Thinking creatively across the lifespan

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Introduction

Creativity is a cognitive ability to be developed across the lifespan. The development of creativity may progress from mini-c and little-c to Pro-c creativity in average individuals and also to Big-C creativity in a selected and eminent population (Kaufman & Beghetto, 2009). In childhood and adolescence, creative potentials usually manifested as mini-c and little-c creativity can be nurtured through informal and formal education (Craft, 2010; Gregerson, Kaufman, & Snyder, 2013). In young and middle adulthood, creativity training is often an outcome of professional development – the Pro-c related to the creative industries (Florida, 2012). In late adulthood, creativity as a mini-c can serve as a cognitive reserve that extends the cognitive limits of older people in successful aging (Lubart & Sternberg, 1999). In the formal and extra curriculum, both direct instruction of creative thinking skills and strategies of infusing creativity into subject learning are prevalent. Direct instruction methods include lateral thinking, problem solving, and so on. Primary and secondary educators often promote the direct instruction method for both typical and gifted learners (Renzulli, 2005). On the other hand, tertiary educators or professional trainers tend to adopt the infusing method more. The infusing method can be flexibly applied and integrated across various disciplines, such as law (Gregerson, 2013), medicine (Ness, 2011), psychology (Solomon, 2013), science and engineering (Cropley, this volume), and so on.
In late adulthood, active engagement in arts and leisure activities promotes creative thinking and enhances successful aging (Cohen, 2000).

A global trend of emphasis on creative thinking in the education curriculum and adult education

Rising emphasis on creative thinking in education has inspired educators to view creative thinking as different intellectual styles (Zhang, this volume) to be acquired by students to foster their understanding of a particular domain. A review on curriculum reform in four Asian societies, namely China, Hong Kong, Singapore, and Taiwan, focusing on promoting creativity in education at the preschool, elementary, secondary, and tertiary levels was documented by Hui and Lau (2010). Similar curriculum emphases from kindergarten to secondary education and evidence were also found in England (Craft, 2005). A review of literature on creativity education in adults by Tsai (2012a) concluded that creativity in education could serve as a pedagogical focus to promote lifelong learning, quality of life, and self-actualization in adult education.

Kaufman and Beghetto (2009) proposed the Four C Model of Creativity: (1) mini-c creativity is defined as “the dynamic, interpretive process of constructing personal knowledge and understanding within a particular sociocultural context” (p. 3) and measured by self-assessment; (2) little-c creativity involves creative activities in which laypersons participate each day (as demonstrated by the work of Richards, 2007) and best assessed by psychometric tests, consensual assessment technique, and other nomination methods; (3) Pro-c creativity represents the developmental and effortful progression to attain professional-level expertise in any creative area (Kaufman & Kaufman, 2007); and (4) Big-C or eminent creativity (Simonton, 1991). Creative thinking is required in achieving these four C’s, although the development may not necessarily progress from mini-c and little-c to Big-C in all individuals. However, the model has provided a constructive framework for educators and trainers when designing creativity programs in schools and organizations.

Hunsaker (2005) reviewed outcome measures of creativity training and categorized as creative person outcomes (e.g., characteristics of creative personality), creative process outcomes (e.g., divergent thinking), creative product outcomes (e.g., project deliverables of a community program), and creative environment outcomes (e.g., perception of environmental facilitation). Most of the creativity programs have selected creative thinking processes as the outcome and manifestation of little-c creativity and only few have chosen the other three as outcomes and evidence of Pro-c creativity.

Different pedagogical approaches to teaching creative thinking in the East and in the West

Creativity is operationally defined by its novelty and appropriateness with equal weightings being assigned to both qualities but sometimes a stronger emphasis on the former in Western culture (Amabile, 1996). But in the East and Chinese culture, appropriateness/usefulness often outweighs novelty. With adequate intercultural awareness, we will mindfully evaluate the reasons why what is valued in one culture can be regarded as valueless in another. The epistemological understanding of creativity is deeply influenced by the socio-cultural perspective on creativity (Rudowicz, 2004). Socio-cultural factors have determined the value and nature of
creativity, the appropriate and most encouraged agent to fulfill the creative role, as well as the functions creativity serve to the individual and the society.

West

Several important comprehensive reviews have provided evidence to support the view that creative thinking can be enhanced by most creativity training programs (e.g., Ma, 2006; Rose & Lin, 1984; Torrance, 1972). For example, Torrance (1972) reviewed 142 studies that were designed to test approaches to teaching schoolchildren’s creative thinking, and found that all categories of programs of creativity training were at least 50 percent successful. Specifically, the Creative Problem Solving (CPS) training program and its modifications was the most successful. Rose and Lin (1984) used the meta-analytic technique to gauge the effectiveness of creativity training programs. They analyzed only studies using the Torrance Tests for Creative Thinking (TTCT) or its modified forms as the assessment instrument. They found that the overall mean effect size of creativity training was .47. In addition, similar to Torrance’s (1972) findings, their results showed that the Creative Problem Solving program had the largest effect size (.63). This result could be considered as a moderate effect according to Cohen’s criteria (1977), and provided evidence to support the effectiveness of creative training.

Ma (2006) has recently extended Rose and Lin’s (1984) work by including dependent variables other than the TTCT, though measures of little-c are still the predominant criteria applied to assess the success of creativity training. He classified creativity into two main categories: creativity without evaluation (e.g., brainstorming) and creativity with evaluation (e.g., problem solving). Measurements were independently taken for each category in fluency, flexibility, elaboration, and originality. Ma’s results revealed that the grand mean effect size (.77) of creativity training is large. The New Directions in Creativity Program (k = 5, effect size = 1.41) ranked number 1 in its effect size, followed by the Creative Problem Solving Program (k = 60, effect size = 0.82) and Khatena’s Training Method (k = 24, effect size = 0.82). Especially, they found age moderating the effectiveness of creativity training. The effect size is the highest for secondary school students (effect size = 0.82, k = 31), followed by college students (effect size = 0.79, k = 92) and elementary school pupils (effect size = 0.75, k = 96), and effect size is the lowest for kindergarteners (i.e., 0.49, k = 17).

Another instructional strategy to nurture creative thinking is infusing method, that is, integrating teaching of creative thinking skills within the syllabus content of an academic domain (Gaskins & Elliot, 1991; Perkins & Salomon, 1989; Sanz De Acdo Lizarra, Sanz De Acdo Baquedano, Giocoa Mangado, & Cardelle-Elawar, 2009). The infusing method has allowed creative thinking to bloom as general cognitive skills in domain-specific learning context, such as the arts, mathematics, sciences, and social sciences. Sanz De Acdo Lizarra and colleagues (2009) conducted a series of three studies to investigate the pedagogical effectiveness of infusing method, instrumental method (direct instruction of thinking skills), and conventional teaching method on secondary school students. Infusing creative thinking into Sciences, Language, Mathematics, and Social Sciences was more effective in enhancing intelligence, academic achievement as well as creative thinking when compared with conventional teaching method. Participants’ gains in academic achievement and creativity in the infusing method still outperformed those in direct instruction method and conventional teaching in the four academic domains. Significant differences were still significantly maintained among the three groups of participants after one year.

Research evidence has shown that studying the arts, for example, dance, drama, music, and visual arts, engendered creative thinking in children and young people in schools. Moga, Burger, Hetland, and Winner (2000) found that there was a positive relationship between arts
learning and creativity. Bryce, Mendelovits, Beavis, McQueen and Adams (2004) reported that creativity and student engagement were enhanced in school-based arts education programs in Australian schools. Gains in creative and imaginative thinking were observed by Harland et al. (2000) in UK secondary schools. In addition to gains in creativity, student engagement and motivation in learning have also been evident in promoting arts education for students. Similar progress in creative cognition and attitude of young children has been derived from a collaborative art education project “5 × 5 × 5 = Creativity in the Early Years” operated in the United Kingdom (Fawcett & Hay, 2004). Young children were able to construct and express their one-of-a-kind ideas via different creative means, under the guidance of art and education professionals. Hanna (2008) has provided an overview on how dance was incorporated into the high school curriculum in the United States. Students were very likely to develop better attention, self-expression, creative thinking patterns, and knowledge application. This alternative learning platform allows creative aesthetic responses in non-verbal languages like movement.

Today, teaching for creativity could be achieved by means of infusing methods, which previously have been more widely adopted in gifted and tertiary education. Infusing creativity into academic subjects has now permeated all levels. An encouraging learning environment that allows equal opportunity and resources for students and teachers to interact is indispensable (Craft, Cremin, & Burnard, 2008). Considering preschoolers’ limited cognitive ability in picking up abstract ideas, infusion methods alongside direct instruction for teaching creativity seemed to generate a positive impact on guiding young learners to produce innovative responses (Walsh, Sproule, McGuinness, & Trew, 2011). Garaigordobil and Berrueco (2011) examined if young children’s level of creative thinking might increase by immersing them in a series of weekly collaborative play sessions. Significant improvement was observed in the number, dimensionality, and authenticity of the responses preschoolers produced, in both the verbal and non-verbal sense. Further demonstrated by Northern Ireland’s education policies, continuous review of education policies might help gear up the development of creative thinking skills through frequent classroom engagement and interaction that help preschoolers succeed in various academic domains (Clack & Walsh, 2012).

Unlike preschool, creative thinking has started to be taught mostly with infusion methods in primary schools, so as to make it more interesting and comprehensible for young students. Information and Communication Technologies (ICT), is one of the most commonly adopted means to facilitate knowledge acquisition in the twenty-first century. Kampylis, Fokides and Theodorakopoulou (2011) have investigated on how a ICT-dependent learning environment may be a more effective instructional mode to enhance creative thinking of primary school students in Greece. The infusing method can be effective in nurturing little-c and preparing students to develop their Pro-c creativity in various knowledge domains.

East

Creativity is gradually developing as an ideology of influence in the Eastern culture. Inseparable from globalization, creativity has gradually become an exploration for curricular reform (Wu, 2004). Similar to the West, the infusion method seemed to be the most widely adopted instructional approach towards teaching and training young children’s creative thinking skills. Heightening the importance of creative thinking to enhance little-c creativity in students’ personal and academic development has encouraged reformative initiatives in many different Asian regions (Hui & Lau, 2010).

Creative thinking trainings for preschoolers in the East often manifests in drawing and writing. As most Eastern characters are logographic, attempts towards bolstering children’s
creative thinking ability have focused on stimulating their graphical expressivity. Chen and Zhou (2010) have conducted a study on graphical expressivity training and creativity learning and yielded affirmative results showing Taiwanese preschoolers’ ability in breaking their developmental boundary and expressing pictorially and innovatively characters outside their current state of knowledge, based on their “phonological and orthographic” experiences with characters previously encountered. Their novel responses have made graphical expressivity training a new approach for developing creativity in young children. In addition, innovative movement can be another strategy to train children’s creative thinking. In Cheung’s (2010) study, learning through movements was found to be useful for building up young children’s creative thinking skills and encouraged Hong Kong preschoolers to exhibit more diversified responses towards expressing the same idea. Listening to music could also be an effective strategy to enhance young children’s creative thinking. In a study with Japanese preschoolers, Schellenberg, Nakata, Hunter, and Tamoto (2007) found that exposure to familiar songs was associated with significant improvement in a creative drawing task. In essence, the children demonstrated stronger motivation relative to baseline in completing the drawing task. Moreover, their post-music drawings were rated as being more creative, energetic, and technically proficient.

In Taiwan, more frequent use of different media has been the core route towards assisting young students to pick up creative thinking skills. Infused learning by means of drama has received positive feedback from students. Lin (2010) found that elementary school students participated in the drama program reported a more self-directive, innovative and dynamic learning process. They tended to feel more comfortable and confident. Drama in education is also found to be an effective strategy to enhance both verbal and figural creative thinking as mini-c and little-c creativity in young children in Hong Kong (Hui, He, & Liu-Au, 2013).

Alternatively, teaching of creative thinking ability could also be delivered by means of a learning camp, in which innovative thinking training has been incorporated in different constructive activities (Wu, Chang, & Tseng, 2012). Primary school students were given the opportunity to strengthen their creative mindset through action learning. The entire camp comprised a total of five different hands-on creative units allowing students to gain a more thorough understanding in the scientific knowledge involved in the creative processes. This new after-class initiative, if successfully implemented, will be a big step towards the cultivation of an innovative generation.

Another learning camp that focused on stimulating secondary school students to release their hidden creative potential while attempting various creative writing tasks, has been evaluated for its usefulness on students’ writing performance (Liang, Chang, & Chang, 2012). Obvious improvements were observed in every aspect of students’ writing performance, including originality or novelty of ideas, flexibility, complexity and details of ideas used and were believed to be the results of students’ exposure to different visual stimuli and mind-mapping techniques, contributing to adding vitality and diversity to their usual mode of thinking.

The cognitive-affective instruction model, which consists of different instructional strategies that help teachers uncover the creative potential of the gifted, has been found to help promote creative thinking. Wang and Chen (2012) have used this model to find out how visualization and discrepancy strategies, as in the model, played a role in affecting secondary school student’s little-c creativity via a game design exercise. Results showed that discrepancy strategy seemed to be more related to students’ creativity and enabled them to identify any unclear areas of learning and put themselves into question, which may then trigger and polish their creative performance as they were more inclined to revisit and elaborate on the subject matter. On top of visualization means that could be utilized, having students constantly hold a critical attitude towards their learning may be one crucial rule to develop their ability to think creatively.
The tendency of having innovative thinking infused in different class activities was also evident in the Middle East, as exemplified by two Israeli studies. Greater enhancement in secondary school students’ propensity and perception towards critical thinking and the actual amount acquired could be ascribed to teachers’ effort in deliberately enacting out-of-the-box thinking activities in class (Miri, David, & Uri, 2007). These positive changes arose from their persistent contribution on bridging students’ classroom learning and real-life application, for example, case studies, collaborative exploratory experiments, and unconstrained discussions. Creative-thinking-stimulating class activities like these were also instrumental in fostering students’ cognitive flexibility and motivation to question, if only curricula could be restructured or designed to accommodate such pedagogical strategic changes (Aizikovitsh-Udi & Amit, 2011), which might help students comprehend class content better than just passive listening.

Recent scholastic literature seemed to have switched to examine how creative thinking development could be attained through language education (Li, this volume). Ghahremani-Ghajar and Mirhosseini (2005) pointed out that dialogue journal writing may be useful in helping secondary school students to adopt a creative or critical way of thought and expression. Theme-free journal dialogue writing has encouraged students to produce more creative and less descriptive and personal-centered journal entries, which could be ascribed to its nature of being a relatively supportive and comfortable channel of idea expression. Despite little evidence showing how journal dialogue writing could help students better articulate a language, its impact on their creative potential seemed unquestionable.

Training for creative thinking in high school students could be very much predisposed by teachers’ instructional flexibility and capacity. The pedagogical development of Singapore has revealed a cutting-edge perspective over facilitating students’ creative mindset in language learning by encouraging teachers to broaden their textual exposure (Kwek, Albright, & Kramer-Dahl, 2007). Through reading and sharing their literary experiences regularly, they were able to transform their insights into practical pedagogical arrangement, furthering students’ opportunities to creatively achieve their learning objectives using a variety of creative text in replacement of traditional textbooks. This practitioner-focused approach is likely to become an area to explore for its impact on students’ acquisition of creative cognitive ability.

**Continuous development of creative thinking across the lifespan – continuous development in adulthood and late adulthood**

Demands for enhancing pre-working population’s mini-c, little-c, and Pro-c creativity have appeared in tertiary education. Research from the last decade has focused on exploring the role creative thinking plays in adult training leading to better workplace performance (Chen, Jiang, & Hsu, 2005; Narayanan & Adithan, 2012), that is, Pro-c creativity, especially in fields that require high flexibility and stress management. Creative attitude, working style, mindset, and culture are perceived to be possible contributors that are needed by corporations to maintain their competitive edge. Such attributes are particularly important for professional industries like nursing and medicine, where the ability to think creatively is highly valued and related to performance of duties, giving rise to considerable need for critical thinking-supportive curricula and evaluation (Simpson & Courtney, 2002). These could be achieved through various infusion or student-oriented methods, such as role plays, checkerboarding, alternatives-possibilities-choices, and so on, to awaken students’ creative potential and facilitate knowledge acquisition to keep up with the dynamic and fast-paced workplace culture upon graduation (Bonk & Smith, 1998).

College education is the training ground for students to be competent professionals succeeding in their career. Many educators aim to sustain constructive learning through teaching
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Table 18.1 Summary of creative programs of CYEP

<table>
<thead>
<tr>
<th>Program Title</th>
<th>Target Recipients</th>
<th>Little-c Input</th>
<th>Mini-c Outcome</th>
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<tbody>
<tr>
<td>3C’s Module: Creativity, Critical Thinking, and Community</td>
<td>Newly arrived children to Hong Kong from mainland China</td>
<td>Creative exploratory activities on the community’s inherent resources and potential</td>
<td>Enhanced pride and sense of belonging and responsibility toward their community</td>
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<tr>
<td>Protecting the Environment</td>
<td>Youth from low-income families</td>
<td>Creative workshop on using recycled materials to make paper, construct a recycled model city, and to create haute couture fashion for a fashion show</td>
<td>Think-out-of-the-box skills on how to recycle or even “upcycle” materials for environmental value in their daily lives</td>
</tr>
<tr>
<td>Soul Empowered: Healing through Art</td>
<td>Women in domestic crisis</td>
<td>Creative art and music workshops</td>
<td>Finding individual and collective creative channels for self-expression and exploring “intra” and “inter” personal insights to a vision for the present and future life, just like a process of “renewal” or “rebirth”</td>
</tr>
<tr>
<td>Community Integration and Narrative “Wisdom”-Building</td>
<td>Elderly living alone and socially isolated</td>
<td>Visits and various community-based activities</td>
<td>Wisdom narratives (expressed in art projects such as story boards and creative writing done by the volunteers)</td>
</tr>
<tr>
<td>All of the above</td>
<td>University students as volunteers</td>
<td>Facilitating the above activities</td>
<td>Transforming what children and youth have learned about exploring the resources and potential of a community into their own process of identifying their own community; empathizing with the women’s experiences, and inspired by their resilience; gaining new perspectives in the process of aging, including new insights into death and dying</td>
</tr>
</tbody>
</table>

thinking tactics and revamping current instructional means to facilitate students’ intellectual involvement in classes. Some have made use of different mainstream media, such as film (O’Malley, 2011), novels and poems (Chrisler, 1990, 1992) and boot camps (West, Tateishi, Wright, & Fonoimoana, 2012), while others adopted a number of concrete thinking tactics, including “out-of-the-box thinking,” “use of analogy,” “broadening and narrowing perspective to an issue,” “brainstorming,” and “viewing the positives from the negatives,” to make knowledge building easier for students through the process of acquiring innovative thinking skills and strengthen their confidence towards applying innovatively in their own expertise (Ness, 2011). Much of these have built on Successful Intelligence (Sternberg, 2002), which
adds to the students’ best abilities and works on the least competent ones, leading students to perform better in a practical, analytical, and creative sense and enjoy the life-long benefits of being purposely trained.

Mini-c and little-c creativity can also be enhanced in college students through co-curricular activities or service learning. For instance, the City–Youth Empowerment Project (CYEP) is a university-based non-credit bearing service-learning project in Hong Kong (Liu, Wu, Lo, & Hui, 2012) that recognizes the importance of creativity and critical thinking in a true pedagogic experience. The project’s mission is to promote social inclusion and civic engagement through mobilizing university students to work alongside underprivileged groups in the community. Grounded in the theme of creativity, critical thinking, and a sense of community, Table 18.1 presents four distinct examples developed by CYEP, to enhance the creative thinking of volunteers and service recipients.

Creativity in teacher education is another major area of Pro-c creativity. New primary school teachers from Singapore have reported higher levels of appreciation towards interactive teaching methods, including collaborative activities, out-of-classroom learning, and student-directed tasks, than veteran teachers, for their importance in developing students’ creative thinking ability (Tan, 2001). Different views over how students’ creative thinking ability could be built through teaching practices were also found in Kindergarten teachers from Zhuhai (Vong, 2008). Regardless of the tension experienced, Chinese teachers nowadays seemed to be well-adjusted to deliver class content by means of hands-on, graphical, and physical involvement exercises entirely novel to them, and students also appeared to respond actively in this new learning structure (Martin, Craft, & Tillema, 2002).

Creative thinking training for adults also occurred in the workplace, where creativity is gaining its place as an intangible corporate asset. Although in reality few resources have been dedicated to create a creativity-favored atmosphere, creativity has significant implications for employees’ effort to innovate (Ismail, 2005) and can only be sustained with internal motivation and incentives and a supportive corporate attitude (Williamson, 2001; Ismail, 2005; Wong & Ladkin, 2008). Paulus and Brown (2007) have proposed that only under such interaction with dispositional dynamics of employees (Paulus, Nakui, Putman, & Brown, 2006) could organizational creativity be fostered through group ideation. Better performance in group ideational creativity achieved from idea-gathering and -writing, aka brainstorming, could be the results of better attention to their colleagues’ ideas and new idea contribution unaffected by social apprehension and peer pressure (Paulus & Yang, 2000). To further maximize corporate creativity, it was suggested that leaving room for more flexible (Putman & Paulus, 2009) and rigorous (Paulus, Kohn, & Arditti, 2011) individual brainstorming would allow subordinates to produce greater amounts of novel, unique and sophisticated outcomes.

Step-wise problem-based corporate training programs and experiential activities might be conducive to the development of creative organizations and effective in assisting employees to perform innovatively and adopt a more favorable perception towards creativity. These programs enabled them to benefit from suspending their judgments, thinking multi-dimensionally and acting creatively. Their creative performance was profoundly improved in terms of novelty, frequency, and diversity, which added to their work productivity and efficiency (Puccio, Firestien, Coyle, & Masucci, 2006). Some other activities like workshops could in fact encourage employees to practice their creative thinking skills through various opportunities offered within companies. Their active involvement through collaborating, idea sharing, and working ideas out would eventually consolidate their creative thinking skills and would be necessary for sustaining their companies’ innovativeness and competitiveness (Karakas & Kavas, 2008). In the case of CYEP team staff, a collective ongoing painting project was in progress throughout
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the year during their weekly staff meeting. Staff would take 15 minutes at the end of the team meetings to work on the free-association painting, and staff members were able to see that the rich finished painting documented various processes they experienced – their own personal struggles and obstacles, brainstorming ideas, pathways to negotiate personal differences, and the common vision and goals.

As one continues to age, innovative intellectual skills could be tools that might help one to better cope with life challenges coming ahead. A number of previous studies have explored the significance and feasibility of making creative thinking training an important part of adult education (Garrison, 1991; Goff, 1992). Many have come to agreement that age-related creativity has eminent impact on individuals’ well-being and creativity could transform across one’s lifespan as life experience grows (Romaniuk & Romaniuk, 1981; Sasser-Coen, 1993), given that midlife and older adults are able to create novel and more elaborated ideas as competently as young adults (Roskos-Ewoldsen, Black, & McCown, 2008).

There has been agreement among past researchers that there is good cause to maintain opportunities allowing older adults to practice their creative thinking. Perceivable benefits gained by the elders from engaging in intellectual stimulation activities were reported by Fisher and Specht (1999). These aged participants involved in creation of artworks tended to believe that supportive attitude, positive outlook, purposefulness, sense of autonomy, good health, active connections with others, and opportunities to grow were important components that would help them succeed in the process of aging. Through engaging in the arts, they were able to derive a sense of contentment, achievement, and belongingness to the community and the external world. To these elders, being creative could empower them to divert their attention to meaningful activities from existing emotional or physical discomforts, allowing them to adopt more positive life attitudes. It seemed that provision of opportunities for the elders to practice creative thinking as mini-c creativity could very likely be a compatible approach to help them cope with their difficulties and maintain their mental and physical well-being.

A recent lifespan study on creative personality and age-related changes on gains and losses, Hui et al. (2013) discovered that the self-perception of creative personality was highest in older adults when compared with midlife, young, and emerging young adults. The onset age and closing age of gains and losses in creative personality were also higher among the older population. Participation in creative and cultural activities, such as watching movies and performing arts, was positively correlated with perceived creative personality. Participation significantly predicted the achievement and recognition dimension of quality of life in a sample of community dwelling elders (Hui, 2013). In a randomized controlled trial study on the effects of participation in a community arts program, positive gains in figural creativity and everyday problem solving scores were reported in the treatment group when compared with their counterparts in the control group (Hui & Liang, 2012).

Knowledge of creative thinking helped older adults succeed in coping with the process of aging, although theory needs to be turned into action in order to reach the goal of successful aging. It was suggested that maintaining such environments would require active involvement and a positive attitude between instructors and aged learners (Tsai, 2012a, 2012b). Learners should be given plenty of stimulation to practice thinking creatively and instructors should guide learners to think step-by-step to inquire and reward them when progress has been made. Moreover, creative education for adults, who are strongly driven and spontaneous, should assume higher level of autonomy, so that they can exercise more control on how they want to express themselves creatively.

Different local initiatives have been implemented to assist older adults to adopt a productive and positive lifestyle. Hickson and Housley (1997) and Boulton-Lewis (2012) have covered
several past and ongoing programs adopted to offer intellectual training opportunities for elders to better adapt to aging. These initiatives operated in different forms, ranging from formal education programs to community activities. Currently, the commonest form of resources invested in promoting mental wellness for the aged is apparently institutional, with elders invited to a short stay at some local tertiary institutions and enrolled in courses they might find interesting. Given a resourceful environment, not only have they experienced great enhancement in their cognitive flexibility and agility, noticeable progress in several personal and psycho-social aspects have also been realized. These results encourage more elders-centered creative thinking training in the future to help older adults achieve a fuller and more satisfying later life.

Conclusion

The cognitive capability to innovate and create across the lifespan is worthy of attention and development. Both regional formal education curricula and informal learning programs for the school-age are working their way to stimulate their mini-c and little-c creativity through direct instruction and infused pedagogy. Western and Eastern academic institutions of different levels, especially kindergartens and primary schools, have begun to integrate mini-c and little-c creativity training in conventional classrooms, by means of drama (Lin, 2010; Hui, He, & Liu-Au, 2013), literature (Liang, Chang, & Chang, 2012), visual arts (Chen & Zhou, 2010) and various other art forms. Infused learning of little- and mini-c creativity has been promoted in a wide range of academic domains including language, mathematics, and the sciences to help young individuals gradually transform their mini-c and little-c into Pro-c creativity.

Pro-c creativity training has continued in college and business organizations. Professional creativity has become a major focus of college education as pre-vocational preparation for young adults as well as as a performance facilitator for working adults. Thinking enhancement programs and activities are vital for fostering working adults’ Pro-c, through comprehensively practicing their mini-c creativity. With cognitive training in mini- and little-c creativity, such stimulation has allowed older adults to successfully get over age-induced cognitive dissonances and live healthily and meaningfully (Fisher & Specht, 1999).

As a concluding comment, it may be productive for future educators, researchers, and organizations to develop more practical yet creative initiatives, delivered either through formal or informal means, to consolidate young schoolchildren and adults’ mini-c, little-c, Pro-c, or even Big-C creativity that are necessary for the betterment of individuals and society.

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References

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Hui, A. N. N., & Liang, E. (2012, November). *Creativity as a reserve capacity in older adults and a virtue in positive psychology*. Symposium presentation in the Second China International Conference on Positive Psychology, Beijing, China.


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