



# Art and Design Pedagogy for Tomorrow's Lifelong Learners

Siu Kay Pun

*School of Art, Design and Media  
Nanyang Technological University, Singapore  
[skpoo@ntu.edu.sg](mailto:skpoo@ntu.edu.sg)*

## ABSTRACT

Globalisation, the knowledge economy, and advances in technologies have changed the way we live and work. They demand a new generation of graduates who can adapt to the new and constantly changing environment and yet remain competitive. This paper argues that educators need to examine the traditional ways of teaching and of producing knowledge expertise. The urgent demand now is for knowledge inquirers and creators, and self-directed lifelong learners. Using case studies of two art and design general electives, this paper examines the pedagogical role of art and design in nurturing lifelong learning skills. Based on student responses to learning and teacher observations, the result is positive. The pedagogical approaches described in this study can serve as a model for general studies education to nurture lifelong learning skills and to raise the standard of design literacy in nondesign students.

**Keywords:** *Lifelong learning skills, art and design pedagogy, collaborative learning, general education.*

## INTRODUCTION

Globalisation, the knowledge economy, and advances in technologies have changed the way we live and work. They demand a new generation of graduates who can adapt to the new and constantly changing environment and yet remain competitive. Today's graduates are increasingly tasked with solving tomorrow's problems that are multifaceted in nature. These problems also need new skills and knowledge beyond their traditional areas of competence. To be successful and sustain value in the global community, graduates need to continue to learn throughout their lifetime [1], [2]. Educators need to examine their traditional way of teaching [3], [4] and of producing knowledge expertise. The urgent demand now is for knowledge inquirers and creators, and self-directed lifelong learners. Education today is about "preparing students for the test of life, not a life of tests" [5]. This paper examines effective pedagogical practices that nurture lifelong learners for the twenty-first century's global community. In particular, art and design based approaches to teaching and learning were used in this study to encourage and gain essential life skills. Lessons were drawn from two art and design courses offered as general studies electives at Nanyang Technological University (NTU), Singapore.

## LITERATURE REVIEW

Globalisation and advances in new technologies have created a competitive world. They have caused many nations to value and invest in their intellectual capital to sustain their knowledge economy. Traditional education that stresses creating knowledge expertise is no longer sufficient to meet the challenges of the fast changing environment. Often, when the students graduate, much of their knowledge learned has become obsolete. In the fast changing world, graduates are often tasked with solving tomorrow's problems. These problems are multifaceted in nature and require multidisciplinary approaches [6]. This calls for adaptation, lifelong learning of knowledge and new skills, and new ways of creative thinking [7] for graduates to remain competitive and to break new ground. The urgent task facing educators

today is to re-examine and re-evaluate their pedagogical approaches to teaching and learning to nurture lifelong learning skills for tomorrow's self-directed lifelong learners, knowledge inquirers and creators. As far back as in 1916, Dewey's *Democracy and Education* called for a curriculum centred on lifelong learning with the goal of personal, intellectual, and social development of each child in preparation for a successful life [8]. Jean Piaget (1963) described intellectual development as a continuing construction of knowledge, the process being one of continual adaptation [9]. Like Piaget, Merryl Goldberg (2012) believed that "intellectual development is a non-ending, continuous, and lifelong process" [9]. Contemporary studies in education, psychology, and economics have done much to address the need to help children become lifelong learners to live productive lives in the twenty-first century. One common link among these researches is the call for change in education because of globalisation [8]. Other studies that supported the need to nurture our students to be lifelong learners in the rapidly changing global world are also evident [10]-[12].

Contemporary lifelong learning theory which has its roots in the constructivist theory of learning, describes learning as continuous throughout life. This includes informal and formal education, is self-directed, intentional, relational, and transformative [2]. Dewey, Piaget and Vygotsky believed lifelong learners construct knowledge for themselves both as individuals and in social contexts and that making meaning is learning [8]. Researchers at University of Bristol in England identified seven dimensions of learning called the Effective Lifelong Learning Inventory (ELLI). These are: (a) changing and learning; (b) meaning making; (c) critical curiosity; (d) creativity; (e) learning relationships; (f) strategic awareness; and (g) resilience [13]. These are dispositions, values and attitudes necessary for lifelong learning and require learners to be self-directed and to take responsibility for their own learning [2]. Tony Wagner (2008), co-director of the Change Leadership Group at Harvard Graduate School of Education, urged educators to help student master seven survival skills to enable them to become productive citizens in the twenty-first century. They are: (a) critical thinking and problem solving; (b) collaboration and leadership; (c) agility and adaptability; (d) initiative and entrepreneurialism; (e) effective oral and written communication; (f) accessing and analysing information; and (g) curiosity and imagination [14]. Though the terms used by the two studies are different, much common ground can be observed. Examples include: (a) critical curiosity and creativity versus curiosity and imagination; (b) learning relationships versus collaboration; (c) changing and learning, and resilience versus agility and adaptability; (d) meaning making versus accessing and analysing information. Similar skills are highlighted as competencies in the P21 Framework for 21st Century Learning. There is already movement towards incorporating such attributes nationwide as college and career readiness in the United States. They are critical thinking, communication, collaboration and creativity, listed under learning and innovation skills [15]. Other skills highlighted are flexibility and adaptability; and initiative and self-direction.

### **Art Education as Pedagogical Role**

In several studies on art education as a pedagogical role to help teaching and learning across disciplines, art was proposed as a form of inquiry for discovery, creation and enlargement of knowledge [16]-[18]. According to the constructivist theory of learning, knowledge is dependent on finding meaning through the experience of the learner or community of learners [8]. Similarly, making meaning from art experience has long been acknowledged as a principle premise in art education [19]. When individuals explore and engage in a group in art making, multiple forms of meaning making can result when thoughts and actions are expressed visually [19]. In using the arts for intellectual development, Merryl Goldberg (2012), author of *Arts Integration*, aimed to engage students in thoughtful inquiry and reflective questioning. To that end, she was convinced that "the art form provides a method that enables each student to

represent and translate an idea...The act of translating requires students to work with ideas as opposed to absorbing them" [9]. She believed "what the artist does through artistic activity is what emancipatory educators encourage: critical, reflective, and creative thinking in the context of society, coupled with expression" [9]. To Sullivan, the action to reflect visually and verbally during art making allows one to learn to think, feel and form skills that are central to sustained learning [19]. Barkan (1960) in his book, *Through Art to Creativity*, recorded conversations of effective teachers. They showed how teacher could play a dominant role as questioner and guide to encourage students to think, visualise, talk and reflect on what was learned. At the same time, teacher also influenced students' artistic development and creativity [20]. Studies in art classroom as a community of discourse have found that it is not much different from that of other disciplines [21]. Theoretically, the arts may place more emphasis on weaning students away from teacher control and towards independent thinking [20]. As one shares one's reflection in class, this forms a personal critique that enriches one's art learning experiences. When the whole class and community engage in critical discourse, the multiple perspectives brought in strengthen deeper learning. Deeper meaning is also generated through discourse [22]. Art learning done collaboratively would allow unique contribution from each learner to the learning community, especially if the learners come from different disciplines and background [6].

The realization that art education can nurture creativity has been around for a century. In 1982, Timberlake provided fifteen ways to cultivate creativity in the classroom and steps toward implementation of art education for creativity [23]. Goldberg (2012) in her book *Arts Integration*, wrote "When creativity takes centre stage in a classroom, members of the learning community can be transformed and inspired to develop many wonderful ideas, inventions, and solutions" [9]. Research by Anna Reid and Ian Solomonides (2007) on design students' experience of engagement and creativity showed that design students were better able to engage with their studies and to work creatively when they developed a robust "Sense of Being". This "Sense of Being" underlined their confidence, happiness, imagination and self-knowledge [24]. It was central to their other experiences like ability to solve design problems; capacity to change their way of thinking and working when the context changed; and became personally transformed into designers [24]. This transformative learning, being the highest learning, is "deeply engaging and touches and changes deep levels of values and belief through a process of realization and re-cognition...It is essential for lifelong learning" [2].

### **ART AND DESIGN PEDAGOGICAL APPROACHES TO LIFELONG LEARNING SKILLS**

This paper studies two of the visual art and design courses offered by the School of Art, Design Media at NTU as general studies electives for all the undergraduates at the University. One of these is a lecture-cum-tutorial based course with a maximum enrolment of 50 students. The course objective was to introduce visual literacy to the students. The other is a studio-based course with a maximum enrolment of 21 students. The course objective was to introduce creative thinking to solve design problems. Students in these courses had little or no background in art and design. They came from different disciplines including Engineering, Science, Business, Humanities, and Communication. The students met once a week for three hours during a 13-week semester. The courses were designed to nurture student-centred lifelong learning skills while learning the media of visual art and design. The teacher played a major role in creating a conducive learner-centric environment. Using collaborative learning, the teacher encouraged meaning making, knowledge construction, critical thinking and creative problem solving. Students were guided to communicate effectively, and to reflect on their learning. In both courses, the teacher (who is also the author of this paper) first introduced the theories and principles of design. After which students formed into small groups to solve design problems in class exercises and group projects, followed by

presentations and class critiques. Students in the studio-based course had more time and space to make use of the different ways to think creatively to unlock visual imagination. At the end of four semesters, a random sample of 90 reports of student feedback on teaching and learning, typical comments from students' reflections on learning and teacher observations were collated. The aim was to understand student responses to learning and to enable improvement on the pedagogical approaches used to nurture student-centred lifelong learning.

## Method

Students in these courses were first introduced the theories and principles of design. They learned to perceive the design elements and were guided to make their own meaning and interpretation. This was done by the teacher framing quality questions to engage students [25] to probe students' perceptions while scaffolding student's thinking and understanding according to their responses to the questions. As David Perkins (1992) put it, "...quality questioning is the primary catalyst for student thinking and learning" [26]. The classroom environment was created to be conducive to nurture learners' interests and deep learning. It was intended to be safe and friendly where meaning making was shared and multiple perspectives were valued and encouraged. Every student in the classroom was encouraged and motivated to contribute as a member of a learning community in constructing knowledge. The aim was to build student ownership and responsibility in learning – "a shift from teacher control of student learning to a partnership approach..." [26]. This learner-centric pedagogical approach was again stressed and further developed when students collaborated in group projects and in class critique.

When students collaborated in small groups (5 in a group in the class of 50; 3 in a group in the class of 21), they were given the opportunity to work with students from different disciplines, backgrounds and experiences. They were also given a glimpse of the real world by having to work with people who have different working styles, personalities and talents. They learned how to use their interpersonal communication skills effectively to help them negotiate ideas, support or lead members to reach a common goal. They had much opportunity to apply the various group brainstorming and creative thinking techniques they learned to produce multiple creative ideas. They learned to analyse these ideas, and to explore, evaluate and arrive at the best idea as a group [27]. This facilitated group creativity from multiple perspectives.

Collaborative group work promoted students' interdependence. Each student was responsible to contribute to the group while also being dependent on the contributions of other members for the group's overall success. There was individual as well as group accountability [28]. Students were also required to do research and to come up with a topic for their group project. This further increased their group responsibility as they took responsibility and control in learning that was self-directed [29], [2].

Bosworth (1994) identified five basic skills needed for learners to engage effectively in collaborative learning. They are interpersonal skills, group management skills, inquiry skills, conflict resolution skills, synthesis and presentation skills [30]. To increase the benefits of collaborative learning, students were briefed on group etiquette. They were also reminded them to uphold a positive mood constantly to avoid conflicts and chaos which could hamper the creative process. They were encouraged to socialise, interact and get to know one another before they started their group work. Most importantly, they were encouraged to have fun while they worked. This helped to generate and sustain students' interest in their learning. Also, it is often when students have fun and enjoy one another's company that crazy ideas emerge. These crazy ideas are often the seeds that flourish into creative fruitful solutions later.

During this creative process of collaborative learning, students learned how they could benefit

from each other's talent, and improve their own skills in critical and creative thinking, problem-solving, adaptability, and design. At the same time, they learned to have fun and make new friends. Meanwhile, the teacher provided space and guidance while encouraging them to take responsibility in their own learning and in their creative endeavours [31], [32]. Students were encouraged to be resilient in exploring their creative solutions and not to settle for the first good idea they arrived at. The teacher made known to the students the learning objectives with emphasis on the learning process [33], [32]. The assessment criteria were also made known so students understood the path to achieve their learning goal [28]. The assessment included individual performance, individual contribution to the group and the result of the group work to encourage maximum participation. During the learning and creative process, the teacher provided timely feedback and evaluation to help students further their learning [33]. These interactions between the teacher and students, and between peers in a group opened opportunities to nurture adaptability and to learn to view from others' perspectives [34]. This helped to further strengthen individual creativity and group creativity.

During project presentations and class critiques, students learned better ways to communicate visually and verbally. As they assessed, evaluated and reflected on the works of their own group and their peers' in a constructive manner, learning and self-improvement often took place (Weimer, 2002). Each student was also responsible to give a written individual report on the group project and self-reflection on learning. This aimed at improving their lifelong learning skills in written communication.

## **DATA AND ANALYSIS**

At the end of four semesters, a random sample of 90 reports of student feedback on teaching and learning, typical comments from students' reflections on learning and teacher observations were collated. The aim is to gain further insights into the learning process and learning results of the students in these two courses. Please refer to Appendix A for the results of student feedback. Summary of student feedback results and typical self-reflections are categorised under the following headings to understand the students' experience in the courses.

### **Meaning Making and Construction of Knowledge in a Community of Learners**

Based on their feedback, 92% of the students expressed positive learning experiences both in a class of learners and in small groups. Examples of their comments are:

"This course has taught me various design elements I can now apply to my work. The brainstorming and creative thinking techniques provide me a firm foundation to build my design on." "My background is in Business and Engineering. Almost everything I did in this course has been a new experience for me. It has taught me how to think more freely and creatively. The new knowledge gained will definitely help me in the future. I now also understand how designers think and solve design problems." "This course has opened my eyes to a whole new world of graphic art where I begin to notice things I never noticed before. Weekly exercises reinforced the lectures and helped me apply what I learned." "Our teacher invokes critical thinking by asking the class questions and interpretations of the graphics." "Our teacher engages the class in discussion, welcomes all our opinions, and asks us questions throughout the lecture to make sure we can all learn from one another."

### **Collaborative Learning**

When students collaborated, nearly 80% reported positive experiences. The challenges some of them faced turned out to be beneficial to them.

### **Self and group learning accountability.**

Nearly 90% learned from each other and contributed to the group. Some of their comments are:

*"I taught my group members some basic techniques on Adobe Illustrator. It was a great experience to teach them because I never thought I was good enough to teach others. In the end, we complement one another well... It turns out even if I were the "expert" in the beginning, I ended learning a lot from them too. .. Everyone contributed equally in different ways, making it possible for us to improve constantly our sketches and finally, producing work that we are all extremely satisfied with." "From the start, we had a shared desire to achieve a high standard result... our main strength was our commitment to working in close collaboration. We scheduled regular meetings, conversed online and mobile application continuously throughout the project. We critiqued each other's inputs, and further developed each other's ideas and work."*

### **Interpersonal communication skills.**

68% perceived improvement in expressing themselves and understanding others. One of their comments is:

*"As a junior, I was trying to make my voice heard in the group. It was a struggle for me to break past my early shyness and the intimidation of the other senior members in the group who seemed hesitant initially to consider the opinions of others. However, I am proud to say I have overcome this problem, learning to put my foot down and making sure my views were not drowned out. I daresay this is a valuable lesson that I have taken away from this project."*

### **Group management, conflict resolution skills, adaptability, and empathy.**

Nearly 80% self-managed their group so that the project could progress as scheduled. They also resolved conflict in the process. Some of their comments are:

*"We have different working styles and knowledge in design. Germaine studies Psychology and Georgina Accountancy. We got a huge variety of ideas and different viewpoints. This led us to improve our design because we have different views and experience...felt like a real design team in a professional setting." "We had trouble coordinating meetings as we had different schedules and multiple deadlines due at the same time. We tried our best to comply with one another and by the end of the semester, I felt I was better at time management." "We have been friends and felt comfortable working together. However, creative differences still arose. .. These differences were solved through compromise and placing ourselves in the other person's shoes." "When we had conflict in our ideas, we tried to resolve them, and came up with even better ideas to further improve our works. Working with my teammates helped me learn from them and as soon as I familiarised myself with their working styles, it was a breeze. This course not only taught me creative ways of thinking in design, but also allowed me to meet new friends and forge new friendships!"*

### **Critical and creative thinking problem solving skills.**

82% learned to be critical in solving design problems and used the critical thinking skills during group work. Examples of their comments are:

*"I appreciate my team for being so open to ideas regardless how absurd they may sound. The final design would not have been possible if the team did not work collaboratively." "We were so comfortable around one another that we spoke our mind, without fear of looking 'stupid'. It is through this openness that most of our once 'stupid' ideas were transformed into 'awesome' ideas."*

## **Visual, Verbal, and Written Communication Skills**

Based on the students' comments and teacher assessment, improvement in these areas could be noticed. Some of the students' comments are:

*"It was a challenge to communicate my ideas during group discussion especially when I disagreed with the others. But I gradually learned to respond to the ideas of others and put across my comments in a diplomatic way in order not to discourage my teammates." "Working with someone not strong in the language gave me a unique challenge. Despite the language barrier, we managed to communicate and even exchanged ideas through drawing and sometimes even hand signs."*

## **Resilience**

The majority worked hard and continued their effort in improving their designs. Examples of their comments are:

*"As a group, I would say we have progressed a lot within a short period of 13 weeks. We went through awkward meetings in the beginning, to being disappointed for not able to come up with a design proper even after weeks of effort. In the end, we finally got the hang of working together, coming up with great ideas and constantly improving our designs together." "All 5 of us are not familiar with designing. We put in much effort and improved our designs again, again and again. Looking at our final product, working all-night just worth it."*

## **Reflection and Self-improvement**

Examples of some students' overall experiences are as follows:

*"This learning journey has motivated me to want to know more about art and design. Attending class was always fun as there was no right or wrong answer and ideas had no limit. Teacher encouraged me to think out of the box and link unrelated ideas together which thrilled me. I now have a sense of confidence that I can solve design problems." "When I go back to my country, I'll push myself to achieve more - like how people work here." "Tree gifting is a very novel idea and there are endless possibilities to market this product. After we graduate, we may consider venturing into this market." "... Enjoyable experience ... explored my creative side that I didn't know I had." "...To be creative can change life and even world."*

## **Teacher (Author) Observations**

When students collaborated in small groups, there was good sharing of ideas when members clicked well and had fun working together. They self-managed their own group for a common goal and made use of the different talents in the group. Most explored their ideas and improved their designs tirelessly until they were satisfied with their results. Most would apply what they learned and gain better perspective in viewing and evaluating designs. When the occasional conflict occurred, such as differences in opinions, working styles and communication problems, there were "high levels of tensions and frustrations". Usually, the group would try to resolve these on their own. In rare occasions, they seek teacher's help. Through these challenges, most recognised the contributions of others and realised the "final product would not have been possible without any of the three of us." They also realised if one member disengaged, the morale of the group was affected. The opposite applies. If one member was strongly motivated, the others would be 'pushed' to achieve the goal.

During critique, students realised their design solutions could be further improved after receiving critical comments from others. They also learned a design problem has multiple possible solutions. They understood having curiosity to learn, thinking critically and creatively as well as continuous exploration enabled them to get the best result. With encouragement

and guidance from the teacher, students became more vocal and critical in analysing their own design works as well as those of others. The majority enjoyed their learning and believed their experience in the course had enriched them for their future careers and in their lifelong learning approaches. Their ignited interest in art and design can also motivate them to continue learning and creating.

### CONCLUSION

This paper calls for an urgent need for educators to examine their conventional way of teaching. With the rapid pace of globalisation, the arrival of the knowledge economy as well as advances in technology, there is urgent need for today's graduates to be ready to solve tomorrow's problems. These problems are multifaceted in nature and need multidisciplinary approaches. Graduates need to have inquiring minds and have the interest and motivation to continue to learn as knowledge will change even more rapidly in future. This paper presents the results of pedagogical practices which have been found through students' experience to be effective in nurturing lifelong learners. In particular, two art and design general studies elective courses that encouraged and inculcated essential life skills were used as case studies. These lifelong learning skills incorporated into the pedagogical approaches were:

- (a) *Meaning making and construction of knowledge in a community of learners;*
- (b) *Visual, verbal, and written communication skills; and*
- (c) *Resilience.*

In addition, collaborative learning to encourage – (a) self and group learning accountability, (b) interpersonal communication skills, (c) group management, (d) conflict resolution skills, (e) adaptability, (f) empathy, (g) critical and creative thinking problem solving skills were also employed. Finally, skills on reflection and self-improvement were inculcated.

Based on the students' feedback, their self-reflection reports and teacher observations, the findings are positive and encouraging. Most learned to construct knowledge through discourse in class and in small groups. While collaborating, the majority learned to think creatively and critically in problem solving. At the same time, they benefited from one another's talent and learned to recognize and appreciate the diversity of views and experiences others brought in. Although some admitted that it needed effort to resolve differences like conflicts in ideas, communication problems, and different working styles, nearly all benefited from their experience. The students felt that they have learned to adapt, to have empathy, and resilience. They also have improved their communication skills. To achieve a common goal, most learned to understand that everyone in the group must contribute, encourage and help one another. The majority enjoyed their learning which most felt had ignited an interest in them, in particular, to solve art and design problems. This interest and the satisfaction they had from their creation of design works would likely motivate them to continue to learn in future. A few felt being transformed into designers as they went through the design stages creatively. These two case studies show that an art and design pedagogical approach can be well suited to nurture lifelong learning skills even in non-design students. With the positive results obtained, these two courses can serve as a model for general studies education to nurture lifelong learning skills and to raise the standard of design literacy in non-design students. Follow-up studies on how these students apply their new skills in their future careers will be valuable.

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## APPENDIX A

### Student feedback on teaching and collaborative learning

	<b>Meaning Making &amp; Construction of Knowledge in a Community of Learners</b> <b>Criteria for consideration</b>	<b>Total Responses</b>	<b>Mean</b>	<b>Strongly Agree (5)</b>	<b>Agree (4)</b>	<b>Neutral (3)</b>	<b>Disagree (2)</b>	<b>Strongly Disagree (1)</b>
1	<b>Encouraged engagement in the course</b> As a result of the teaching approaches taken by this faculty member, I was involved & interested in the course.	90	45.8 (91.6%)	52	38	0	0	0
2	<b>Communicated clearly</b> This faculty member was easy to understand in all forms of communication.	90	45.4 (90.8%)	49	41	0	0	0
3	<b>Was approachable</b> This faculty member created opportunities, either in classes, or outside classes, for students to ask questions & seek help.	90	44.6 (89.2%)	51	29	10	0	0
4	<b>Helped students understand important concepts</b> This faculty member took steps to ensure that I understood how the subject matter of the course is framed by principles or concepts, or how the details fit together into concepts.	90	46.7 (93.4%)	60	30	0	0	0
5	<b>Encouraged critical thinking in the subject area</b> The teaching approaches of this faculty member encouraged me to think deeply and analytically about the knowledge and concepts in the course.	90	46.6 (93.2%)	59	31	0	0	0
6	<b>Presented the subject matter in a methodical and logical way</b> The way this faculty member designed & conducted classes helped to build my knowledge & understanding in a systemic way.	90	46.3 (92.6%)	57	33	0	0	0
7	<b>Encouraged creative thinking in the subject matter</b> This faculty member's teaching invited me to think about the subject matter in innovative & inventive ways.	90	46.8 (93.6%)	61	29	0	0	0
	<b>Overall</b>		92%					
	<b>Collaborative Learning</b> <b>Criteria for consideration</b>							
8	<b>Self &amp; group learning accountability</b> I have learned much myself & from others in my group. We all contributed to the group.	90	44.8 (89.6%)	51	31	8	0	0
9	<b>Interpersonal communication skills</b> I have improved expressing myself & understanding others in my group.	90	33.8 (67.6%)	17	42	23	0	0
10	<b>Group management, conflict resolution skills,</b> We self- managed our group to keep our schedule & resolve conflict.	90	40.1 (80.2%)	35	31	14	10	0
11	<b>Group adaptability &amp; empathy</b> We adapted others' ideas & saw from others' viewpoints.	90	39.4 (78.8%)	29	38	12	11	0
12	<b>Critical &amp; creative thinking problem solving skills in the group</b> I have learned to be critical in solving design problems & used my creative thinking skills.	90	41.1 (82.2%)	32	36	22	8	0