

PEDAGOGY FOR CREATIVE COLLABORATION

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ABSTRACT

In an increasingly globalized and knowledge-based economy, graduates with creative minds and able to collaborate will have a clear competitive edge over their peers. This paper examines the pedagogy used in an elective course aimed to raise the creative design literacy of nondesign students who were mostly Business students. Students in this course learned to think creatively and worked collaboratively in small groups to solve design problems. The positive results in this study strongly suggest the pedagogical model employed is well suited to prepare Business students to be better future promoters and consumers of design.

JEL: I230

KEYWORDS: Collaborative Learning, Group Creativity, Group Dynamics, Design Making

INTRODUCTION

Singapore, a tiny island-state with few natural resources, has, by necessity, invested heavily in education to develop its human capital to its fullest as a pillar of economic growth since its independence in 1965. In a speech on “Education for Competitiveness and Growth” at the Singapore Conference in Washington in February 2012, Singapore’s Minister for Education, Mr Heng Swee Keat, likened the earlier years as “survival-driven” and “efficiency-driven” years (Heng, 2012). Singapore’s economy has since developed rapidly and by the late 1990s, had transitioned into a knowledge-based economy. In 1997, the Prime Minister launched the *Thinking Schools, Learning Nation* initiative and the focus then switched to fostering greater critical thinking skills, creativity and innovation among its students, from primary schools, through secondary schools to universities (Goh, 1997).

Singapore’s circumstances force it to develop its human capital seriously. It considers education as critical to its survival and education will shape its future. To remain competitive in the rapidly globalizing world, Singapore leaders firmly believe that its future knowledge workers need to have creative minds and multidisciplinary skills. These future workers will be the ones who will challenge the conventional approaches to business, communication and aesthetics to break new grounds and compete in the globalized economy. Much efforts and resources have thus been invested to release and develop creativity among these future knowledge workers.

This paper studies the benefits of collaborative learning in nurturing the creative minds of undergraduates. A case study of an elective course designed to facilitate creative thinking skills in solving design problems is presented. Emphasis is on creative collaboration in a learners’ centric environment where students work in small groups. The results are encouraging and this pedagogical model can be considered to nurture and release learner’s creativity in other disciplines.

LITERATURE REVIEW ON CREATIVITY AND CREATIVE COLLABORATION

Our nation’s continual educational change places much emphasis on nurturing essential creative thinking skills of our future knowledge workers. So what are the essential creative thinking skills or creativity wanted in these workers? Can every individual be creative? Contrary to conventional belief that only a few can be creative, Richard Florida, an American urban studies theorist, once stated, “Every single human being is creative”. He argued the world is shifting from an economy based on physical assets –

land, capital, and labor – to one based on intellectual assets, or human creativity (Florida, 2006). Present-day research on creativity has broadened its scope to refer to creativity as “creative cognitive processes fundamental for human functioning and not a trait granted to a chosen few” (Moreau and Dahl, 2005). Simply put, “ordinary creativity rather than genius” (Craft, 2003). Judith Heerwagen who shares this perspective also believes all of us have the potential for creative expression. However, whether we express or suppress our innate creativity depends on “the socio-cultural context, personality differences, and specific personal experiences such as knowledge and skills” (Heerwagen, 2002).

Some researchers defined creativity to “include the generation of ideas, alternatives, and possibilities” (Smith, 1998); “the ability to solve problems or to make something or to pose questions regularly in a domain; those questions are initially novel but are eventually accepted in one or more cultures” (Gardner, 1993). Recent theoretical and empirical work looks at creativity as something the brain does naturally. In other words, the cognitive functions of our brain can adapt and change to aid problem solving when conditions call for it. It argued that under such circumstances, “novel approaches and inventions are highly advantageous” (Simonton, 2000; Findlay and Lumsden, 1988). Others argued that “Creativity is an acquired behaviour - learnable, teachable, tangible, and crucial to human development” (Balkin, 1990).

With the belief that all human beings have the potential to be creative, the next pedagogical issue is to find effective ways of nurturing and releasing this creativity in our future workers. Educators like Dewey and Vygotsky had long held that education is a social process. They believed our thoughts and ideas are constructed through communication with others (Dewey, 1897; Vygotsky, 1986). George Swede, the psychologist, suggested that “groups can be creative”, a notion that “creativity is socially constructed” (Swede, 1993; Heerwagen 2002). Other psychological study revealed the potential a child can raise himself “to a higher intellectual level of development through collaboration” (Vygotsky, 1987). Studies on peer interaction within schools have all inferred that collaboration helps individuals integrate many perspectives on a problem. It also helps bring in superior intellectual results (Inagaki, 1981; Inagaki & Hatano, 1977; Kol'tsova, 1978). The focus of collaboration is to create an environment of active, involved and exploratory learning and creativity (Slavin 1990). When students collaborate in small groups, they can express themselves and explore their ideas in a nonthreatening environment (Sandberg 1995). They benefit from a diversity of ideas and talents. This broad concept of “diversity which includes different disciplines, personality types, and different ways of thinking about problems are believed to lead to increased number and variety of ideas” (Stacey, 1996). Many researchers on team dynamics also found diversity to heighten individual and group creativity. Mutual sharing of talent and knowledge from different disciplines not only can be a good learning experience for all involved but can also enable a multidisciplinary approach to solving problems. This setting has a close likeness to the real working world where people from different backgrounds collaborate to find design solutions that are relevant and necessary to meet many different interests and uses.

Researchers also found that group creativity works best when members have fun, play and feel relaxed with one another. This enables members to produce free flow of ideas without feeling inhibited. As Meryll Goldberg, Professor of Visual and Performing Arts put it, “play can be an intensely creative time. It is an opportunity to break the rules, open the door of discovery, and thereby create” (Goldberg, 2012). Fredrickson has reviewed the literature on the effect positive emotions, such as “joy, contentment, satisfaction, anticipated pride, and challenge” have on information processing. She believes that “positive emotions temporarily create a broader mind set and prompt individuals to expand the self, share information with others, and push themselves to their limits” while the opposite can “become unfortunate distractions and emotionally disempowering” and “de-contextualise the learning and de-motivate the student” (Fredrickson, 2001). On the dynamics of group creativity, researchers have observed the “collective direction” is not provided by a ‘leader’ but by group members “executing timely information and their expectation of appropriate action”. In other words, group creativity depends on a self-managing team and as computer simulations of flocking show (Reynolds, 1987) members in the team often display

signs of separation, alignment and cohesion. Separation is the ability to steer to avoid crowding others. Alignment is the ability to steer towards the average heading of the local flock mates, and cohesion is the ability to steer to move towards the average position of local flock mates (McWilliam and Dawson, 2008; Reynolds, 1987). When students get along well with one another and manage their roles and responsibilities well, they often share the excitement of understanding and discovering the problem collectively. They then work towards a common vision to tackle it. Other researchers on group creativity have pointed out the benefit of “communities of practice” which “provide an intellectual space for engagement and ‘imagination’ to manifest within individuals and amongst groups” (Wenger, McDermott & Snyder, 2002). Also peer collaboration under guiding teacher who encourages and not controls (Vygotsky, 1978, Oldham & Cummings, 1996) is important influencing individual and group creativity. The pedagogy also involves teachers and students as co-participants in learning.

METHODOLOGY

At the Nanyang Technological University in Singapore, the undergraduate curriculum requires students to take elective courses outside their own major discipline to broaden their education. Among these electives, many of them are designed to nurture creative thinking in students through art and design studies. This paper examines an elective course conducted at the Nanyang Technological University entitled “Creative Thinking in Design Solutions” which is open to nondesign undergraduates to promote creative thinking. Approved by the University Academic Board, the objectives of the course are twofold: as general education to nurture creative thinking in the nondesign students; and to raise the standard of design literacy in these students. The methodology stresses group creativity and collaborative learning. Most of these students are from Business and Communication disciplines with Engineering and Science students form the minority. These students bring with them different views based on their different backgrounds and experiences. Collaborative learning allows them to share their views in a group setting to come up with innovative and creative approaches to design solutions. Done in a studio setting, the lecturer serves as the facilitator to guide students in constructing knowledge. The goals are to nurture creative thinking through ideas creation and visual expression in group work; and to apply and evaluate creative ideas for effective design. These lifelong skills will prepare the nondesign students to be better future consumers, clients, co-designers, promoters and interest groups of design.

The maximum enrollment of each class is 21. Students meet once a week in three-hour studio sessions for thirteen weeks. In a typical session, introductory lectures on basic principles and approaches in design and in creative thinking are included as most of these students do not have visual art and design background. Creative thinking techniques to help students unlock their visual imagination are emphasized. These are divergent thinking, associative thinking, analogical thinking and lateral thinking. Brainstorming using free association with words, images, sound, tactile and motion are also included. After the introductory lectures, students randomly form themselves into small groups of three. They work collaboratively on the class exercises which are intended to help them apply the basics of design and become familiar to using the various ways to think creatively in problem solving.

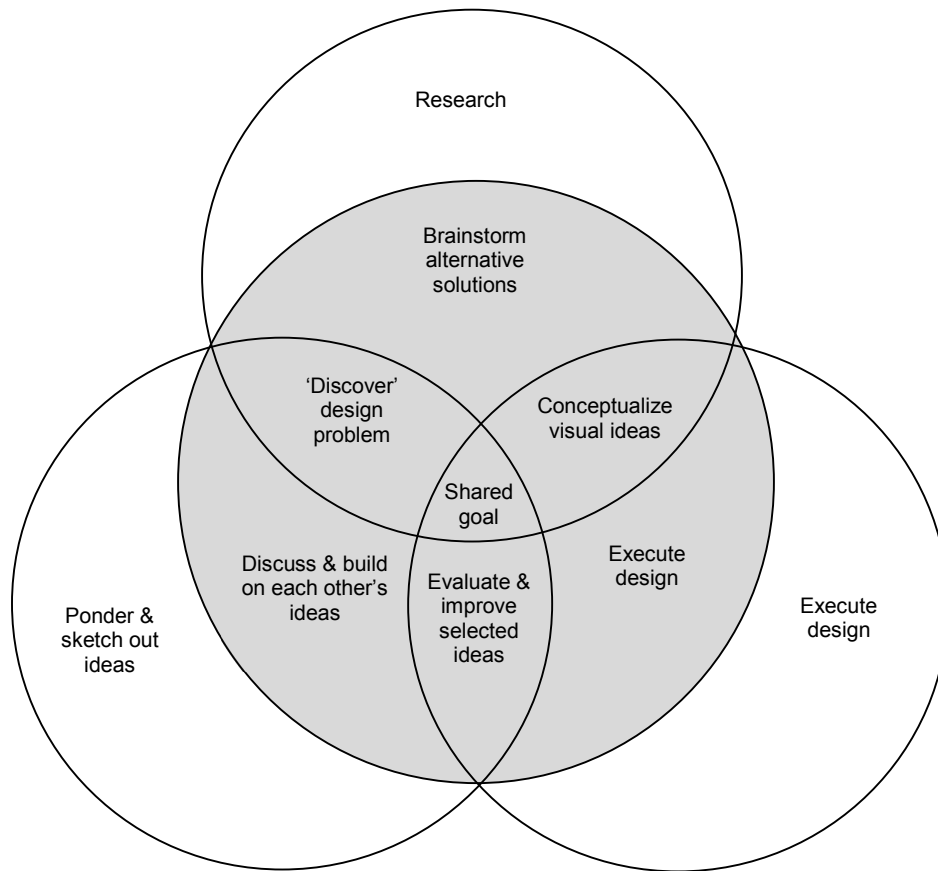
Group brainstorming and collaborative work are emphasized. Besides working collaboratively to build ideas on top of others, play, having fun and feeling relaxed with other group members are emphasized. Having students from different disciplines working in a group exposes students to how others with different backgrounds think, solve problems and communicate. Opportunities are created for students to develop empathy by learning to view from others’ perspectives. This method takes advantage of all the individual creativities as well as developing new group creativity.

To reap the benefits of group synergy, students are briefed on group etiquette. They are reminded to uphold a positively toned mood constantly to avoid conflicts and chaos which may hamper the flow of communication and interactions among members. In line with this thinking, students are encouraged to go

out together for drinks, to socialize and to interact. Interaction helps to understand one another better, especially how others from different disciplines may think and communicate differently (Biscoux, 2007). This is especially so after students form themselves into ‘permanent’ groups of three for their final design projects on which they spend four to five weeks to complete. This final project requires students to create and design a brand identity for the launch of an event or a company that promotes earth friendly awareness. This project provides the opportunity for students to find a design problem first and then to solve it.

Figure 1 below illustrates the inner workings of a group in collaboration. The shaded areas show group members to be working together while the white areas show ‘separation’ or parallel activities by individual.

Figure 1 Inner Workings of a Group In Collaboration



This figure shows the inner workings of a group with collaborative activities in the shaded area. Parallel activities by individual fall in the no shaded areas. Group who sets up a shared goal often alternates working between collaborative and individual activities. For example, members may start with brainstorming alternate solutions to conceptualize visual ideas together. They then break off, do more research or ponder sketching ideas on their own. After which they gather to discuss, build on each other’s ideas, evaluate and improve the selected ideas before executing the design together or individually.

Teams that create conducive environments for themselves often establish a shared goal and a common vision at the start of their project as shown in the focal center of Figure 1. They brainstorm thoroughly with all members present to ‘discover’ a design problem and to conceptualize ideas to solve this problem (Csikszentmihalyi, 1990). At times, individual leaves the group to do some research before the team meets again to evaluate the alternative solutions for their design problem. This evaluation often involves brainstorming until all members are mentally and physically exhausted. They then break up, reflect

individually on what transpired, research for more information, and come up with new ideas. They meet again in a group to share and evaluate each idea, build and improve on the selected ideas. The team may alternate these group and individual activities a few times to decide the best possible solution. When the team selects a final solution, they may either divide the job or perform together. This depends on how competent each individual's skills. Even after individual completes the designs, other group members often come together to evaluate the designs and improve on them.

During workings of a group, one member may take on the role of writing minutes for, and scheduling, their meetings. Another may take on the role of 'leader' ensuring everyone does his or her 'homework' and presents them on time for discussion. In this age of new media, the team may likely also create a Facebook for the project to ease their communication and co-creation online. Whenever the team needs extra research information, either the 'leader' assigns a member to do it or someone in the group volunteers to act on it. When members can uphold an environment conducive for learning, the interests, excitement and passion of even one member can motivate others to keep the group going so collectively they can achieve their goal.

During any one of these stages in their final design project between brainstorming, selection of best possible solution and design execution, the lecturer provides guidance and encourages the team to achieve better results or reach higher ground. These consultations enable the lecturer to gain better insight how the team works. Problems that inhibit learning are discussed and settled. Examples are differences in working styles, inability to meet group's expectation, and major conflict of ideas. However, the lecturer reminds the group often "the person or situation that disturbs us the most might be the one that could have the greatest impact on our ability to make positive and creative changes" (McNiff, 2003). Her sensitivity in deciding when to allow the group resolve the conflict on their own can impact their learning and achievement significantly.

After completing their final group projects, students present their projects to the whole class and submit their reports. Their presentations and reports include: 1) Reasons the design problem and issue are chosen. 2) Their research, brainstorming for ideas and their creative thinking techniques to form design solutions. 3) How they use visual images as tools for imagination and communication. 4) How and why they choose design elements and principles to suit the message and spirit of the product. 5) And how they explore and experiment in creating the designs. Each student also includes his or her experience and contribution as an individual, and as a member of the team; challenges faced and benefits.

After each team's presentation, the class are invited to give a critique with one group leads the rest for comments. Students are given guidelines in critique etiquette earlier. They are to create open and harmonious learning environment always. They are to be aware of the manner they prefer to receive comments on their work, respect others' opinions and feelings and give constructive comments to help others to improve. Students also give their opinions on their peers' comments. At the end, the lecturer gives her comments and sums up all the opinions. This helpful sharing of comments between peers and lecturer creates an environment for students to construct their own learning. Students also learn how each group manages their collaborative work, the benefits and challenges faced and how problems which arose are resolved.

DATA

Through all the reports presented and interviews with group members at the end of each semester, the author gained further insights into the workings of each group in their final design projects. The following data highlight certain group creative experience and typical manner when members from different background work together in small groups of three.

Sharing of ideas: It is clear from the students' feedback the approach taken in the conduct of the course created a relaxed atmosphere and encouraged cross-fertilization of ideas. 82% of the students in the class reported that they had fun and good sharing of ideas during brainstorming; evaluation of design ideas; and exploration and improvement of designs. 69% felt that they could not achieve the results without each member contributing to the group.

Leveraging on each other's strengths: There is clear evidence the groups took advantage of their diverse backgrounds and talents in carrying out their projects. 73% recognized the benefits from each talent in achieving their goals. Those with design software skills would carry out the designs. Others performed other roles. 56% cited improvement of design skills with the support and motivation from others.

Benefit from what they learn from the course" 74% reported the benefits of collaborative learning in the course in increasing their skills and confidence in applying design theories into practice. It also helped them in thinking creatively to solve design problems and in exploring their creative side they were not aware of.

Self-managing teams and meeting challenges" All the groups showed some form of self-organization and "collective direction" with members contributing according to their strengths and talents. 37% reported major challenges but could resolve these, learn from them and eventually understand the diversity of the group. Challenges cited are major conflict in opinion, working styles, motivation and commitment of each member, time and effort spent on the project, and communication problem.

RESULTS AND DISCUSSION

There was in general good sharing of ideas especially when group members clicked well with one another. With the approach taken in this course, most group members enjoyed working together and had fun. Examples of their comments are:

"I learned that by working in a team, the design ideas shared are insightful and fresh." "At first, I found that each of us in the group have differing views, probably because we come from different Schools. However, this turned out to be good as it allowed us to look at issues from different perspectives and not simply from a promoter's angle, which I take as an advertising student." "ZZ and I were in charge of the children book and it was fun since ZZ have many ideas and kid's topic is his ace too... Even though I did most of the design execution of the book, I still keep asking for others' contributions." "We had wonderful brainstorming sessions. We were so comfortable around one another that we speak our mind, without fear of looking 'stupid'. It is through this openness that most of our once 'stupid' ideas were transformed into 'awesome' ideas".

Most of them could benefit having group members with different disciplines and backgrounds as they contributed ideas from different perspectives. Various talents and capabilities existed among group members. The groups took advantage of the diverse talents and benefited from each other's talent. The special talents that showed up among the students include proficiency in design software, in copywriting, in facilitating brainstorming and in transforming ideas into sketches. Most recognized the contributions of diverse talent. They understood that they have achieved the creative result because all members committed and contributed fully. Some of their comments are on the next page:

"My main issue is that I have problems using Photoshop. However, my group mates helped me overcome this problem and we could benefit from each other's strengths while making up for the others' weaknesses... All in all, it was a very pleasant experience that taught the team more than the course syllabus." "It has been the coming together of each person's expertise that has made the process so interesting and our product so successful. Very often, we build on each other's strengths and push

ourselves to the limit in producing the best work we can...There were times we stayed up in the wee hours to do our project. I will miss our weekly meetings.” “Working with a team of people from various specializations was challenging at times. Yet it was also interesting to work with people who have different working styles and different approaches to the problem...felt like a real team creating designing concepts in a professional setting.”

Most of them also applied what they learned in creative thinking like thinking out of the box and how unrelated ideas can be linked to their design projects. Some cited the opportunity to explore their creative side and gain better perspective in viewing and evaluating visual images. For Business students, in particular, who are more familiar with business strategies, the creative design making in this course has created a new aesthetic awareness in them. While they explored and evaluated their creative solutions, they realized that visual designs could be powerful form of communication to create impact in marketing their business strategies. Below are some of their comments:

“I did design work in Polytechnic, but the thought processing skills acquired from this course helped me in streamlining and refining my sketches. It also added depth in my designs.” “I found myself applying what we learned in class on our project. For example, much thought was put into choosing the correct font to suit the overall concept. We also kept in mind to uphold consistency throughout our project with the fonts, colors, images and lines used. I am highly pleased with the result of our final design, and could not ask for better group mates.” “While my strength is more in using Photoshop to design compared to drawing, I slowly started recognizing how by drawing, ideas can be developed further from there.” “Being able to attend this course had allowed me to realize my dream. I had enjoyed the process. It gave me a sense of confidence that I could do design work. This motivated me to want to know more about art and media. Attending class was always fun as there was no right or wrong answer and ideas had no limit. I was allowed to think out of the box and link unrelated ideas together which thrilled me. I was introduced to many design principles that helped me see graphic images and better understand many designs I used to take for granted.” “...Enjoyable experience...explored my creative side that I didn't know I had.” “...To be creative can change life and even world.”

There is clear evidence of group self-organization and self-management. A few performed well as ‘leaders’, ensuring every member complete his or her assigned duties based on the planned schedule. Some admitted the difficulties faced when members with different working and communication styles worked together and when contrasting and conflicting ideas were presented resulting in “high levels of tensions and frustrations”. However, they went through these challenges and emerged from the “long and exhausting process”. They now recognize other’s contribution and realize the “final product would not have been possible without any of the three of us”. A few also cited the enthusiasm of one member could motivate others to contribute. The opposite also applies. The morale of the team could be affected when one member disengaged. Some examples of their comments are:

“I've always and still am daunted by group work, but this experience has made me recognize its greater potential compared with working alone. Another point I noticed about group work was that it was motivational when all other team members were. However, if just one of us was not, the atmosphere would be dampened and that would affect our productivity. This project has also made me appreciative of what others can contribute. For example, I found it nice that XX took much initiative to organize early meetings, even out of school, as well as to lead the discussions. XX would often contribute enthusiastically crazy ideas which I sometimes found hard to swallow...YY would often be the one to combine my more conservative ideas with those of XX.” “Most of us had to juggle this group project with other school projects. We had to use our time efficiently, and worked hard as a team... I thoroughly enjoyed myself and had great fun working with my team.” “...The most memorable group project. Our group came randomly and there was a whole load of communication problems. None of us came from the same country and we did not speak the same ‘English’. However, the longer we worked together, the

more we could work - amazing. At the end of the project, I found that I could understand everyone clearly. We became attuned to the 'English' that each of us spoke." "As a whole, this final group project has been a fruitful one, especially group work experience. It was not easy to work as a team. Even having a good friend as a teammate was not easy... Despite the early high levels of tensions and frustrations, I am glad to see our final design collaterals as the product of a long and exhausting process. Though I'm sure there is still room for improvement...I feel this final product would not have been possible without any of the three of us."

CONCLUSION AND IMPLICATION

This paper set out to examine the benefits of collaborative learning in nurturing creative thinking in students. An elective course employing learner's centric pedagogy was used as case study. Emphasis was on small groups of students collaborating to solve design problems. These students came from diverse disciplines, backgrounds and countries. Most of them had no or little training in the visual art and design. Students were encouraged to have fun and uphold positive mood while working together. They were briefed on group etiquette and were prepared with possible challenges. Much care was taken to create environment conducive for creative collaboration. The lecturer guided and encouraged without controlling. Data were obtained from students' reports, interviews and teacher observations. Most students had fun, shared and explored ideas while collaborating and leveraging on each other's strengths. More than half had improved their design skills. Most also benefited from what they learned from the course like the creative thinking skills and applied them in solving design problems.

The findings of this study confirm the observations of other researchers on group dynamics in collaborative group learning and group creativity. This study shows that most groups organized and managed themselves while leveraging on, and benefiting from, each member's strengths and talents as they collaborated in learning and working. This is especially so as they came from different disciplines and had different backgrounds. They learned from one another. They shared the different ways of viewing and solving a problem. Though a few faced challenges, they overcame them as they progressed. All commented that they could achieve the results because every group member contributed fully.

This study also shows the pedagogical model is well suited to nurture creative thinking and collaborative learning skills. For nondesign students especially those in Business and Communication disciplines, design making as pedagogy is apt. Training the aesthetic sense, skills in creative thinking and visual communication and the ability to collaborate with others from different disciplines are all necessary in the 21st century workforce. The elective course in this study can be applied as a model for general education to nurture creative thinking in Business students and to raise the standard of design literacy in these students. Follow-up studies on how these students apply their new skills in their future careers will be valuable. Beyond limit of this study, research to compare the results of creative collaboration applied to nondesign disciplines will be useful. Further studies on nurturing creative thinking in Business students without collaborative learning and working will be useful to understand the contrast in results.

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BIOGRAPHY

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