A Comparison of Creative Strategies in Teaching Undergraduate Students in the Visual Arts and Design

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A Comparison of Creative Strategies in Teaching Undergraduate Students in the Visual Arts and Design

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INTRODUCTION

Teaching Creativity

As Runco (2004) observed in his major review, 'creativity is more important now than ever before' (p. 658); consequently, teaching creativity and creative thinking, particularly within the visual arts and design context, is now receiving more overt attention. The course being discussed in this paper (2545QCA Creative Thinking) was offered first as an elective eight years ago; in 2009 it became a component of the core foundation program in Design at Queensland College of Art Griffith University.

Teaching creative thinking has been approached in many different ways. The methods outlined in the classic summary produced by Torrance (1987) have not changed significantly over the years, but emphases have. While now there is more focus on group performance and teamwork in creative production (based on the belief that 'two heads are better than one'; see McWilliam & Dawson, 2008), there still is a concern with the individual development of creative capacity.

A Course in Creative Thinking

This course begins with a range of exercises that challenge existing mindsets and explore different ways of perceiving /envisioning *information*. Following this, methods of encouraging creative ways of thinking are introduced and applied to specific problems. Throughout this process, students engage with the material presented to them on an individual level as well as working together in teams, the members of which may change from week-to-week. While being structured around content delivery, this course has maintained its flexibility to retain currency. Consequently, after eight years, the course is

still a work in progress. Students are encouraged to keep discovering new ways of presenting information and (with permission) the more effective of these approaches subsequently can be incorporated into the content.

Course achievement is assessed in three ways: (a) Group Seminar Presentation, (b) Creative Product, and (c) Participation. In this study, only the Creative Product mark was used to measure creative outcome as this reflected individual effort. This score was determined from the individual ratings of the four tutors, using a moderation process corresponding to the consensual assessment method (Amabile, 1996; Balchin, 2007).

The timetabling of classes has been found to have a noticeable effect on class attitude. Observation has shown that students in the afternoon groups seem much more enthusiastic compared with their peers being taught the same material in the morning. This may reflect the different patterns of sleep and wakefulness of adolescents/young adults compared with older adults; research in this area has suggested the school day should begin later and finish later to accommodate this difference (Wolfson & Carskadon, 2003; Vince, 2006). Based on these findings, classes are timetabled for early afternoons in preference to mornings.

Creative Thinking Techniques

Course content is based on the premise that any one method of enhancing creativity may be more effective for one person than for another. Therefore, students are introduced to a range of strategies, all of which have been shown to enhance creative thinking. During the semester, they are given opportunities to apply these approaches in addressing particular design problems. Through this process, they discover which of these strategies work best for them individually.

Some of these activities attempt to stimulate attentiveness to states of consciousness that are likely to affect creative ability, e.g. left/right brain awareness (Edwards, 1989; Pettigrew, 2010). Others encourage spontaneity, e.g. ‘improv’ techniques including theatrical improvisation (Johnstone, 1979), or stimulate narrative, e.g. ‘improv’, word, and word/image games as well as establishing unlikely connections (De Bono, 1973; Johnstone, 1979; Smith, 2005). Risk taking is involved along with an acceptance of randomness (De Bono, 1990; Jones, 1991; Fobes, 1993; Taleb, 2007). Aspects of emotional intelligence are examined (Goleman, 1995; Ciarrochi, Forgas & Mayer, 2001).

An approach dubbed the 'Non-specific Brief' requires students to explore unlikely possibilities by exploring a word or phrase that sums up the essence of the brief. Typically, this initially uses brainstorming and mind mapping (Buzan & Buzan, 2000), and then ways of refining the initial concept/s, e.g., the 'Six Thinking Hats' technique (De Bono, 1999). Unlikely associations are investigated using the senses, e.g. synaesthesia (Cytowic & Eagleman, 2009). The subconscious is explored using Johnstone's 'Waking Dream' and other techniques (Johnstone, 1979). Finally, to provide a meta strategy for 'messy' problems, students are introduced to Creative Problem Solving (Treffinger, Isaksen & Stead-Dorval, 2006).

Training of Tutors

All staff invited to teach in this course undergo a training/induction process. Each new team member is required to become a 'student' in the class for a complete semester. This ensures that s/he not only observes the complete process but also participates in all the activities. While this training involves a considerable investment (time and money) in the staff, it is considered the most satisfactory way to maximize the likelihood of consistency of delivery and assessment by tutors.

Research Issues

This study presents the results of the first formal research into the outcomes of this basic component of the QCA Design program. One issue of interest here was whether or not exposure to this course would increase students' confidence in their creativity ability. This self-assessed creativity has been conceptualised as creative self-efficacy and has been linked with enhanced creative outcomes (Tierney & Farmer, 2002). It was expected that students would show greater creative self-efficacy on completion of the course, and that those with higher self-assessed creativity would receive higher marks as an indicator of their more creative output.

METHOD

Participants

From a total cohort of 143 students enrolled in the first-year Creative Thinking course at QCA for Semester 2, 2009, 70 completed the Creative Thinking Questionnaire and Course Evaluation. Of these, 57 were female and 13 male, while 45 were Australian and 25 from other cultural backgrounds (mainly Asian). Students were taught in four groups

by different staff, who were experienced teachers, who had all been involved in the program for between one and two years, and who had undergone the required induction/training process.

Materials

To measure students' perceptions of their Creative Thinking Ability, a 20-item questionnaire was developed that provided statements about their understanding of the concept of creativity (eight items: e.g. 'Creativity is essentially about problem solving') as well as ones expressing their perception of their own creative ability (12 items: e.g. 'I can come up with creative ideas at any time') with which participants had to indicate their agreement on a 5-point scale (1 = Strongly Disagree; 3 = Undecided; 5 = Strongly Agree) (see Appendix 1 for a copy of the questionnaire). In addition, a separate Course Evaluation Questionnaire was administered that measured, again on 5-point scales (a) how useful students found each of nine specific techniques introduced and applied during the course (1 = Useless; 5 = Really Useful); and (b) their level of agreement with statements relating to the course experience (1 = Strongly Disagree; 5 = Strongly Agree). Opportunity was provided for respondents to comment on any other approaches that they had found useful, and anything that they felt should be emphasised or included in the program (see Appendix 2 for a copy of the Course Evaluation Questionnaire).

Procedure

During the first class of the semester, students were asked by their tutors to complete the Creative Thinking Questionnaire (participation was voluntary). The same survey was administered in the last class of the semester to detect any changes in perceptions. In addition, at this time, the Course Evaluation also was conducted.

RESULTS

Effectiveness of course

To compare students' pre- and post-course understanding of the concept of creativity and their assessment of their own creative ability or creative self-efficacy, composite totals were produced from responses to the respective items (after scores on negative items were reflected). Repeated measures analyses were performed (Pre- and Post-) with Sex (Male/Female), Cultural Background (Australian/Other), and Tutor (four classes) as the between-group variables.

No differences were found between students' understanding of the characteristics of creativity before and after undertaking the course (M_{Pre} = 26.1; M_{Post} = 26.2), but since the maximum total score for the eight items is 40, this would suggest that students still need to give more attention to appreciating the essential aspects of creativity. However, differences were found in how they perceived their own creative ability, with the Post scores (M_{Post} = 44.3; maximum score = 60) being significantly higher than Pre scores (M_{Pre} = 40.7). While no sex or cultural differences were observed, a Tutor X Experience interaction was recorded.[1] Figure 1 shows that different tutors were able to generate varying levels of creative self-efficacy in their students.

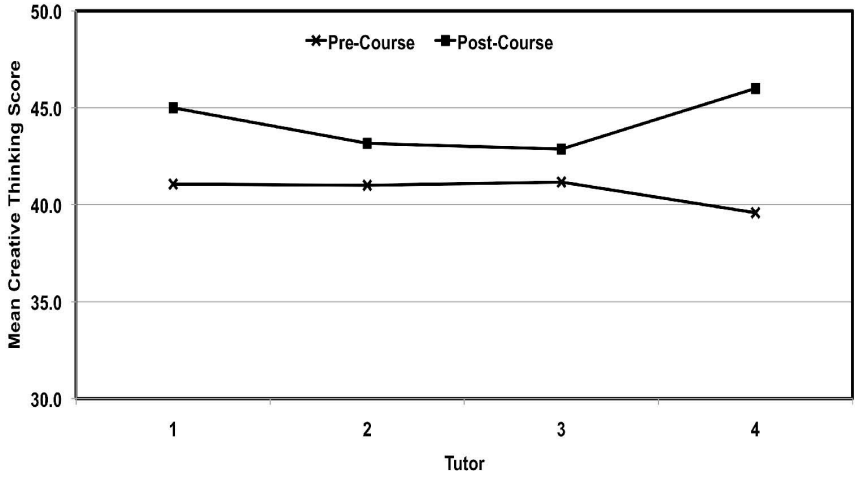

Figure 1: Mean Pre- and Post-Course Creative Thinking Scores from Each of the Four Tutorial Groups

Similar significant differences between tutorial groups were found when comparing the students' mean ratings of the overall value of the course.[2] Class 2 (M = 3.7, SD = 1.0) provided a significantly lower value rating than did Class 4 (M = 4.7, SD = 0.5). Not

[1] Mean Perceptions were compared by conducting a Sex X Culture X Tutor X Experience (2 x 2 x 4 x 2) ANOVA with repeated measures on Experience (before and after the course). The Experience main effect was significant ($F_{(1, 430)}$ = 40.3, p < .01), as was the Tutor X Experience interaction ($F_{(3, 36)}$ = 3.9, p < .05).

[2] A one-way ANOVA comparing the mean Overall Value of the course determined by students from different tutorial groups: M1 = 4.2, SD = 1.0, n = 17; M2 = 3.7, SD =1, n =17; M3 = 4.1, SD = 0.9, n = 30; M4 = 4.7, SD = 0.5, n = 12 ($F_{(3, 72)}$ = 3.2, p < .05).

surprisingly, those respondents who reported that their teacher inspired then to learn also rated the course of higher value ($r_{(70)}$ = .75, p < .01).

Comparison of Creative Thinking Techniques

Nine idea-generating techniques were compared in this study: Drawing on Right Brain (1); De Bono's 'Po' (2)[3]; IMPRO Activities (3); Creative Problem Solving (4); Waking Dreams (5); Word Play (6); Non-Specific Briefs (7); Affecting Senses (8); and Playfulness (9). Two repeated-measures ANOVAs were conducted comparing mean Usefulness ratings of the techniques given by students. One analysis included High versus Low creative self-perception as a between-group variable (High being those students at or above the 75th percentile of the final Creative Thinking scores; Low including those at or below the 25th percentile). The other was a Sex X Culture X Tutor X Technique (2 x 2 x 2 x 9) ANOVA with repeated measures on Technique. Significant differences were found among Techniques; however, this result was qualified by a significant Tutor X Technique interaction that is shown in Figure 2.[4]

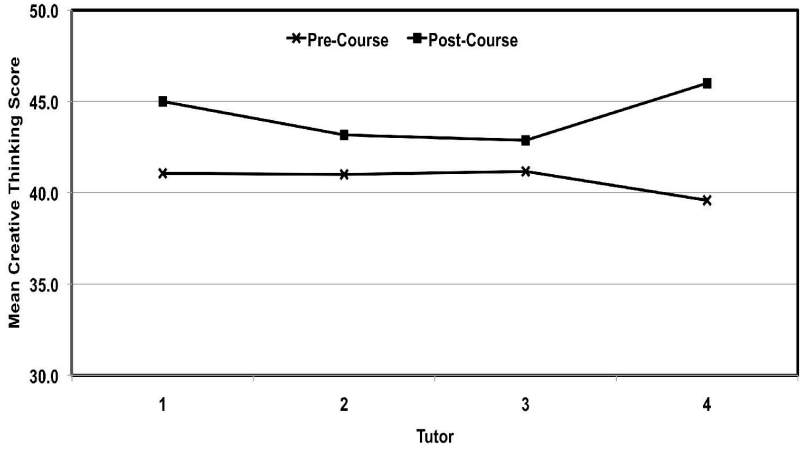

Figure 2: Mean Usefulness Ratings Given by Students in the Four Tutorial Groups for the Nine Creative Thinking Techniques

[3] Numbers in parentheses indicate the Technique as presented in Figure 2.

[4] A significant main effect for Technique was obtained: $F_{(6, 409)}$ = 18.9, p < .01; also a significant Tutor X Technique interaction was observed: $F_{(18, 409)}$ = 1.6, p < .05.

It can be seen that, overall, techniques such as Impro, CPS, Word Play, Affecting Senses, and Playfulness were found to be the most useful, while De Bono's 'Po' and Waking Dreams appear to be less useful. However, equally important is the fact that the perceived usefulness of techniques varies with the tutorial group in which students were taught. Other student characteristics (sex, culture, perceived creativity) did not influence preference for approaches.

It also was of interest to look at the clustering of preferences for the techniques employed in the course. Table 1 records the significant correlations between the Usefulness ratings of the approaches used. For example, it can be seen that, although the coefficients are not high, those students who found Word Play useful also tended to find CPS, Waking Dreams, Non-specific Briefs, Affecting Senses, and Playfulness helpful. Interestingly, although IMPRO and CPS were found useful in their own right, those who valued them appreciated a limited range of other approaches.

Table 1

Significant Correlations (Pearson's r) Between Usefulness Ratings for Various Idea-generating Techniques

Technique	3	4	5	6	7	8	9
IMPRO (3)	--				.23*		.31**
Creative Problem Solving (4)		--		.33**	.25*		
Waking Dreams (5)			--	.39**			.26*
Word Play (6)				--	.38**	.36**	.26*
Non-specific Briefs (7)					--	.37**	.38**
Affecting Senses (8)						--	.34**
Playfulness (9)							--

- $p < .05$ ** $p < .01$

Relationship Between Perceived Creativity and Creative Performance

Finally, an analysis was conducted to determine the extent to which perceived creativity and the indicated value of the course related to the final assessment of the students' creative product. Here the mark for a student's individual project was used as the criterion. Unfortunately, it was possible to match these data for only 39 students.

Perceived Creativity score and Course Value rating correlated significantly with Individual Mark (Perceived Creativity: $r_{(39)} = .40$, $p < .05$; Course Value: $r(39) = .34$, $p < .05$). This suggests that, while the correlations are moderate, the students' perceptions of their ability have some validity in relation to their judged performance.

DISCUSSION

Benefit of Course

Students experienced two major benefits from undertaking this course. First, as the results indicate, respondents showed a stronger belief in their creative capacity after completing the course than they did at the start. More work needs to be done to determine if this is a 'real' or lasting effect, or merely one reflecting the extensive attention given to creativity within the semester (the fact that students did not seem to develop a deeper understanding of the essence of creativity as a concept raises some doubts about the likely persistence of this greater creative self-efficacy). However, having increased confidence in their creative potential should lead students to enhanced risk-taking in their creative output that has been proposed as a desirable trait (Byrd & Brown, 2003).

The fact that a significant relationship was found between students' creative self-efficacy and the independent assessment of their creative production gives some support to the belief that the positive self-perception is a substantive effect. This connection suggests a second related benefit of the course; however, further longitudinal research is required to demonstrate continued generalization of the effect to creative output in other courses. For this, a control group that was not exposed to the current program also would be needed for comparison.

Interestingly, these results provide a different view of the value of creative self-efficacy to that presented by Kaufman, Evans and Baer (2010) in their comparable study of 9-11 year olds. These authors reported that creative self-efficacy showed a 'poor connection to actual creative abilities across domains' (p.12) including visual arts. Perhaps by the time students reach tertiary level, they are better equipped to evaluate their own ability leading to more consistent and valid findings.

Usefulness of Techniques

Comparison of the various creative-thinking techniques applied in this course showed that, in spite of expected individual preferences, students overall found some approaches more useful than others. De Bono's 'Po' and the Waking 'Dreams' techniques consistently were not valued. This suggests that the course content could be tightened by concentrating on the application of a smaller core of relevant and valued techniques. However, it would be important to conduct further study into what it was about the various approaches that students found useful. With that information, a more cohesive and complementary set of techniques could be assembled, avoiding duplication as much as possible.

Importance of Teaching

Above all, these findings point to one overriding influence in the teaching of creative thinking: the role of the tutor. In spite of their participating in an extensive training/induction program, tutors in this program exhibited notable individual differences in their ability to inspire students to believe in their creativity, and to highlight the usefulness of the various approaches employed. While the basic training must be maintained, these results suggest a revision of the teaching structure might be appropriate. Clearly, different tutors are able to engage more effectively with certain approaches and draw on their strengths to motivate students. Therefore, rather than require all tutors teach all techniques, assuming they are equally effective with each, more student engagement might be achieved by having tutors teach to their strengths, working across groups applying approaches they themselves value.

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Appendix 1: Creative Thinking Questionnaire

These questionnaires are strictly confidential.

Please be as honest as you can when answering these questions. Your responses will form part of an on-going research project in creativity. There is no 'right' or 'wrong' answer.

This questionnaire is definitely *not* an assessment item.

Identity (you can use an alias): ……

Please read each statement carefully, then circle one of the numbers on the right, where:

1 = Strongly Disagree, **2** = Disagree, **3** = Undecided, **4** = Agree, **5** = Strongly Agree

1.	My solutions to problems are usually different from my peers	1 2 3 4 5
2.	When given a problem I think of lots of different solutions	1 2 3 4 5
3.	My solutions to problems are usually better than my peers	1 2 3 4 5
4.	When given a problem I usually have only one good idea	1 2 3 4 5
5.	Creativity is essentially about problem solving	1 2 3 4 5
6.	When given a problem I find it hard to think of more than one solution.	1 2 3 4 5
7.	I can come up with creative ideas at any time	1 2 3 4 5
8.	Creativity is something you either have or you don't have	1 2 3 4 5
9.	Creativity is all about problem finding	1 2 3 4 5
10.	Most other students at QCA are more creative than I am	1 2 3 4 5
11.	Creativity can be learned successfully	1 2 3 4 5
12.	Some times I am much more creative than at other times	1 2 3 4 5
13.	Talking with other people stimulates my creativity	1 2 3 4 5
14.	If I wait long enough I'll always come up with a good idea	1 2 3 4 5
15.	Creativity is something that cannot be explained	1 2 3 4 5
16.	I am more creative when I am alone	1 2 3 4 5
17.	Creativity is pure intuition	1 2 3 4 5
18.	The only way to be creative is through persistence	1 2 3 4 5
19.	There are many different ways of thinking creatively	1 2 3 4 5
20.	Since being at QCA I am more creative than before	1 2 3 4 5

Cultural background [eg. Australia/China/Venezuela/etc.] ……

Sex: Male [ ] Female [ ]

Appendix 2: Course Evaluation Questionnaire

1) During the semester you took part in a number of different ways of encouraging creative thinking. Please rate them: **1** = **Useless,** **2** = Better than nothing, **3** = OK, **4** = Fairly useful, **5** = **Really useful**

If this form of question doesn't seem to fit with the activity or how you want to describe it, please feel free to change the question or write you response on the back of the sheet

1.1	Drawing on the right-hand side of the brain (e.g., upside down images)	1 2 3 4 5
1.2	Using De Bono's concept of 'Po'	1 2 3 4 5
1.3	IMPRO activities generally	1 2 3 4 5
1.4	The Creative Problem Solving technique [CPS]	1 2 3 4 5
1.5	Waking Dreams (being 'led' through a dream sequence)	1 2 3 4 5
1.6	Word Play exercises in general	1 2 3 4 5
1.7	Non-specific briefs [i.e., initially, just being given a word or phrase]	1 2 3 4 5
1.8	Affecting senses (e.g., Emotional intelligence, other senses, etc.)	1 2 3 4 5
1.9	Using Humour/Fun/Playfulness	1 2 3 4 5

1.10 If you remember something else (good or bad) that isn't listed here please add it now:

- 1 2 3 4 5
- 1 2 3 4 5

2) Please read each statement carefully, then circle one of the numbers on the right, where:

1 = **Strongly Disagree**, **2** = Disagree, **3** = Undecided, **4** = Agree, **5** = **Strongly Agree**

2.1	The course was a complete waste of time	1 2 3 4 5
2.2	I found that I already knew most of the course content	1 2 3 4 5
2.3	I enjoyed the experience	1 2 3 4 5
2.4.	Overall, the course has been of value to me	1 2 3 4 5
2.5	The teacher inspired me to learn more about this subject	1 2 3 4 5

3) What would you like to have done more of, or what would you like to have had more information about?