

The Creative Application of knowledge in University Education: A Case Study

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Introduction

This paper documents a research project undertaken by the authors to investigate the recognized need for creativity based education at all levels. National and international bodies in business, politics and education have emphasized the need for creativity, recognising the importance of innovative and creative thinking in a wide range of human endeavors. Acknowledging the need to cope with constant change that will only increase in the future.

The Robinson Report in the UK 'All Our Future: Creativity, Culture and Education' argues that the future success for all organisations now lies in new approaches to developing the creative talents of employees and the need to educate for a creative workforce. To keep pace [businesses] need people who can consistently generate new ideas and adapt to constant change. (Robinson, 1998)

Schools and universities are not educating for creativity, in fact they 'systematically suppress creative thinking'. Robinson goes on to say that old models of education cannot successfully promote creativity at all levels of education but for future success this must change. Our project sets out to explore ways that this can be achieved, and the kind of changes necessary in policy and approach.

Other bodies too have recognised the need for change in educating for creativity. The Prime Minister's Science, Engineering and Innovation Council (PMSEIC) working group has identified the importance of Creativity as a prerequisite for economic growth – 'the knowledge economy is rapidly being eclipsed by the creative economy.' (DEST, 2005) and the SA Strategic Plan has identified the need for education to enhance creativity and innovation (Tryens, 2007).

Daniel Pink (2005) has summarized this 'we are moving to an economy and a society built on inventive, empathic, big-picture capabilities, the conceptual age.' In other words we need to move from an education system efficient at imparting knowledge and skills to one aimed towards the application of knowledge which acknowledges the importance of constructing new ideas.

The question as to what kind of education *is* required for the creative application of knowledge has led us to undertake this project to investigate whether the way we have

developed for the creative application of knowledge in design disciplines can be effective in engaging students in this process in a range of other university specialist areas.

We were encouraged by Perkins (1994) and Goh (2002), among others, who have established that methods for teaching creativity can transfer from one area or specialisation to another, and in fact this transfer is an essential component of any learning organisation.

Martin (2006), Dean of the University of Toronto Business School, argues a need to apply the process of how designers think (creativity) to the thinking involved in business productivity and Hackett (2005), President and CEO of Steelchase Inc. describes the intersection of design and business, and argues that people in 'knowledge jobs' require the idea production approaches found in design practice.

Background to the project

The idea for the project has its origins in the feedback from students who were enrolled in Creative Thinking and Idea Generation elective courses in our Visual Communication Design program. These courses attracted students from Engineering, Architecture, Business and Marketing, Event Management, Journalism, Education and some audit students from a variety of Industries. They observed that a creative input was lacking in many of these programs and it was only when they had the experience that our courses offered that they began to question the lack of a creative dimension in their own specializations.

Traditionally, university programs are seen as extremely efficient at imparting bodies of knowledge, technologies and systems and processes that are known, testable and translatable and that can easily be replicated and measured. The processes that lead to new ideas and the ways that we arrive at them are not so easily definable, and are often overlooked in preference for information that is more easily measurable. Lecturing staff from a range of other disciplines reinforced this view and agreed on the importance of a creative input in how students apply their knowledge. However there was very little in the way of a structure in their courses to assist students to achieve this. Our research indicated there was an expectation that students would apply knowledge in a creative way, but methods to facilitate this were lacking. As an example, students in a management program, who were expected to submit a proposal for a business venture, applied a range of business principles such as structures, marketing, feasibility, accessing finance, managing risk, protecting your idea etc., without any strategies for coming up with original ideas. Their University training had only prepared them for one part of the task. The creative component was left to its own devices. This is reflected in a survey of Graduate Qualities that *our* university promotes and which forms an integral part of all course outlines, which confirms that there is a greater emphasis on acquiring knowledge, and with it, preconceptions of set patterns, expectations and outcomes.

Our university's mission statement states that it 'is innovative' and proclaims its ability to 'apply and communicate knowledge'. Erica McWilliam (2007) notes 'a recent analysis of the occurrence of the word "creativity" within higher education policy documents, such as

graduate attributes, indicates that 75% of all Australian universities have an expressed commitment to 'creative' learning outcomes.

However, in reality, graduate qualities such as acquiring 'Bodies of Knowledge' are given far greater priority in our university than creative problem solving, providing for security of *knowing* rather than building confidence for the challenge of possibilities that would arise from *application* of the knowledge. The same can be seen in a wide range of programs and also in general education (Robinson, 1998).

Definition

Creativity involves the restructuring of existing ideas, knowledge, technology and systems into new models and configurations – information shifts and inventiveness that generate new meanings and transference from one application to a distant one. Bruner (1960) describes it as a 'perception shift' that allows us to see the underlying principles in particular disciplines and then to restructure these key ideas. This view is implicit in what we acknowledge as innovation and the creation of new knowledge. What our project attempts to do is address how we can best teach creativity, what structures exist in our curriculum to do this and how can we best engage students in the process. By investigating and applying the notion of *Perception Shifts* we are attempting to imbed some of the basic underlying principles of creative and innovative thinking in these courses. This creates new ways information and knowledge can be applied in these disciplines, within the university and ultimately in the industries these disciplines serve.

Part of this process will be to counter some misconceptions about creativity, in particular the notion that it is the domain of a few 'talented' individuals and cannot be taught. Even so called creative people perpetuate these misconceptions, for example, Paul Rand has said that the most important thing in his designing is 'talent, and that's all intuition, and you can't teach that' (Maeda, 2000). Our approach, however, is supported by De Bono (1990) 'Creative thinking is not a talent, it is a skill that can be learnt'.

Approach

In our approach, we regarded creativity and inventiveness as involving an hierarchy of skills – the simpler levels of which are both directly teachable, and transferable from one discipline to another. (While at higher levels this transference may be more complex and problematic, the same principles may be useful. However to establish whether this is the case or not will be the subject of other studies.) The engagement we require our project to engender is most important because it is only this that can lead students to be confident and secure in an environment where outcomes are not known or expected. We see creative outcomes, by definition, as not predictable but about possibilities, engaging and empowering students, in actually making decisions, judgements, and arriving at possibilities, shifting from ***having to know the predetermined*** to ***creating*** the knowledge. The approach designers use, which we are using as the starting point for our model, has been defined as 'the science of uncertainty' and is about arriving at possibilities, not 'right' answers or single 'truths' (Dilnot, 1998).

We want students to experience success in these ways of working, arriving at creative outcomes which are not predictable. To achieve this, students begin at a very simple level with few variables and little complexity to gain confidence in themselves and these processes, gradually increasing the complexity and variables involved so that they are able to maintain this confidence.

Project: Trials and Methodologies

We invited programs across the University and other institutions to participate, initially by examining the current practice in these programs and identifying opportunities for application of creative practice with due consideration to particular characteristics that might allow for unique outcomes. We began by looking for specialisations where a creative dimension might be expected, but was not being undertaken in any depth. Our participation was then based on deepening the curriculum to include a creative dimension involving the application of its specialist knowledge. By collaborating with the teaching staff in the discipline, we were able to identify what the program was trying to achieve, and then were able to work out how the specifics of that discipline could be extended to include a creative application of its knowledge. This involved changing the structure of the program, or changing the order of presentation, and changing the presentation from a passive to participatory mode by introducing collaboration, questioning and reevaluation, self direction and self evaluation. We did this to encourage student engagement with their learning by optimising interdisciplinary approaches to new areas of work, working collaboratively and on research that has established that creativity or inventiveness depends on the ability to make unexpected connections (perception shifts) that lead to new ideas.

These strategies were chosen because they get the learners to reformulate their attitudes towards the task as a whole, by examining the problem to be solved from many perspectives, by examining and challenging assumptions, by engaging in an exchange of ideas, by suspending premature judgement and allowing ideas to develop, by seeing other connections and associations, and by establishing expectations of creative outcomes, so that they get out of seeing their discipline in the expected way. The important thing is that they are expanding and adding flexibility to what they already know.

Initially the students participating in our workshops were engaged in exercises and presented with case studies to make them aware of the things that inhibit them being creative, specifically designed to develop understandings and strategies to unblock and overcome impediments such as perceptual, associational, cultural, professional, emotional, social, language, preconceptions, etc.

Then students participate in a number of creative thinking methodologies; encouraging fluency, flexibility, originality and elaboration of ideas, using playfulness and chance, building confidence in intuitive processes such as dreaming, daydreaming, meditation and relaxation, accepting and even encouraging making mistakes, and fostering originality. For instance, the need to consider quantity initially rather than quality, to withhold judgement and criticism, to challenge assumptions that we may take for granted, to make random and chance inputs, to accept mistakes and to bring out

originality by allowing each person's unique character and experience. The aim of these principles and methodology is to push the unexpected, to introduce ways of working that break the tendency to come up with an immediate overall solution that is able to meet *all* the complex requirements and aspects of the problem.

This project sets out also to challenge some myths about creativity that are common in education and are reinforced in many workplace environments; that only certain people are creative, that creativity is only applicable in certain fields like art, that creativity cannot be taught and that it involves a lack of discipline. Our workshops also specifically challenge the idea that creativity is an individual characteristic, by having students experience the increased diversity and originality generated by collaborative interaction and the exchange of ideas. Csikszentmihalyi (1999) suggests that the *community, not the individual* matters when seeking to foster creativity.

Our approach had students adapt to changing situations, see connections between things to create new meanings in practising innovation and communication in a variety of ways. We attempted to balance knowledge acquisition and skills with developing the confidence to be innovative in applying these.

These strategies enhance creative thinking because they model the perception shifts necessary to encourage innovation and provide an understanding of the underlying principles necessary for developing creativity. Exposure to these new ways of working has generated confidence in the processes as students successfully experience creative outcomes from these structured endeavours. They have come to see new possibilities and insights into the application of the traditional approach to their specialisation.

The results and students' feedback from the project clearly establish that the majority of participants have demonstrated creative capacities, that creative outputs are the result of disciplined activity in response to a problem and that creativity can be taught in a wide range of disciplines. Creativity should be seen as an integral function in all specialisations. However, we have established that unless the notion of a creative dimension is embraced and developed to suit the special characteristics of the particular discipline then it is unlikely to be successful.

We have found that these approaches can be applied to teaching and encouraging creativity in *all* subject areas. In our workshops we found that improvements in the creative application of knowledge could be taught by a series of exercises involving working individually, collaboratively and across disciplines.

Trials were conducted in the Entrepreneurial Enterprise, Event Management, Education, Social Work and Creative Writing courses.

Appraisal

We are really only expecting to make a start; to develop *beginning* skills in creativity in the participants; measuring the success of the project *as a whole* by determining the

usefulness and validity of having participants gain an understanding of the nature of creativity and practice in creativity skills applied to their specialist discipline.

Our appraisal model therefore was based initially on a review and synthesis of the evidence from focus groups, evaluation feedback etc. from students' and teachers' initial responses to participating in the individual trials. However, we realize that its success may only be truly indicated in medium and long-term attitude changes.

We were also not readily able to measure the effectiveness of creativity processes *embedded* in the discipline curriculum on a *continuing* basis.

However, in the short term, an overall appraisal of the project, based on student and staff feedback and evaluation confirms that there were increases in speculative, exploratory and investigative modes of learning. We found that students are more engaged in their practice by utilising a creative way of working. The appraisal of each trial exposed the likelihood of new, possibilities and interpretations influenced by the particular characteristics of the different disciplines.

We also required students to undertake a self-evaluation to determine whether our proposals resulted in a different way of thinking, giving rise to more diverse and innovative outcomes than their previous educational experiences. We examined previous outcomes for the same project and to compare the diversity, innovation and engagement of students earlier proposals with those resulting from our trial workshop.

We intend to follow up the effect of this exposure to these creative idea generation techniques on a medium and long-term basis to see whether they have had a continuing effect on the students in their further education and their professional practice.

Outcomes of the Trials

While it was evident that the student outcomes of the workshops were measurably more diverse and innovative than previous courses or than expected outcomes, some student feedback for these trials indicated that there was still a high expectation of teacher directed, individually assessed and predetermined outcomes. This could be seen as being artificially directed and influenced by course outlines and compliance, perhaps even-over compliance, with university orthodoxy. The need to overcome this preconception has been a major challenge that this project is aiming to overcome. We recognize that these trials represent a major shift in students expectations from their previous educational experience.

In our results to date, significant changes in student perceptions and attitudes have been indicated by Course Evaluation Instruments (CEIs), focus groups and student feedback questionnaires. A CEI rating interpretation guide comparing our courses in creative thinking with a wide range of other university courses in arts, architecture etc. shows a consistently higher mean, indicating a clearer idea of expectations from *our* course and developing and strengthening a number of qualities of a University of South Australia graduate.

Some typical CEI text responses are:

'This was a ground breaking course for me as it allowed me to identify and learn to work around numerous forms of creative blocks. I also increased my level of professionalism'.

'The concepts taught can be applied across all areas of life and work'.

'It gave me huge confidence in my idea generation abilities in my own studies'.

'This subject should be a compulsory unit for everyone (perhaps in the entire education system)'.

'This class completely renewed my faith in my own designing ability'.

All programs participating in the trials have indicated that they want to make this a permanent part of their programs and courses.

Outcomes of the Project

The evidence from these trials has enabled us to develop a comprehensive curriculum model for the teaching of creativity across traditional subject boundaries, based on recognising the importance of collaborative and group work in teaching creativity, embracing and developing a creative dimension to suit the characteristics of that discipline's knowledge, and having these strategies embedded in that discipline. Creativity must be integrated into *all* areas of a specialization, so that teaching it is seen as an integral part of a discipline rather than a specialist add-on. In our workshops, this model provided direct experience of the creative thinking process and generated confidence in its development that lead to successful application over many facets of the course.

We plan to build on our experience to date to develop a model to embed a creative dimension in a range of specialist discipline curricula by conducting workshops applied to *whole course curricula*. In the long run we see the potential to promote, encourage and lead in establishing the value of creativity at all levels of university education and assist and advise in its implementation in a wide range of curricula.

Evidence from our workshops demonstrates that creativity *can be taught*. The list of indicators attributed to creativity has consistently been mentioned by students in their feedback on the project workshops, facilitating their ability to analyse and synthesise information and to generate new meanings and ideas as a result of perception shifts in the way information is conceptualized.

Initiatives and Recommendations

We foresee that the outcomes of this project could lead to policy innovation within the university acknowledging that more needs to be done to include creativity as an important practice in graduate quality objectives, mission statements etc. In the long run we see the potential to promote, encourage and lead in establishing the value of creativity at all levels of university education, and to assist and advise in its implementation in a wide range of curricula, leading to the possible establishment of a centre for creativity teaching and learning research and practice within the university, or in collaboration across institutions. Real change will require institutional financial and policy commitment.

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