough? Many people on the planet exist without the most basic of these needs. How can this justify our striving to attain our personal ‘self-actualization’ – including our creativity, while so many fall so short of even the most basic levels of need and wellbeing.

Well maybe this is part of the problem, David Parker, in his introduction to *The Impact of Creative Initiatives on Wellbeing: A Literature Review* (McLellan, et al., 2012), argues that the opportunity to achieve this higher level ‘enhances [our] aspirations, achievements and skills . . . because creativity brings with it the ability to question, make connections, innovate, problem solve, communicate, collaborate and to reflect critically’, to gain a sense of autonomy, self-regulation, ‘possibility thinking’ and the willingness to take risks, particularly when problems ‘retain a high degree of ambiguity [what a designer might define as a wicked problem] to gain confidence in themselves and recognize their own potential and work ‘more effectively *both individually and socially*’ (our italics). While acknowledging that there is often a ‘wide gap between reflection, analysis and learning’, he emphasizes that the ‘wide focus of approach’ is fundamental to the nature of creativity. Not only are these the characteristics everyone will need to meet the ‘skills demanded by contemporary employers and . . . be vital for young people to play their part in a rapidly changing world’ (McLellan et al., 2012, pp. 6-7). They are the same skills needed to develop empathy and understanding of our own and other people’s needs and aspirations, particularly honesty in the face of superstition and self-interest, using more than a fair share of wealth, resources or whatever aspects or level of needs that contribute to wellbeing at others’ expense, and improving one’s personal self-respect and sense of worth by a high level of understanding. For instance, a positive psychology as promoted by (Seligman & Csikszentmihalyi, 2000) where subjective wellbeing rather than objective wellbeing is seen as building understandings of what brings high levels of happiness and satisfaction to people’s lives.

Definitions and the Reciprocity of Wellbeing and Creativity; ‘You Can’t Have One, You Can’t Have None, Without the Other’

Starting with the perhaps the more indefinite of the two; wellbeing; we might be talking about different kinds of wellbeing, ranging from survival, physical and mental health, happiness, achievement of human potential, and wellbeing of different kinds; physical financial, social, emotional, ecological, and so on. As well we might be ap-

proaching it at different levels; the individual, the family, our immediate contacts, tribe or cultural group, our economy, the nation, humankind, the biosphere, planet, and/or the physical or divined heavens.

To begin with, we can determine that all the ‘lesser’ levels such as our physical existence depend on the universe and nature, its physics and chemistry, for instance, being the way, it is, including the galaxy, solar system and earth being the way they are. They have not always been this way, and, as we can see from the envisaged changes of global climate change resulting from our lack of imagination and foresight, as well as orbital changes bringing ice ages, snowball worlds, floods and droughts, may not always be the same in the future. No less an eminent thinker than Steven Hawkins (2017) is saying we will need to find another planet – ‘we’ meaning some tiny number of us, perhaps for the ‘wellbeing of the whole’. Hmmm . . . but in fact, some of these past events have had a major influence in our ultimate evolution, and therefore our ability to even consider the nature of ‘wellbeing’. The so called ‘snowball’ world, which may have lasted for as many as 25 million years appears to have given rise in the development of multicellular organisms, without which we would not have evolved ultimately (Lane & Martin, 2010). The deforestation of Africa because of (natural?) climate change probably gave rise to our walking upright (Leakey, 1999), which in turn may have changed out physiology and the development of a large brain in a way that allowed language, the development of culture, collaboration, abstract thinking, foresight and creativity. However, what we can conclude from this kind of analysis is that each of these levels of wellbeing is, in some way, for good or bad, interdependent on the other levels.

But, for example, who determines what kind of wellbeing we value as a society, that nebulous idea? In the words of a recent social commentator, ‘when did we stop *having* an economy, and *become* an economy (our italics) and it is apparent that, in western ‘societies’ we value objective or economic wellbeing above all, to the extent that other multi-faceted values of subjective wellbeing, prestige, social cohesion, political governance, and so on, are judged by this factor. (Howell & Howell, 2008). Apparently, after the Second World War, the United States of America had the choice of what kind of wellbeing to base their society on. They could have chosen education, health, sustainability, participatory political structures or such, but instead, deliberately chose consumerism and economic growth, to the obvious detriment of those other possibilities, and wellbeing at many levels (Tooze, 2008).

But not all societies have made the same choice. Bhutan, admittedly a very small proportion of the overall population of the world (which probably makes it even harder to resist the dominant values), has adopted a Gross Happiness Index instead of a Gross Domestic Product. Among others, Kahneman & Deaton. (2010) in their paper ‘High income improves evaluation of life but not emotional well-being’ have documented the decline of happiness against increasing personal wealth above that which is necessary to meet our basic needs. This may be a strong indication of the importance people give feelings of worth in the eyes of others as opposed to their own actual well-being. It is perhaps also a strong indication of the difference between our values, such as wealth being admired and determining of our influence and respect, as opposed to our inner self regard which embodies feelings of control, confidence, taking initiatives, taking risks, tolerance for ambiguity and not being repressed by insecure situations and ambiguity but being challenged by them, which may be inherent in our real well-being, as well as being the necessary precursors for creativity. Further, in a user pays society, all sorts of opportunities relating to your wellbeing depend on a person’s monetary ‘wellbeing’, such as education, health services, water, energy, political influence

and the opportunity to act creatively at personal, community and societal levels. Many might be regarded as rights, not privileges and may depend on a person's wealth to the detriment of the wellbeing of many people at many social, economic and educational levels.

Creativity Education for Wellbeing in an Unknowable Future

Notions of how creativity can facilitate wellbeing at a time when the economic models of social life are subject to increased scrutiny and the need to justify educational policy decisions on merely economic values which merely facilitate future competitiveness on the path to working, are being questioned (McLellan, et al, 2012). As a result, the requirement to teach creativity in university programs has occurred primarily in response to the impact of change and the acknowledgement that not only is innovation necessary for dealing with this need to cope with change but in fact it is the driver of change. Change and the ever-increasing rate of change is a phenomenon we recognize as impacting on societies and it is challenging our capacities to adapt across many aspects of our life, (Gregoire et al., 2003).

As a result, educational institutions have been dragged kicking and screaming to the realization that in order to respond to the challenges complex environmental, social and economic pressures bring, students wellbeing in an increasingly complex and challenging environment will depend on them learning to respond in a creative, innovative, enterprising and adaptable way. They will need the motivation, confidence and skills to use critical and creative thinking purposefully (McWilliam & Haukka, 2013). However, the nature of traditional University education is not seen as meeting the needs of a world in this state of increasingly rapid change. (Robinson, 1999).

In the authors' experience, educators themselves recognize that existing approaches in university programs don't meet the requirements of a rapidly changing physical, social and economic environment. As well, creativity is not acknowledged as necessary for either professional or personal wellbeing. The authors have found that its implementation in 'traditional' academic disciplines has required going beyond conventional educational practices that can be seen to be antithetical to creativity *and* wellbeing. Educators often recognize that education needs to embrace a pedagogy emphasizing the capacity to think critically, solve complex problems, take responsibility and innovate. Krislov (2014), Pink (2005), Chiczenmayheyl (1996), Farrell (2001), Sawyer (2003) and the IDEO model of 'educating for creativity' (d.school, Stamford, 2014.) for instance, emphasize collaboration, experiential learning and creative thinking. Their aim is to prepare students to apply approaches that will allow them to thrive personally and professionally amidst the anticipated rapid change will demand flexibility of thought and creative ways of working for educators themselves, for their own and other's wellbeing. These creative approaches are needed to develop ways of designing pedagogies that allow graduates to determine ways to define and solve problems which don't as yet exist many having no precedent or known predictable answers emanating from past contexts. In this environment students will need to be able to participate in complex creative systems, rely on diverse collaborations and multiple levels based on knowledge rather than objects, and communication of ideas across disciplines rather than making 'things'. The current static model of knowledge acquisition and retention will not produce the skills required to create knowledge linked to ideas (Sawyer, 2006). (University of South Australia, 2014).

There is a need to underpin all program structures to approach problems from many perspectives, challenge assumptions and combine diverse approaches and multi-

ple points of view, explore not what *is* true but what *could be* true' (our italics), (Datar, et al., 2010); imaginatively frame questions and to have the ability to make perception shifts. They will need to produce graduates who can think about the relationship between all the parts and the whole, and who can envisage the big picture and not be limited only to the expertise of their discipline, but imagine its relationship with everything else (Martin, 2010). These are ways of working commonly associated with the arts and a design thinking methodology, not business, engineering, health schools or other disciplines, and require a radical shift to teaching *for* creativity rather than *about* it (Kirby, 2006; Wladawsky-Berger, 2010).

In accepting these factors as necessary for wellbeing at many levels, educators are being challenged to move from 'back to basics' content delivery and skill acquisition in highly prescriptive curriculum content to building the capacity to co-create the curriculum in students and the insight to direct their own learning. Educators will need to be able to do this in ways that reflect the decision-making demands that a rapidly changing world and workforce will impose on them, for their own continuing relevance and the wellbeing of the students in their future as employees, entrepreneurs and in their personal and social life, the boundaries between which are increasingly blurred. In order to acknowledge the importance of creativity, innovation and entrepreneurial skills in a variety of programs Universities are in turn presented with a challenge for how they develop strategies to educate and produce graduates that have these skills in the face of sometimes pompous and reactionary regard in their own self-importance historically. Why would they be any different to any other institutional dodos? (McWilliam & Dawson, 2007)

Speaking of which, business organizations also have been forced to respond to an increasingly changing environment in for their economic wellbeing, to prosper or even survive. Their challenge also entails responding to an increasing number of today's problems faced, again in scenarios that may have no precedents, and therefore have few or no tried and tested ways of approaching them. The impact of rapid change has been evident for some time, and it has become obvious in these situations that conventional thinking and the characteristics of historical structures of regimentation, hierarchical management, social conventionality, employability expectations from business, populist interference from government, obedience, rules and protocols, risk management, the predictable behaviour and performance expected, and management structures with authoritative hierarchies will not be adequate (Held, & McGrew, 2000; Postman & Weingartner, 1971; Rittel & Webber, 1973; Buchanan, 1992).

As educational institutions exhibit many of these same characteristics of business organisations, it may not be surprising that they also are being obliged to recognize that existing approaches in many university programs don't foster creative thinking and are not meeting the requirements of a rapidly changing work environment that our students are entering. (Martin, 2010), (McWilliam & Dawson, 2007), and (Bransford, et al., 2000) articulate that the setting of the classroom is under pressure to transform into learning labs, design studios, and other more flexible settings. An emphasis of learning at a more meaningful and versatile level of understanding rather than merely acquisition and mastery of facts is seen as crucial to fostering an innovative economy. In turn this needs to build flexibility adaptability and self-management and an enterprising disposition as graduate attributes that can be applied in the workforce (du Gay, 1996; Garrick & Usher, 2000; du Gay & Pryke, 2002). This will be necessary to conceive and create the new hybrid professions, new cross-disciplinary industries, and new forms of creative economies across the range of transitioning industries necessary to contribute to the personal wellbeing of the individual's personal

future wellbeing and their effective functioning to the wellbeing of the institutions they will work for and their value to wider social, political and democratic institutions. As we all live in and all depend on *our* wellbeing on these institutions, it is important that we contribute to *their* wellbeing and efficacy as well,

Perceived essential talents that need to be acquired across a range of disciplines for the wellbeing of those institutions *and* the individuals in them are, and will increasingly be, a capacity for creativity and innovation. This entails personal responsibility, empathy and sense of value towards others and the task required, effective communication skills across disciplines, team work and collaboration. It will require openness to diversity, leadership, adaptability, creative idea generation approaches and idea management skills towards problems that are uniquely new, and a capacity for strategic thinking and self-awareness. Leadership focusing on taking the initiative, intuitive decision making, strategic thinking and personal integrity will be required from people at all levels, as is already apparent with the ‘flattening out’ between all levels of responsibility as a key requirement for the wellbeing of enterprising behavior and the people participating in it (Martínez, et al., 1998) (Australian Government Department of Industry Innovation and Science, 2015)

The relevance of Design Education Approaches to Education for Creativity Across Disciplines and For Wellbeing More Generally

There is a considerable degree support claiming a correlation between an arts/creativity curriculum in schools, and the fostering of student ‘self-efficacy motivation, life skills and wellbeing. (Eisner, 2001). This represents the so-called STEAM (Science, Technology Engineering, *Arts* and Mathematics) approach in comparison to the more commonly advocated merely STEM (Science, Technology Engineering and Mathematics) which concentrates only on objective and technological aspects. However, the latter are rapidly changing, and will do so at an increasing rate, but the flexibility of thinking required to cope with this rapid change may have been neglected with this narrower approach. Here we need to make clear that this includes all the ‘Arts’, including design, writing, history, philosophy ethics and so on. Without a so called ‘Arts’ dimension it can be argued that there will be no writing, no communication, no creative idea generation, no idea management or development skills and arguably no humanist emphasis on wellbeing. The Qualifications and Curriculum Agency (2009) describes the process as contributing to a consciousness transformation improving cognitive functioning and promoting personal growth and freedom for self-expression and wellbeing.

Innovative examples of education embodying the principles of building in students the above-mentioned capacity to co-create the curriculum and direct their own learning in ways that reflect the decision-making demands that a rapidly changing world and ways of “working” will impose on them, personifying the learnable, unspecialized, cross disciplinary, community based, collaborative nature of creativity (McWilliam & Dawson, 2009). Approaches aimed at bringing out the repressed creativity that we all have (Robinson, 1998); Greenfield, 2010) are evident in leading design education institutes including the d.school at Stanford, MIT Media Lab, the Global Innovation Design program at the Royal College of Art and Imperial College, self-directed design education in Azerbaijan, and in Australia, cross disciplinary design education at James Cook University (Fleishmann, 2008) and courses across disciplines in Creative Intelligence and Innovation at the University of Technology, Sydney. Additionally, the authors, who are both practicing designers and design educators, have

found that design is a useful model for the application of creativity to a range of other disciplines because of its less individual and personally expressive, and more collaborative, cross disciplinary, communicative, and based on transferable theory. We consider that it can be effectively employed in the creative application of the specialist knowledge of other disciplines because it can be more problem focused, disciplined, systematic, based on process rather than outcomes, based on creative application to technology and is about the useful application of underlying theory and knowledge (Gluth & Corso, 2015).

Based on these design principles for the inclusion and embedding of a creative dimension to the specialist knowledge of a widely varied range of specialist disciplines, the authors have conducted workshops that have effectively added this aspect to programs and courses where it might have been expected, but was not being taught. The reasons that it may not have been taught varied widely also, but included the above-mentioned university emphases on acquisition of knowledge, judgmental assessment, education for qualification or confirmation of pre-specified skills. As well there were difficulties in understanding creativity beyond it being perceived as an innate skill as well as how to 'assess' it because of expectations that it involves the judgement of the outcomes, rather than emphasis on the creative process, collaboration and self-assessment against self-determined purposes

What we did: Introducing a Creative Foundation to Education Programs Across a Range of Disciplines So That Those Programs Themselves Encourage Creativity and Therefore the Wellbeing of Their Participants Personally and Professionally.

Accepting that Creativity has a significant contribution to wellbeing, individually and professionally, and in physical, psychological social and economic ways; and the core of the knowledge society is innovation (Sawyer, 2006), how can we expect pedagogy to contribute? Further, how can we prepare and retrain educators to embed a creative dimension into their curriculum in such a way that both students and educators can assimilate it as the basis for their wellbeing in their profession and their life? What approaches will facilitate creative realization and how might this be recognized and appraised?

In overcoming these prevalent trepidations towards creativity, the authors have initiated and conducted programs to introduce an aspect of creative idea generation in a variety of such disciplines. This incorporated a range of specific creative thinking approaches within a structure that itself embodies and models the nature of being creative by employing approaches in which student's ideas could be developed within their own discipline, applied directly to their work and aimed at changing their mindset. Based on our experience as design educators the authors have conducted a number of workshops that embodied the following approaches:

Teaching improvisationally by responding to what happens and what the students bring to the possibilities rather than sticking to a planned procedure and outcome. Teaching for innovation must involve a high-level of improvisation so as to allow students to co-construct their knowledge not always possible in a highly structured, directed classroom. A process where the teacher facilitates and guides the learning process to a series of outcomes building knowledge together in ways that are not always predetermined. This encourages responsibility and autonomy and independent thinking by providing the opportunity to express original ideas and opinions. In this envi-

ronment the ability to self-teach and to drive one's own learning encourages personal responsibility and ownership of the learning experience. (Graue, et al., 2015). Our approach provides the opportunity to re-engage students with their university experience by promoting one of the traditional objectives of education in what Bugeja (2006) describes as the 'critical thinking in learners'. Heathcote and Bolton (1995) describe it as students taking on the mantle of the expert, fostering inquiry based learning as they see themselves taking on responsibility for making decisions in respect to their own learning as opposed to seeing themselves as passive students. Education in this context is seen as not something that is done to you, but rather something that you experience (Robinson, 1998).

Using a creative teaching process itself as a model of the approach we were encouraging the students to undertake, as should management in any enterprise. The notion of teaching creatively and teaching for creativity and the resultant creative learning. We wanted to make a distinction between the desire for 'effective teaching' (teaching creativity) as opposed to 'learner empowerment' (teaching for creativity) as our main objective in a process that emphasized learners' ownership of the curriculum, the knowledge to be investigated and the contexts in which teaching and learning took place, as a means of establishing a framework for creative engagement (Jeffrey & Craft, 2004).

Structuring an effective collaborative, learning environment based on unstructured group discussion that conveys to students the development of egalitarian cross-disciplinary teamwork. This leads to greater student engagement through deeper learning, significant impact on performance and overall success. (Barron, et al., 2008). Many enterprising businesses work this way, and people seldom work in the isolated way that traditional education assessment and study models personify.

Recognition of ways of working as the key learning attributes, allowing students to collectively build knowledge collaboratively through a process of enquiry and discovery reliant on identifying key questions and hypotheses. This recognizes that a set 'knowledge' of any specialisation, is immediately out of date, and that the 'skills' required require finding information from the vast amount available and utilising it creatively. A process of problem finding involving an ability to perceive the total problem where knowledge is not simply to be mastered but to be thought about (Olson, 2014).

Building the ability to think reflectively and externalize skills and in so doing understand the thinking behind the thinking. From this student learn that the art of structuring an argument and elaborate their thinking process.

Focus on the creation of new knowledge through processes based on prototyping, technical innovation, exploration of new procedures utilizing design thinking that encourages learning through a process of constant adaption to situations in ever changing relations between subject, object and context (Buchanan, 1992). Scheer, et al. (2012), supported by Piaget's thoughts that learning and creating are fundamentally intertwined (Sawyer, 2006).

The process of creative thinking is an iterative process, in that it relies on repetition of the same processes to different purposes, involving exploration, playing with possibilities, speculating, sharing and reflecting to develop new ideas. The constant adjusting, critiquing, changing and revising to present models and prototypes of

ideas was very evident in student postings feedback enhancing their creative experiences, and their apparent feelings of wellbeing, as exhibited in the following example:

“When creativity is approached in this manner it gives the individual the feeling of being in control of their own process, which can be liberating and inspiring in itself. Yet, at the same time having the opportunity to receive valuable feedback and support. Collaboration with freedom.” – Student # 1;
(from the Course Evaluation Instrument, University of South Australia, 2011-16.)

We observed that our approaches encouraged variety and flexibility of expression in the learning process an important component in encouraging creative thought, something not always possible in the structured traditional approaches where bodies of information are delivered to all students in the same way and at the same time.

Creativity demands discourse, tension, dialog, and debate among the interested parties’ Social communities through providing informal feedback and support contribute greatly to recognition and support to an audience engaging in creative work where the sharing and exploration of ideas and opinions facilitates creativity (Gardner, 1994). Most participants in interest driven communities are motivated by the fact that their work will be viewed by others or by being part of an appreciative community and they are able to gain validation, recognition and audience for their creative works and to hone their craft within groups of like-minded an expert peer (Ito et al., 2009).

These workshops have established that adopting these principles can be achieved by some of the following simple approaches:

Working collaboratively to encourage participation and engagement with others in teams across disciplines, cultures, socioeconomic levels, etc., where conversation, communication, finding ways of working together, participatory assessment and considering how others see your work, are important experiences in becoming exposed to different points of view.

The underlying premise for both collaborative and cooperative creative learning is founded in constructivist theory (Panitz, 1999). Where knowledge is discovered by students and transformed into concepts they can relate to themselves. It is then reconstructed and expanded through new learning experiences consisting of active participation by the student as opposed to the traditional passive acceptance of information presented by a lecturer seen as the ‘expert’ gatekeeper of the knowledge. Learning and specifically creativity comes about through transactions and dialogue among a community of students, lecturers, faculty and society in a social setting. Creativity relies on discovery through the processing of information into new and novel configurations that can be facilitated by lecturers peers and community but essentially it needs to be actively generated.

We were conscious of fostering this processing of information through active engagement and self-expression at the student’s pace and timeframe, and gained more forthright communication through real time feedback allowing a faster and easier response for teachers, and enabling students to connect meaningfully with each another. Students commented that the generation of ideas encouraged by this exchange was greatly enhanced, as indicated by the following example.

‘The approaches allowed me look into a topic on a scale that I wouldn’t normally. I now understand that the more you break down the initial issue or question to the core the easier it is to rebuild it in a different way. It is this way I

was able to come up with ideas I probably never would have if simply asked to answer the question' – student # 2; (from the Course Evaluation Instrument, University of South Australia, 2011-16.)

Unblocking the impediments to creative thinking; associational, cultural, professional, emotional, social, language and others by challenging assumptions or preconceived ideas, not taking things for granted, defining and recognition of assumptions in order to challenge them, accepting that *any* assumption or preconception can be challenged or reversed, leading to new possibilities.

Encouraging lots of ideas; fluency without critique, by withholding the judgment sense and avoiding premature judgement all ideas no matter how crazy, seemingly silly or inappropriate were presented. The generation of a large volume of ideas without judging allows all ideas an opportunity to be considered no matter how irrelevant they may initially appear.

Encouraging lots of different ideas; flexibility, reinterpreting ideas, restructuring ideas into new configurations, comparing or substituting of things with similar or comparable qualities, taking an existing idea from one situation, discipline or application and applying it to another different one, considering the opposite or negative of an idea, etc.,

We found that the fluency and flexibility of ideas was enhanced by encouraging interaction and sharing due to the self-reinforcing function that commenting, which gave rise to subsequent conversations created. Many ideas were being encouraged, whereas students noted this did not happen when they worked in isolation. Ideas were being interrogated/discussed and reworked, and students were grasping the underlying principles, relating to creativity and building confidence in knowing when and how it was taking place. deeper learning and understandings was happening evidenced from what students were reflecting on and commenting. Developing and reconceptualising of ideas were going far beyond specific task orientated course requirements and even beyond the bounds of the course as the approaches were allowing students to enthusiastically take control of their learning, as illustrated by the following examples

'I feel some of the ideas I came up with never would have surfaced if I hadn't considered the topic so intensely. I definitely would use this process again.'
– student # 3

'[It] made me look at the topic in completely new way' – student # 4;

(both from the Course Evaluation Instrument, University of South Australia, 2011-16.)

Encouraging originality; personal interpretations, playfulness, having fun, risk taking and using humor and absurdity, using other senses such as smell, music, movement, touch, and including dreams, examining ideas or processes that didn't lead anywhere (even if they still don't — it is the *examination* that is important) and using mistakes to change thinking or ways of looking at the problem by using 'wrong' ideas or 'errors' as a springboard for the generation of new ideas.

Elaboration; embellishing ideas by the addition of details creating new meanings and better understandings. The process encourages the expanding of ideas through a process of clarification and articulation of thoughts, analogous and metaphoric thinking.

Intuition; putting ideas into the mind, stirring them and allowing plenty of time for responses from the unconscious.

Reflection, thinking critically about ideas and approaches.

Self-evaluation and peer evaluation, not relying on expectations of how the teacher will assess the ideas, but taking into account the tasks, processes and purposes that the students have determined for themselves.

Our approaches encouraged peer based sharing and the use of feedback emanating from interest based communities within the disciplines we were working with, which provided a stark contrast to formal educational environments where feedback is provided only by the persons in authority who 'own' the experience. Feedback from peers and audiences who have personal connections and interest in the work promotes collaboration and informal learning and was a strong feature of our work. This once again relies on the notion of social creativity and Csikszentmihalyi's insistence that it is the community, not the individual that is the agent of encouraging creativity. He advocates intentionally turning away from the individual nature of the creative experience to focus on a social context model. This implies deliberately encouraging diversity in the participants and giving value and consideration to all the divergent ideas and contributions and feedback that would arise from this contrasting input demonstrating to students that learning involving a diversity of input and peer interaction encourages participation and engagement. Therefore, our work is not only involving an isolated peer group but involved adult, lecturer, and community involvement which allowed students to experience feelings of relevance, inclusion, working collaboratively and the understanding of how working in this way improves wellbeing at the individual and group level, as indicated in the following responses

'Great sense of teamwork developed through . . . conversations . . . felt great to get feedback from peers – student # 5

'What was refreshing was that I found validation in the ideas and posts I submitted on line from other people in the class' - student # 6

(Both from the Course Evaluation Instrument, University of South Australia, 2011-16.)

Identification of inhibitors to creativity by examining things such as fear of making mistakes, the need to be right, the need to have an expected answer, the need to follow a predetermined process, the expectation that a process needs to lead to a solution, the need to follow a set routine (the idea that ideas only come at certain times and certain places, for instance in class or at school), using only logical, analytical, routine or judgmental thinking — and challenging and overcoming them.

Developing confidence by beginning very simply to provide positive experiences of the process and model effective ways of working before slowly adding complexity as students' capabilities and self-assurance develop for the appropriate level.

Embedding the processes in the relevant disciplines specialist knowledge, not as an add-on, as our experience has shown us that treating it as an unrelated strand will not be successful.

It was paramount that in developing our approach that academic achievement was able to be recognized as being determined by peer culture and interest driven activity be and that acknowledge the importance of intellectual growth and personal and cultural wellbeing as outcomes of the experience.

The creative social learning context of reciprocity provides students with scenarios to produce and evaluate knowledge and culture, contribute content and comment on others content, while expert participants provide leadership, direction and commentary but not have authority over fellow participants.

Students were encouraged to develop their identities and reputations through these peer based networks within a network of respected peers, rather than formal evaluations from lecturers or a testing regime. They also take on more responsible roles through ownership of their presentations, learning and evaluation of others. More mature adults have a role but not a conventionally authoritative one that may be the expected norm. Teachers are working collaboratively with students and in a consulting role . . . 'co-conspirators' which they have identified as a 'pedagogy of collegiality' (Mahendran, et al., 2005) where the responsibility for education is more of a distribution within networks of people and institutions. This creates a learning environment that provides encouragement to experiment and explore without the dominance of direct instruction. It requires a cultural shift for students who need to take an active role in determining the direction of their education and a certain openness to experimentation and social exploration that many might find is more demanding of exertion than the passive acceptance that they have been trained to accept as this approach is generally not characteristic of educational institutions. While student outcomes of the workshops were measurably more diverse and innovative, course evaluation instruments, focus groups and such for these trials also indicated there was still a high expectation teacher directed, individually assessed and predetermined outcomes, evidently artificially influenced by course outlines and compliance, perhaps even over compliance, with university rules, which is exemplified by the following student response;

'The beauty of utilizing these approaches with the more formal approach to education is that you have the opportunity to work with a more collaborative approach, which often stretches our thinking and methods beyond the initial working brief. Ultimately, resulting in greater engagement. As confidence grows, we extend the process further, which often results in reconsidering the preliminary approach as the idea grows and is out-worked further, creating better results.' – student # 7,

(from the Course Evaluation Instrument, University of South Australia, 2011-16.)

Educational institutions have identified the need to move from traditional models of delivery to design thinking models where students develop the capacity to apply their knowledge and direct their own learning in ways that reflect the decision-making demands that industry will need to build a greater reliance on creativity and innovation.

They may have identified attributes to reshape their institute's culture to develop understandings of principles and pedagogy to achieve relevant, structured and scalable innovative practice, in partnership with industry to seek opportunities, and develop new ideas that change its core organization structure and philosophy. Many see the need to encourage considering big picture, holistic approaches to the way problems are diagnosed, understanding the way specific specializations and approaches can be utilized more innovatively, and to encourage staff and students to be less risk averse, take initiatives, accept greater responsibility and to explore new ideas and ways of working. (Klawe, 2017. Stanford University's d.school, Harvard University's i-lab, Oklahoma State University's Institute for Creativity and Innovation and Ball State University's Center for Creative Inquiry),(Flinders University, UniSA) However they may also be meeting considerable resistance from conservative political, industry institutions, media and the community generally because it's both harder to measure against simpler 'right or wrong' conventional standards, and it will seem threatening to the hierarchical power structures and management constructs. But things may be changing too fast for these attitudes to thrive for much longer and this approach may serve as a model for other enterprises that plan to survive by adopting a creative approach to an unknowable future (Gluth & Corso, 2015).

'It Changed my life' – student # 8

(from the Course Evaluation Instrument, University of South Australia, 2011-16.)

Support for our approaches

In the literature review *The impact of creative initiatives on wellbeing* (McLellan, et al, 2012) it is asserted that 'if we are interested in helping future generations of flexible thinkers, who are resilient in the face of challenges, who can marshal a repertoire of skills and knowledge when moving between tasks of different types and complexity, then, as this review clearly demonstrates, the learner's sense of wellbeing will be key'.

'We see that as student's confidence grows, they begin to think better for themselves and recognize their own potential to improve. This, in turn, means they are able to work more effectively both individually and socially' (ibid, page 7). This points to a clear link between creative learning and wellbeing in young people. We argue that these creativity interventions are typically associated with outcomes that our review of the literature indicates are wellbeing related, whilst interventions associated with facets of wellbeing we contend are often creative in nature. The view that creative interventions do have the potential to promote wellbeing is strongly asserted by Csikszentmihalyi's (1996) notion that if the individual is functioning creatively that reveals that this is indicative of the highest 'self-actualization' levels of wellbeing.

Study Limitations

While this study sets out to establish that creativity is an inherent characteristic of human beings, the argument that it is also a principal quality of human wellbeing, at the individual, community and perhaps global level. This is based on the authors understandings of the essential creative requirements of design education for a rapidly changing profession initially, and the application of those principles to teaching approaches in other disciplines more widely. It is also based on the contemporary under-

standings of creativity as being community based, collaborative, learnable (or relearnable) and general rather than inborn, individual, specialized, and personal. (McWilliam, Dawson, 2007). It is further influenced by many publications regarding the unsuitability of current educational approaches, to individual, community and more widespread wellbeing, particularly those lacking a creative context to the application of knowledge, as in particular the ideas exemplified by (Robinson, 1998) and others. It concentrates to a large extent to the contribution education can make towards encouraging and exemplifying a creative characteristic in educators and students applicable to their personal and working lives in a rapidly changing work and social environment. The arguments we have made about the essential importance of creativity to wellbeing are also based on the authors own research into the effect structured play as opposed to unstructured play in preschool can effect individuals medium and long term creativity and wellbeing (Thiessen, et al., 2013.) We acknowledge that our rationale is principally based on our experience in education, rather than more widespread life experiences, particularly in less advanced economies or political realities where mere survival may leave little opportunity for creative expression. However, it is evident that, from the beginning of human history people have manifested a need to creatively express and artistically interpret an imaginative vision of their place in the world, their social cohesion and their future possibilities through decoration, dress, music, dance, ritual burial, reshaping their environment, abstract thinking and symbolic representation leading to the beginning of writing up to forty thousand years ago (George, 2016)

Summary and Conclusions

In summary, our work in promoting creative initiatives has involved challenges to traditional educational pedagogy in our institutions and speculation on how the educational experiences we provide our students will prepare them for future careers that will be significantly different to the present and the past – if not extinct as a result of rapid change across all sectors of society. We argue that wellbeing is not likely to be fostered in teacher centered controlled learning environments that traditionally were accepted as providing the skills for transitioning into a workforce that will not be likely to contribute to future prosperity. Our approaches factored in the need to foster student's wellbeing by preparing them as flexible and adaptable thinkers able to confidently deal with the uncertainty, complexities and challenges of the future. Their wellbeing is likely to be dependent on ways of working that promote a sense of autonomy, tolerance for ambiguity, self-direction, speculative thinking and a preparedness to take risks as part of the learning process, where the learner's sense of wellbeing will be key. Our own student formal and informal feedback confirms that creative experience builds students' confidence as they become adept at thinking for themselves and recognise their own potential to improve. Students are able to work more effectively both individually and socially in ways that undoubtedly show dispositions and capabilities directly related to various aspects of what are described in greater detail as the kind of self-actualization that contributes to the higher levels of wellbeing.

While exploring the complex nature of wellbeing and questioning what education ought to be doing to prepare students for an as yet unknowable future, we assert that simply concocting sets of current education outcomes is a totally inadequate indication of suitable education for future wellbeing. We maintain that flexible thinking, resilience, skills, underlying knowledge and understanding will be necessary to equip students with meta competences beyond cognitive knowledge in dealing with complex and widely varying problems.

Creative learning is essential to establishing a 'sense of wellbeing' in learners and is essential to future durability, however in order to achieve this the creativity education curriculum will need to address some challenges. Including, as just one example, the current universal movements in education around standardised testing regimes that are not addressing that competences need to go beyond isolated information acquisition in certain subjects. This tends to exclude assessment processes that address individual needs and reflect the way people will need to function in real workplaces, and in the information age where the real skills will be where to find the information, and how to apply it in diverse, imaginative, flexible and unexpected ways.

In order for individuals to survive and maintain a sense of confidence and wellbeing in an ever-changing society there will be a greater demand for the curriculum to address the development of competencies and skills that deal with an increasing complexity of everyday life, increasing, globalisation, fast-changing technological advances, shorter product cycles and tightening economic competition,

The curriculum will need to facilitate interdisciplinary real-world experiences, fostering of student's social and metacognitive competences through Design Thinking in ways approaching and accounting for complex phenomena in a holistic constructivist manner transitioning from traditional knowledge transfer to the development of individual potential and wellbeing.

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