



# Students' Perceptions of Creativity Education: A Perspective from Hong Kong, China

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**Abstract:** Education, knowledge, and creativity are progressively becoming driving forces behind new social, cultural, and educational structures. With particular reference to Hong Kong, the purpose of the present study was to examine the under-researched relationships between creativity, practices, and values in school learning as perceived by adolescent students. Data from a sample of 3,519 Hong Kong Chinese school students, mainly aged between 11 and 15, from 16 schools were collected in 2019. Based on the data, this study explored the sources, values, and limits of fostering creativity in young students in school education. Educators must consider ways to cultivate creativity, nurture creative attitudes, and encourage students to develop their creativity across primary and secondary school levels.

**Keywords:** *Creativity education, school subjects, school examinations, students' perceptions, Hong Kong*

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## INTRODUCTION

Creativity is a worldwide activity, an essential process of bringing something new into being with an evolutionary outlook that results in a multidimensional transformation of ideas, imaginations, and even dreams. In 1950, Joy Paul Guilford delivered his presidential address at the American Psychological Association, appealing to the field to bring about gains in the popularity of creativity research and emphasising the central significance of creative talent for industry, science, art, and education (Guilford, 1950; Plucker, 2001). Studies have shown that motivation is a function of beliefs identified as relevant for creativity (Amabile, 1996; Schwartz, 1994). The shift of creativity research from individual traits to the broader contexts in which they are expressed is evident, for example, in the work of Csikszentmihalyi (1988, 1990, 1996) and Gardner (1993), both individually and collectively.

A substantial body of literature has examined the importance of creativity in human development and, particularly, cultural development in the Western context (Cerisola, 2019; Connery, John-Steiner, & Marjanovic-Shane, 2010; Sternberg & Lubart, 1995). Creativity in human achievements has provided many contributions to human civilisation (Goldberg, 2018; Sternberg & Kaufman, 2018). Creativity is the cornerstone of a knowledge-based society and economy and it contributes to different life areas and countries sustainable development to deliver goods and services with cultural, artistic, and creative content (Lee, Chan, Xu, & Chun, 2017; Nathan, 2018; Pasca, 2018; Stasiulis, 2017; Tsubonou, Tan, & Oie, 2019). Csikszentmihalyi (1988) proposed a model of creativity that drew attention to the social context, out of which creativity results from a complex interaction among a person, a field, and a culture in its innovation.

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Research has also shown that education can play a vital role in fostering people's creativity. Despite the significant importance of the creativity and educational framework, so far, relatively little attention has been paid to school education and how creative practices can be enhanced in contemporary school education in response to young students perspectives. This paper, therefore, focuses on three questions regarding student's perceptions of their creativity potential and their important sources of creativity education, the values of creativity in school education and the importance of creativity in school subjects, as well as the encouragement and limitations of creativity education in schools, respectively. This study hypothesised that creativity is the main source of school education, and it can be enhanced through school education and the encouragement and support from teachers and schools (D. Davies et al., 2014; Gao, Chen, Zhou, & Jiang, 2020; Sparks, 2020; Yuan, Wu, Hu, & Lin, 2019). Before presenting the data of this study, the first aim of this paper is to provide a theoretical integration through the development of a framework based on the relationship between creativity and education, curriculum, and appropriate strategies to foster creativity in general school education.

## LITERATURE REVIEW

Creativity is featured in many areas of life, such as human interaction, communication, cooperation, and social and cultural awareness, and as such, creativity in school subjects as an element of the school curriculum is a means to satisfy that role.

Following the work of John Dewey (1859-1952), educators have been searching for a better means of bringing not only creative doing but creative thinking into the work of education (Harris, 2016). Studies on international trends in creativity, cultural, and arts education policies have found that the direction for the next generation should include making more room for imagination and innovation to prepare students for creative workplaces and communities in a rapidly evolving education landscape (Barton & M., 2017; Berlin & Tavani, 2016; Harris, 2016; Mullen & Browe-Ferrigno, 2018; Silton, 2017; Tsubonou et al., 2019).

Yet in the past decade, there have been growing calls to nurture and teach creativity from an early age in schools (Mohammed, 2018). In regards to various curricular studies, Hartley and Greggs (1997), Simonton (1999), and Zare (2011) have recommended that students with convergent thinking tend to favour physical sciences while those with divergent thinking lean towards humanities and social sciences, and they discovered that artists had higher creativity levels than scientists and engineers. Furnham, Hughes, and Marshall (2013) found that creative arts students had a divergent style while science students had a convergent style, and creative arts students believed that they were more creative than science students. On the contrary, Charyton (2015) found that there were no substantial differences in creativity between musicians and engineers. Williamson (2011) also observed that there were no differences between arts and sciences undergraduate students regarding creative problem-solving skills. In the past decade, STEAM (Science, Technology, Arts, Engineering, and Mathematics) has been extensively advocated, and new measures in education have been implemented that celebrate creativity across the sciences, arts, and education to equip students with interdisciplinary learning that will expand their creative and critical minds (Braund & Reiss, 2019; Charyton, 2015; Conradt & Bogner, 2018; Newton, 2012).

Research has indicated that creativity is sensitive to the environmental situations of the creator. Although some literature has insisted that student creativity is a matter of innate ability, talent, and capability (Moravcsik, 1981), others have found that creativity can be nurtured (Torrance, 1972) and improved through adequate education programmes (Scott, Leritz, & Mumford, 2004). Csikszentmihalyi (1996) posited that children can develop personal creativity given the benefit of a harmonious and worthwhile environment. This approach may also help students accomplish a life that highlights their individuality. Schools are one of the major institutions that help students develop creativity comprehensively (Ali, 2017; Besancon, Fenouillet, & Shankland, 2015; Hennessey, 2015; Robinson, 2016; Sawyer, 2019). Amabile (1983) stated that when all the social and environmental elements that might influence creativity are pondered, most can be found in the classroom. The execution of teacher encouragement in facilitating student creativity has been reported in numerous studies e.g., see (Birch & Ladd, 1997; T. Davies, 2006; Gao et al., 2020; Sternberg, 2003; Sternberg & Kaufman, 2018; Yuan et al., 2019). Moreover, creativity necessitates a safe environment in which to play, operate autonomously, and accept risks that can also happen in the home environment. The relationship between family background characteristics and parent-child relations also helps to foster creativity in children at home (Harrington, Block, & Block, 1987; Williamson, 2011). Peer feedback (Budge, Beale, & Lynas, 2013), Internet technology (Lee et al., 2017), and social media (Corso & Robinson, 2013) are also changing the landscape of what is integral to creative

practice.

## CREATIVITY IN HONG KONG SCHOOL EDUCATION

Over the last two decades, school education in Hong Kong has undergone many changes. The World Has Changed, So Must the Education System! This was the leading statement in *Learning for Life, Learning through Life: Reform Proposals for the Education System in Hong Kong* published in September 2000 (Education Commission, 2000). Subsequently, Curriculum Development Council (2001) published the curriculum document *Learning to Learn: The Way Forward in Curriculum Development*, which identified creativity as a generic skill to be developed in students. The development of creativity is one of the three core generic skills, together with critical thinking and communication, that can be promoted in all key learning areas at all school levels (Education Commission, 2006). All reform measures must serve the best interests of learners, promoting the opportunities and abilities of learners to enjoy learning, enhance their effectiveness in communication and develop their creativity and sense of commitment. Students are required to relate to the development of generic skills in particular subjects, such as languages, visual arts, and a variety of extracurricular activities (Lee et al., 2017). In a correlational study of 803 primary school students, a positive association between arts learning experience and creativity was significantly found (A. Hui, He, & Lee, 2010; S. Hui, 2019). The promotion of the collective academic disciplines of Science, Technology, Engineering, and Mathematics (STEM) education was first planned in the 2015 Policy Address and further sustained in the 2016 Policy Address (Education Bureau, 2016).

However, Hong Kong's students are often criticised for their lack of creativity. Among 1,418 Chinese school children who took the Wallach-Kogan Creativity Tests in Hong Kong, it was reported that there was a significant drop in creativity scores between sixth and seven graders (Lau, Cheung, Chan, Wu, & J., 1998). Creativity decreased from Grade 4 to Grade 5 and then again from Grade 6 to Grade 7, the assumption being the difficult transition from primary to secondary school (Lau et al., 1998). According to the 2017 Economist Intelligence Unit Index, school education in Hong Kong was ranked lower than that in Singapore, South Korea, and Taiwan. As explained by John Lee, a Chair professor at The Education University of Hong Kong's Department of Curriculum and Instruction, Singapore, South Korea, and Taiwan are doing a better job of introducing innovation into their education systems, while Hong Kong does not encourage students to take risks (Ng, 2017). The examination-oriented education system in Hong Kong has been blamed for the impoverishment of student creativity (Marginson, 2011). For example, in studying for the Hong Kong Diploma of Secondary Education (HKDSE) examination (Hong Kong's university entrance examination), students have little time to do non-academic activities because they are under pressure to work longer hours on homework assignments. According to an annual survey conducted by the Hok Yau Club (a non-profit non-governmental organisation in Hong Kong) involving 1,970 students from 24 schools who took the HKDSE examination in 2019, their pressure score was rated as 6.76 out of 10, which was marginally higher than the 6.75 obtained in 2018, while 10.5% ranked the pressure that they felt at the highest level of 10 (S. Hui, 2019). Hong Kong education has been disparaged because with or without recent reform initiatives have presented daunting obstacles that discourage creative teaching, and teachers have to be attuned to these barriers and to conceive possible escape routes for creative teaching (S. Chan & Yuen, 2014).

A number of local studies have shown that teachers have to work hard to incorporate creativity into classroom activities, for example, difficulties in creativity reforms (Cheng, 2010), the challenge of teachers to adapt Western creative pedagogy in developing creativity (Cheung, 2016), the relationship between teachers' creativity beliefs, creative personality, and creativity-fostering behaviours (S. Chan & Yuen, 2014), the challenges of creativity education to young students in school (D. W. Chan, 2002), and teachers' beliefs and practices of nurturing creativity in gifted education (S. Chan & Yuen, 2015). Creativity plays a vast role within school systems, and children need guidance and stimulation to develop their creativity to their full creative potential, not only by teachers but also by parents (Silton, 2017).

### *Aim and Research Questions*

To address the gap in the literature, the purpose of this current study was to examine the under-researched relationships between creativity, practices, values, and challenges in school learning among school students. Drawing on enquires in Hong Kong, this study addressed three pairs of specific research questions:

1. How do students perceive their creative potential and the important sources of creativity education?
2. What are their perspectives of the values of creativity in school education, as well as the importance of creativity in general school subjects?

3. What are their perceptions of the encouragement given by their schools in the development of creativity education, and the limitations of school examinations on the implementation of creativity in school education?

## RESEARCH METHODOLOGY

Survey research was used in this study, which focused on quantifying the collection and analysis of data on Chinese school students. This study was administered an anonymous self-designed questionnaire to collect the views of a large sample of student informants in an economic and effective manner [Cohen, Manion, and Morrison \(2007\)](#). The reason for selecting the target group of senior primary and junior secondary school students was that these students were capable of answering the written questionnaires individually. Many secondary schools would not allow their senior grade students to participate in the survey as they had a very tight schedule to prepare for the HKDSE examination. The school informants of the main survey were recruited via email invitation and social media.

According to the survey requirements, quantitative analysis (e.g., mean, standard deviation, percentage, cross-tabulation description, and the Analysis of Variance [ANOVA]) was conducted using the Statistical Package for Social Sciences (SPSS) functions. The questionnaire included closed items with multiple-choice answers and structured ratings using a 5-point Likert scale (from 1 = highly disagree to 5 = highly agree) to allow the students to express degrees of agreement, approval, importance, or frequency. The survey questionnaire served seven purposes:

1. To gather the students demographic information (gender, age, and grade level)
2. To evaluate their creative potential
3. to find out their influential sources of creativity in education
4. To examine the students attitudes towards the values of creativity education
5. To collect their views on the importance of creativity in general school lessons
6. To elicit their perspectives on the encouragement by their schools to engage in creativity education
7. To explore their views on the influence of school examinations on creativity education.

This study adopted SPSS software 22 to analyse the survey questionnaire data, identify patterns in the students responses, their experiences with the evaluation of their creative potentials, major sources of creativity education, and their perceptions of the values of creativity education conducted in their own schools.

## PROCEDURE

This study received ethical clearance for research involving human participants and personal data from the institutional committee on the Use of Human and Animal Subjects in Teaching and Research.

A pilot study involving 100 senior primary and junior secondary school students (i.e., from Grade 4 to Grade 9, aged between 11 to 16) from 10 schools was carried out between February and March 2019. The survey questionnaire was drafted in Chinese, which was the subject students native language, and appropriate amendments to some expressions written in Chinese were made after the pilot study. The contents of the questionnaires were discussed, amended, and approved by a team of education experts and schoolteachers who were involved in the pilot survey. Issues that were observed among the students who took the pilot questionnaire included understanding the questionnaire items, the terms used, the sequence of questions, the flow of statements, and the length of the questionnaire. Errors were amended and re-piloted until no further changes were considered necessary.

Schools were invited to take part in the main investigation in April 2019. A copy of the questionnaire and the information sheet were sent to schools for approval. Upon the approval granted by the school authorities, the main survey was administered from May to December 2019. Students were given about 10 minutes during in-school lessons or class periods to complete the questionnaire according to the instructions given by the school principals and their individual teachers. The teachers who administered the survey were free to choose the respondents, and they served as facilitators in collecting and returning the questionnaires.

## RESULTS

### *Participants*

The data analysed in this study was obtained from a sample of 16 schools (one all-girls primary school and 15 co-educational primary and secondary schools), including one government primary school, three government-aided

primary schools, and 11 government-aided secondary schools. Data from a sample of 3,519 senior primary and junior secondary school students (1,709 girls, 1,783 boys, and 27 unknown gender) aged between 11 and 15 and above were collected. Of the respondents, 405 (11.5%) were in Grade 4; 394 (11.2%) were in Grade 5; 433 (12.3%) were in Grade 6; 856 (24.3%) were in Grade 7; 881 (25.0%) were in Grade 8; and 534 (15.2%) were in Grade 9. Among the valid responses, 11 (0.3%) were 8 years old or younger; 536 (15.2%) were between 9 and 10 years old; 948 (26.9%) were between 11 and 12 years old; 1,571 (44.6%) were between 13 and 14 years old; and 426 (12.1%) were between 15 year old and older

### ***Self-evaluation of Creative Potential***

The students were asked whether they had the potential to be creative and to use their creativity to make their life more interesting. Of the responses, 520 (14.8%) highly agreed and 132 (3.8%) highly disagreed that they had creative potential to make their life more alluring. The overall mean for their agreement of having creative potential and adopting creativity to make their life more intriguing was 3.39 ( $SD = 0.99$ ) (from 1 = highly disagree to 5 = highly agree). Comparing the students who attended the six grades, the students in Grade 4 maintained the highest responding mean (see Table 1).

Table 1 *Students Perceptions of their Creative Potential to Make their Life More Interesting*

Grade	Mean*	Standard Deviation	N	Total Valid %
4	3.61	1.16	401	11.4%
5	3.46	1.00	393	11.2%
6	3.50	0.99	434	12.4%
7	3.30	0.97	880	25.1%
8	3.30	0.94	532	15.2%
9	3.35	0.92	532	15.2%

Note: \* From 1 = highly disagree to 5 = highly agree

There was a statistically significant difference between the primary school and secondary school students as determined by the one-way ANOVA in using creativity to make their life more interesting [ $F(5, 3486) = 1.824, p < 0.001$ ].

### ***Important Sources of Creativity Education***

The students were asked to rate their most important sources of creativity education, and the top five highest responses were school music teachers (1,097 answers), parents (394 answers), the Internet (299 answers), popular idols (181 answers), and friends (83 answers). Despite the fact that 1,097 and 394 students said that their most important sources of creativity were learnt from their school music teachers and parents, respectively, some students asserted that their creativity sources were developed through other subject teachers, peer interaction, and their acquaintance with the Internet and mass media.

Cross-tabulation analysis found that more primary school students opted for higher percentages for teachers teaching Chinese Language and teachers teaching Social Science, while the junior secondary school students had higher percentages for parents, siblings, friends, classmates, teachers teaching Mathematics, art teachers, my popular idol(s), the Internet, and mass media. The students in Grade 9 were the only ones to rate teachers teaching English as the most important influence on their creativity education (see Table 2).

### ***Students Attitudes Towards the Values of Creativity Education in School Learning and in Life***

Overall, the student respondents believed that values could be found in creativity education in school learning and in their life. The average mean scores (from 1 = strongly disagree to 5 = strongly agree) for Grade 4 to Grade 9 were in the order of 3.81 ( $SD = 1.06$ ), 3.74 ( $SD = 0.96$ ), 3.73 ( $SD = 0.97$ ), 3.50 ( $SD = 0.95$ ), 3.44 ( $SD = 0.92$ ), and 3.51 ( $SD = 0.92$ ), respectively. Comparatively, the primary school students obtained higher means than the secondary school students (see Table 3).

Table 2 *Percentages of Students Perceptions of Their Most Influential Sources of Creativity Education by Grade*

Sources	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9	Blank Answers	Grand Total
Parents	15.2%	9.1%	12.9%	26.4%	25.4%	9.9%	1.0%	100%
Siblings	6.7%	6.7%	13.3%	28.9%	20.0%	24.4%	0.0%	100%
Friends	7.2%	6.0%	9.6%	25.3%	32.3%	24.2%	0.0%	100%
Classmates	3.6%	14.3%	7.1%	32.1%	32.1%	10.7%	0.0%	100%
School music teachers	12.0%	15.9%	13.4%	22.8%	21.5%	14.1%	0.3%	100%
Teachers teaching Chinese Language	33.3%	33.3%	0.0%	733.3%	0.0%	0.0%	0.0%	100%
Teachers teaching English Language	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	50.0%	100%
Teachers teaching Mathematics	25.0%	0.0%	0.0%	25.0%	25.0%	25.0%	0.0%	100%
Teachers teaching Social Science subjects	50.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Art teachers	0.0%	20.0%	20.0%	20.0%	40.0%	0.0%	0.0%	100%
Teachers teaching Physical Education	12.5%	0.0%	12.5%	0.0%	37.5%	37.5%	0.0%	100%
My popular musical idol(s)	2.8%	6.1%	9.9%	29.3%	29.8%	22.1%	0.0%	100%
The Internet	2.3%	2.0%	7.0%	26.4%	37.5%	24.7%	0.0%	100%
Mass media (e.g., radio and/or television)	10.9%	1.6%	10.9%	32.8%	26.6%	17.2%	0.0%	100%

Note: \* From 1 = highly disagree to 5 = highly agree

Table 3 *The Number of Student Respondents Regarding the Importance of Creativity in School Education*

Grade	Highly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5	*Mean & Standard Deviation
4	15 (13.2%)	28 (12.1%)	98 (7.5%)	134 (11.3%)	123 (19.3%)	3.81 (SD=1.06)
5	8 (7.0%)	26 (11.2%)	118 (9.1%)	144 (12.2%)	93 (14.6%)	3.74 (SD=0.96)
6	13 (11.4%)	24 (10.3%)	123 (9.5%)	169 (14.3%)	97 (15.2%)	3.73 (SD = 0.97)
7	31 (27.2%)	60 (25.9%)	332 (25.5%)	295 (24.9%)	124 (19.5%)	3.50 (SD = 0.95)
8	30 (26.3%)	56 (24.1%)	404 (31.1%)	263 (22.2%)	118 (18.5%)	3.44 (SD = 0.92)
9	13 (11.4%)	37 (15.9%)	220 (16.9%)	179 (15.1%)	78 (12.25%)	3.51 (SD = 0.92)

Note: \* From 1 = highly disagree to 5 = highly agree

An analysis of variance also showed that a significant effect of the values of creativity education in school was found between the primary and secondary school students [ $F(5, 3448) = 13.393, p < 0.001$ ].

### **Important Components of Creativity Education**

Overall, the top three important elements of learning creativity education were valuing a creative mind for the future, valuing my education development, and valuing the heart of cultural creativity (see Table 4).

Table 4 *The Number of Student Respondents Regarding the Importance of Creativity in School Education*

Values	Number of Responses
Valuing a creative mind for the future	2,467
Valuing my education development	1,397
Valuing the heart of cultural creativity	1,394
Valuing the achievements of human society	944
Valuing my nation (e.g., cultural and economic development)	854
Valuing my city (e.g., cultural and economic development)	832
Others	36

Thirty-six students chose other values such as having good teachers is more essential, valuing critical thinking, knowing the education of philosophy, knowing the education of psychology, an education in the humanities, knowing the arts, knowing about the earth, knowing about gender studies, knowing about world history, etc.

Teaching Subjects that Students Liked for Creativity Education The students were asked to indicate their level of agreement that school subjects should include creativity in school learning (from 1 = strongly disagree to 5 = strongly agree). The surveyed subjects included Chinese language education; English language education; mathematics education; science education; technology education; personal, social, and humanities education; arts education (including music and visual arts); and physical education. The top three preferred school subjects among the students were arts education ( $M = 4.05$ ,  $SD = 1.06$ ), science education ( $M = 3.90$ ,  $SD = 1.08$ ), and technology education ( $M = 3.87$ ,  $SD = 1.04$ ) (see Table 5).

Table 5 *The Overall Average Mean Scores of the Students Preferences for the Integration of Creativity Into School Subjects*

Rank	School Subjects	Mean*	Standard Deviation
1	Arts education	4.05	1.06
2	Science education	3.90	1.08
3	Technology education	3.87	1.04
4	Physical education	3.54	1.17
5	Mathematics education	3.48	1.16
6	Personal, social, and humanities education	3.45	1.07
7	English language education	3.27	1.15
8	Chinese language education	3.25	1.14

Besides the subjects of science education, personal, social, and humanities education, and arts education, the students in Grade 4 scored the highest for the incorporation of creativity in most school subjects among the six grades (see Table 6).

#### ***Students Attitudes Towards Their Schools Encouragement of Creativity Education***

Schools are supposed to support the development of students creativity, and it is one of the important environments in which creativity activities take place. In this study, the students were asked about their agreement of whether their school environment encouraged the development of their creativity (from 1 = highly disagree to 5 = highly agree). The average mean was 3.45 ( $SD = 1.24$ ). Among the 3,510 valid answers, 1,133 (32.2%) opted for agree and 515 (14.6%) for highly agree. Within the six grades, the students in Grade 4 obtained the highest scoring mean (see Table 7).

The cross-tabulation calculations showed that 120 (23.3%) Grade 4, 77 (15.0%) Grade 5, 78 (15.1%) Grade 6, 107 (20.8%) Grade 7, 86 (16.7%) Grade 8, and 45 (8.7%) Grade 9 students chose highly agree for their schools support in reinforcing their creativity. Using the one-way ANOVA, there was a significant difference found between the primary and secondary school students regarding their perceived encouragement given by their schools for creativity education

Table 6 Average Mean Scores and Standard Deviation (SD) by Grade

School Subjects	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9
Chinese language education	3.54 (SD = 1.21)	3.41 (SD = 1.16)	3.37 (SD = 1.17)	3.25 (SD = 1.07)	3.14 (SD = 1.19)	3.02 (SD = 1.13)
English language education	3.46 (SD = 1.28)	3.41 (SD = 1.22)	3.44 (SD = 1.14)	3.24 (SD = 1.08)	3.18 (SD = 1.09)	3.07 (SD = 1.12)
Mathematics education	3.89 (SD = 1.18)	3.60 (SD = 1.12)	3.53 (SD = 1.19)	3.45 (SD = 1.14)	3.35 (SD = 1.13)	3.33 (SD = 1.14)
Science education	4.15 (SD = 1.15)	4.21 (SD = 1.15)	4.18 (SD = 1.06)	3.80 (SD = 1.05)	3.68 (SD = 1.06)	3.81 (SD = 1.06)
Technology education	4.19 (SD = 1.00)	4.15 (SD = 1.01)	4.08 (SD = 1.00)	3.78 (SD = 1.00)	3.68 (SD = 1.07)	3.76 (SD = 1.00)
Personal, social, and humanities education	3.73 (SD = 1.29)	3.78 (SD = 1.16)	3.62 (SD = 1.13)	3.45 (SD = 1.01)	3.43 (SD = 1.05)	3.42 (SD = 1.11)
Arts education	4.04 (SD = 1.17)	4.26 (SD = 1.02)	4.25 (SD = 0.97)	4.05 (SD = 1.06)	3.91 (SD = 1.08)	4.07 (SD = 1.01)
Physical education	3.86 (SD = 1.32)	3.71 (SD = 1.25)	3.69 (SD = 1.20)	3.57 (SD = 1.12)	3.39 (SD = 1.12)	3.35 (SD = 1.08)

Table 7 Average Mean Scores of the Students Agreement of the Encouragement of Their Schools in the Development of Creativity by Grade

Grade	Mean*	Standard Deviation	N	Total Valid %
4	3.75	1.08	401	11.5%
5	3.60	1.00	392	11.5%
6	3.57	1.03	432	12.4%
7	3.42	0.92	849	24.3%
8	3.30	0.92	877	25.1%
9	3.31	0.90	531	15.2%

[ $F(5, 3474) = 17.299, p < 0.001$ ].

### **Constraints of School Examinations in Relation to Creativity Education**

The students were asked the extent to which their school examinations limited the development of their creativity. The Grade 4 students maintained a comparatively low responding score among the six grades (see Table 8).

The cross-tabulation calculations also demonstrated that the secondary school students had a higher agreement regarding the drawback of school examinations in the development of their creativity: 73 (11.9%) Grade 4, 82 (13.4%) Grade 5, 66 (10.8%) Grade 6, 142 (23.2%) Grade 7, 157 (25.7%) Grade 8, and 88 (14.4%) Grade 9 students chose highly agree, respectively. Adopting the one-way ANOVA, there was a significant difference found between the primary and secondary school students regarding their perceived encouragement given by their schools in the development of creativity [ $F(5, 3474) = 12.628, p < 0.001$ ].



Table 8 *Average Mean Scores of the Students Agreement of the Encouragement of Their Schools in the Development of Creativity by Grade*

Grade	Mean*	Standard Deviation	N	Total Valid %
4	2.857	1.39	402	11.5%
5	2.95	1.41	392	11.2%
6	2.80	1.30	432	12.4%
7	3.11	1.08	848	24.3%
8	3.22	0.92	877	25.1%
9	3.26	1.08	529	15.1%

## DISCUSSION

Creativity is an essential aspect of teaching and learning that is influencing education worldwide, including Hong Kong's education policy and teaching practice, and is shaping the possibilities of twenty-first-century learners. In the last two decades, creativity has been identified as a generic skill to be nourished in our students at all levels in the key learning areas (Education Bureau, 2016; Education Commission, 2006). Despite pedagogical practices in the school curriculum that have been evolving over the years, there have been few concerns about the growth of creativity in school education in response to students beliefs and needs. This current study found that significant differences in students perceptions of their creative potential, values of creativity education in life, the importance of creativity education in school, and their beliefs on and the limitations of school examinations in regards to creativity education were shown between the primary and secondary school students. Such differences may conclude that creativity education aligns with the recognition of individual students creative potential, the influence of creativity in learning, their preferred values and learning subjects in creativity education, their beliefs on the encouragement of creativity education by their schools, and the limits of school examinations on creativity education across primary and secondary school education. Based on the three research questions and the data drawn from the survey findings from the students in this study, this section will address three pairs of relationships for discussion focused on the two sectors of primary and secondary school students: (1) the students perspectives of their creative potential and their influential sources of creativity education; (2) the association between the values of creativity education and the teaching subjects; and (3) their perceived encouragement given by their schools and the restraints of school examinations on creativity education.

First, the students self-assessment of their creativity presumed that such potential supported the development of their creativity, and that both family and school environments played an important role in enhancing the students creativity. With increasing grade levels, the students perceptions of their creativity potential to make life more interesting decreased accordingly (though a slight increase from Grade 8 to Grade 9 was found, see Table 1) (Lau et al., 1998). The one-way ANOVA was also found to be significant between the primary and secondary school students in respect to their self-evaluation of their creative potential. The data implies the importance of intrinsic motivation for creativity in different educational environments (Amabile, 1983; Gao et al., 2020; Simonton, 1999), as well as an awareness of the relationships between teachers and students and parents and students, particularly when students reached senior grades.

As mentioned earlier, 1,097 student respondents claimed that school music teachers influenced their creativity, 394 acknowledged parental influence, and 299 reported the Internet. For 520 students (14.8% of the total), they assessed themselves as highly agree in cultivating their creative potential to make life more interesting, and one-third opted for school music teachers (126 answers, 33.2%) as the most influential sources. A few student respondents also answered that having good teachers was sufficient for them to develop their creativity. At the heart of these ideas is creativity education as centred solely in the mind of the teachers and more as a partnership between teachers and students, with the teachers as the major architects of learning (T. Davies, 2006; Gao et al., 2020; Sparks, 2020; Yuan et al., 2019). On the one hand, the findings indicated that schoolteachers (particularly music teachers) assume more of the role of the transmission of knowledge, and they shape students construction of their personal understanding of creativity. With an understanding of how music teachers are related, we should consider music central to child development and pose the question of how we can provide rich opportunities for students engaged in music activities both inside and outside

the school (or classroom) environment. Though school music teachers were a very important source of creativity, the distinctive source of students' creativity education was also shared among different subject teachers, parents, siblings, peers, the Internet, mass media, and popular musical idols (see Table 2). This study also indicated that there was convincing evidence of the strong influence of parents in creativity education, particularly among the secondary school students (see Table 2). A key role in developing the creativity of students of all ages is played by formal and informal education. How to shape students' personality traits and attitudes conducive to creativity is a challenge to teachers, parents, and social media. It is therefore suggested that schools, parents, and other sources should encourage students whenever they are engaged in creative activities in schools and at home and help them to develop their potential (Budge et al., 2013; Conradt & Bogner, 2018; Corso & Robinson, 2013; Williamson, 2011).

Second, the function of schools should provide opportunities for students to explore and experience creativity in many different ways. Education for creativity can be included in the whole curriculum and the whole process of education in school. Though Grade 4 students in this study maintained a higher responding mean among the six grades, there was not a big difference found in their perceptions of the values of creativity education (see Table 3). The survey findings also revealed that the most preferred important element of the values of creativity education was viewed as valuing a creative mind for the future (see Table 4). This domain of values may be understood as approaches and skills in life as part of the students' intellectual composition in a complicated and fast-changing world. The other top preferred creative values of educational development and cultural creativity were referred to as other forms of education that developed the students' capacities for original ideas and action through educational and cultural development. Based on the survey findings, creativity seems to be linked to specific subjects, such as the arts, science, and technology (see Tables 5 and 6). Though this study demonstrated that creativity should not be confined to specific school subjects, it had a high relative occurrence in arts education. Putting education at the heart of debates on creativity, we should establish the importance of creativity in teaching and learning in school and forge the connection between the two cultures of the arts and the sciences (and even technology) (Andreasen, 2012; Simonton, 1999; Zare, 2011). Telling the story of how arts, science, and technology education can work together to create a new creativity education may be more relevant to the relationship between the arts and the sciences (including technology) in the needs of the twenty-first century (Braund & Reiss, 2019; Charyton, 2015; Newton, 2012).

Creative arts in school are also a crucial ingredient in the making of creative life in education. The diverse components of the cultural sector include film, dance, music, new media arts, visual arts, etc. Enhanced communication skills, increased self-confidence, and self-expression are among the many reasons for teaching the arts in school (Curriculum Development Council, 2002). The arts are as important as academics, and the survey findings of this study may help our schools, teachers, and parents hold the belief that both arts and other teaching subjects can be equally important. It is often argued that arts teachers as a matter of course are predisposed to creative risk-taking. Teaching creativity aims at encouraging creativity across all subjects, not only the arts. This study also realised that Grade 9 students were the only grade to question how to implement creativity education across the curriculum of different subjects for primary and secondary education. Educators and educational policymakers should also consider why and how some teaching subjects such as Chinese and English language education (see Tables 5 and 6) can be addressed appropriately in and across the school curriculum in creativity education, as well as how we can use creativity in STEAM education to inspire and to support students' creativity while collaborating on an application of knowledge, ability, and skills to solve their daily life problems.

Third, schools are important institutions for students' creativity development, and the role of schools is required in guiding students towards creativity to take advantage of modern developments. Nonetheless, the examination-oriented education system in Hong Kong has been blamed for the impoverishment of student creativity. Comparatively, the primary school students of this study obtained higher responding means and had a larger percentage that opted for highly agree in the development of creativity with the encouragement and support given by their schools. However, this attitude changed in a negative way as the class levels increased (though Grade 6 obtained a slightly higher responding mean than Grade 5). In this study, statistically significant differences between secondary school students were found regarding their perceptions of the constraints of school examinations in developing creativity education ( $p < 0.005$ ), whereas there were no statistically significant differences between the primary school respondents ( $p > 0.005$ ). To determine whether a statistically significant relationship was present between the students' perceptions of encouragement supported by their schools and the limits of school examinations on creativity education, a Pearson  $r$  was calculated. For the sample of primary school students, the data was statistically significant (though it was weak) ( $r(1223) = -0.066$ ,

$p < 0.05$ ). For the sample of secondary school students, the finding was not statistically significant ( $r(2253) = -0.03, p > 0.05$ ).

Despite various education reforms implemented in Hong Kong since the early 2000s, the local education system remains highly examination-oriented (Marginson, 2011), and interest in creativity declined among the students (particularly in the senior grades) in this study, which may have coincided with their participation in school examinations. The limits on creativity are caused by increased academic examinations. At the end of secondary school education, all students sit for the HKDSE in order to enrol into a four-year university for their first degree programmes. Under the present education system, while primary school education remains unaffected, examinations play a pivotal role in students success for secondary school students (particularly the senior grades) in receiving a university education. In response, the Hong Kong Government uses examinations as gatekeepers of access to schooling and indicators of learning outcomes. Such education that holds examinations as its core element downplays the ultimate purpose of schooling in creativity education. Clearly, teachers play an instrumental role in determining whether or not student creativity is undermined or minimised by the use of assessments in the classroom. Creative classroom practices should be considered as primary and secondary education looks to prepare students for the future.

## CONCLUSION AND IMPLICATIONS

This study showed that the students had an encompassing view of creativity education. Based on the results of the survey findings, this study found that there was a discrepancy between senior primary and junior secondary school students in perceiving creativity and the ways they claimed to foster or to limit creativity during their school learning. The high evaluation of students perceptions of creative potential supported the development of their creativity, and teachers, parents, and school environments played an important role in cultivating students creativity. It is even more necessary for teachers and parents to know the importance and developmental benefits of creativity. Students should be provided with opportunities to be creative whenever possible within and outside the school environment. Generally, most students in this study considered that the most significant component of the value of creativity education was education for a creative mind for the future. There are questions of how to bring the two cultures of the arts and the sciences centred upon education for a creative mind in life. Careful planning for such creative learning experiences is important and perhaps best done in the whole school curriculum. This study also demonstrated that students highly valued arts learning that might navigate their creativity in a well-rounded educational experience. With twenty-first century firms emphasizing the value of creativity in school education, it is important that teachers across diverse teaching and learning disciplines are allowed to value the trait in their students. We should get back to a place where the creativity of students is just as important as passing a test or an examination for the benefit of successful education.

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