

Definitions of Creativity by Kindergarten Stakeholders: An Interview Study Based on Rhodes' 4P Model

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ABSTRACT

In 2017, Hong Kong included the notion of creativity in its official kindergarten curriculum framework. However, the curriculum did not define what creativity means in relation to 3- to 6-year-old children. Stakeholders such as teacher educators, kindergarten principals, and teachers may have different understandings of creativity, possibly leading to difficulties in implementing this notion into practice. We adopted Rhodes' 4P model to examine Hong Kong kindergarten stakeholders' definitions of creativity in relation to young children. We posed two research questions: (1) What are the themes and elements that Hong Kong kindergarten stakeholders refer to in their responses when defining the notion of creativity? (2) How do these stakeholders differ in their responses when defining this notion? We asked 50 kindergarten stakeholders (20 teacher educators, 10 principals, and 20 teachers) to define the notion of creativity using their own words. Content analysis, descriptive statistics, and multiple Fisher's exact tests (2×2) were used to analyze their responses. We found that all stakeholders possessed a partial understanding of creativity, especially teachers.

Stakeholders' definitions mainly focused on the importance of creative processes. Other components such as the learning environment, the traits of a person, and the creation of products were rarely alluded to in their definitions. We conclude that there is an urgent need to explicitly articulate and conceptualize the notion of creativity in kindergarten curriculum frameworks, such as Hong Kong's curriculum Guide. This would allow stakeholders to find common ground in the teaching and learning of creativity. Implications for the enhancement of creativity education are discussed.

KEYWORDS:

Creativity; kindergarten education; Hong Kong; teachers; principals; teacher educators; Rhodes' 4P

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INTRODUCTION

In 2017, Hong Kong included the notion of creativity in the official kindergarten curriculum framework, merging this notion with the arts (Curriculum Development Council [CDC], 2017). The curriculum suggests that pedagogical activities should “stimulate children’s creativity and imagination, and encourage them to enjoy participating in creative works” (CDC, p. 24, 2017). However, despite the great interest in fostering children’s creativity, the curriculum does not clearly articulate what creativity means in relation to young children within the Hong Kong context. Stakeholders such as teacher educators, kindergarten principals, and teachers may have different understandings of creativity, possibly leading to difficulties in implementing this notion into practice (Cho et al., 2017).

The purpose of this study is to understand how kindergarten stakeholders, specifically teacher educators, principals, and teachers, define the notion of creativity in relation to 3- to 6-year-old children. There are two subsections in the literature review. In the first subsection, we introduce the 4P’s model (Rhodes, 1961) as our theoretical framework to explore stakeholders’ definition of creativity. This model consists of four strands within creativity (i.e., *process*, *product*, *person*, and *press*). In the second subsection, we examine prior studies that have employed the 4P’s model to investigate how stakeholders in the field of education understand creativity.

LITERATURE REVIEW

Theoretical framework: Rhodes’ 4P model

Creativity is a term frequently employed in everyday language. In fact, creativity constitutes an overarching part of human development throughout the lifespan (Byun et al., 2023). Numerous studies indicate that the early years are critical to fostering children’s creative potential, which lays the foundation of their whole-person development in the future (Dere, 2019; Yusuf, 2009). This is the reason why international organizations such as the Organisation for Economic Co-operation and Development [OECD] (2017) have been actively advocating for integrating creativity within school curricula around the world.

Yet, due to the multifaceted nature of creativity, it is difficult to define this notion and universally accepted definitions do not exist (Fox & Schirmacher, 2014; Newton & Newton, 2014). As indicated by Han (2003), the notion of creativity varies across different fields, or in other words, it is domain-specific. In the field of early childhood education (ECE), which is the focus of this study, the definition of creativity may not be necessarily the same as in the other fields. The notion of creativity is also age-specific, suggesting that individuals from different age groups can be creative differently (Hui et al., 2019). The exploration of creativity specifically from the perspective of ECE would be vital for stakeholders to move forward regarding children’s creativity development.

In this study, we adopted the 4P's model proposed by Rhodes (1961) as our theoretical framework to examine stakeholders' responses when they define the notion of creativity in relation to 3- to 6-year-old children. While multiple creativity frameworks have been proposed by scholars in recent decades (Doyle, 2019; Glăveanu et al., 2019), the 4P's model remains highly influential in the field of education, and researchers keep using it to frame and conceptualize contemporary studies (Kirişçi, 2023; Sali & Özbay Özdemir, 2023). This could be due to the simplicity and comprehensiveness of the 4P's model, which makes it particularly powerful for practitioners to understand that creativity involves several components. According to the 4P's model, the notion of creativity can be divided into four strands—*process*, *product*, *person*, and *press* (Rhodes, 1961). These four interrelated, yet stand-alone, strands display the multiple components or aspects of creativity, helping us to gain a better understanding of this notion (Said-Metwaly et al., 2017). In the following paragraphs, we elaborate on each of these four strands in detail.

Process

The first strand within the 4P's model is *process*, which can be understood as the mental mechanism that occurs when an individual engages in creative or activities (Kozbelt et al., 2010; Rhodes, 1961). According to Rhodes (1961), a few essential questions within *process* are “what causes some individuals to strive for original answers to questions while the majority are satisfied with conventional answers?”, “are the processes identical for problem solving and for creative thinking?”, and “what are the stages of the thinking process?” (p. 308). These questions reveal that process refers to the mechanism that has been employed by an individual to brainstorm, generate, and refine a creative idea. In fact, *process* includes a variety of actions and behaviors exhibited by an individual, both at the conscious level and subconscious level (Sali & Özbay Özdemir, 2023). Some of these actions can be exploring the environment, solving a problem, seeking answers, expressing ideas verbally or non-verbally, and independent thinking (Compton, 2007; Runco, 2008). To develop creativity, individuals may need to go through some sequential steps in their learning (Fox & Schirrmacher, 2014). These steps can include “sensing problems or gaps in information, forming ideas or hypotheses, testing and modifying these hypotheses, and communicating the results” (Torrance, 1977, p. 7).

Product

The second strand within the 4P's model is *product*. This strand emphasizes the final outcome that is being produced by an individual, as a result of creative learning activities (Rhodes, 1961). *Product* is the result of an idea being transmitted into a tangible artifact (e.g., words, paint, clay, or other materials) or tangible innovation (e.g., new technologies). By examining these tangible artifacts and innovations, we could potentially trace back to the moment of inspiration and events that led to creative ideas (Rhodes, 1961). In today's rapidly changing world, new challenges and problems arise constantly. Tangible artifacts and innovations provide solutions to these problems and drive progress in contemporary societies (Tan, 2019). For these reasons, among others, scholars such as

Sali and Özbay Özdemir (2023) have argued that *product* is one of the most essential components within the definition of creativity.

The literature regarding *product* has focused on two dimensions, namely originality and usefulness (Gruszka & Tang, 2017). Originality refers to the production of ideas that are novel and innovative compared to other ideas that are currently available (Runco & Jaeger, 2012). The level of originality demonstrated by an individual can determine their capability to think outside the box, explore alternative perspectives, and challenge established conventions (Dere, 2019; Newton & Newton, 2014). Usefulness refers to the practicality of an idea and highlights its contribution to the betterment of a society (Yue & Rudowicz, 2002). Specifically, a useful idea can create solutions that address real-world problems and improve the quality of life for individuals.

Person

The third strand in Rhodes' (1961) framework is *person*. It encompasses the personality, intellect, temperament, traits, habits, and attitudes that are directly or indirectly related to the aptitude for being creative. Traditionally, some scholars suggested that creativity is inborn for anyone, highlighting that all individuals are creative (Duffy, 2006). Some other scholars suggested that there are certain personal traits/characteristics that make an individual creative, which are the prerequisites of creativity (MacKinnon, 1966). As such, the strand of *person* focuses on identifying creative individuals by examining their personal traits/characteristics. For example, Ata-Akturk and Sevimli-Celik (2020) indicated that creative individuals are typically imaginative and innovative, and able to come up with a variety of ideas. Dere (2019) revealed that creative individuals are flexible in their learning and can easily adapt to different learning environments, teaching approaches, and models. Furthermore, Dane (2010) and Baer (2015) indicated that the mastery of certain skills (e.g., art skills), knowledge (e.g., understanding the history of arts), and languages (e.g., sufficient vocabulary) could lead to creativity.

Press

Finally, the fourth strand is *press*. This strand refers to the characteristics and conditions of an environment (e.g., classroom) where creativity emerges (Rhodes, 1961). The learning environment is widely recognized as an integral aspect of the definition of creativity (Diakidoy & Kanari, 1999). Although each individual perceives the environment uniquely (Rhodes, 1961), all individuals form ideas in response to the stimuli and sensations they receive. When individuals learn in an environment where they feel enjoyable and relaxed, their creativity tends to flourish (McDevitt & Ormrod, 2014). In fact, Sali and Özbay Özdemir (2023) suggested that *press* (i.e., learning environment) can influence the other three strands within the 4P's model (i.e., *process*, *product*, and *person*). In ECE settings, a rich environment with sufficient learning materials, time, and space will allow young children to solve problems in different ways (Yeung & Bautista, 2023). Furthermore, the atmosphere of teaching and learning varies across different learning environments. While some learning environments cater to individuals' differences and provide more freedom for learning, other environ-

ments allow little freedom for self-exploration and free investigation (Leung et al., 2023; Pakarinen et al., 2023).

Prior studies on how stakeholders in education understand creativity

The 4P's model (Rhodes, 1961) has informed recent studies regarding how stakeholders in the field of education understand the notion of creativity. As mentioned, while the model was proposed more than 60 years ago, it provides a simple yet comprehensive framework for education stakeholders to understand that creativity involves a wide range of components beyond personal factors. Sali and Özbay Özdemir (2023) employed the 4P's model to investigate how pre-service kindergarten teachers ($n = 60$) in Turkey perceive the notion of creativity. Participants were asked to explain the concept of creativity by drawing a picture and writing a description for the picture they drew. These drawings and descriptions were analyzed using the 4P's model (Rhodes, 1961). Results showed that participants' definitions of creativity were most frequently alluded to *process*, followed by *person*, *product*, and *press*. Specifically, for *process*, participants' definitions alluded to the actions of generating a large number of ideas, looking at events from different angles, and making creations. In terms of *person*, participants mentioned various personal traits that they deemed were highly important. These traits included being able to develop a different perspective, having a vivid imagination, being able to think freely, having courage, self-confidence, ambition, open-mindedness, etc. For *product*, some participants reported that it is critical for the final learning outcome to be either original or functional/useful. Finally, for *press*, just a few participants reported two characteristics of the environment that were closely related to the definition of creativity—being free without restriction and being natural. It is concluded that although all four strands are important to the notion of creativity, some strands (especially *product* and *press*) tend to be overlooked by participants.

Drawing on the 4P's model, the interview study by Kirişçi (2023) explored how primary and middle school teachers ($n = 14$) in Turkey define gifted students' creativity. Unlike the results in the first study, Kirişçi (2023) found that participants' definitions of creativity alluded most frequently to *product*, followed by *person*, *process*, and *press*. Regarding *product*, most participants used the terms original, unusual, and novel to describe the creative learning outcomes. Note that these terms resonate with the notion of originality. Only a limited number of participants described creative learning outcomes as being functional/useful. For *person*, many participants suggested that creativity is closely related to personal traits such as being open-minded, responsible, inquisitive, observant, sensitive to changes, and good communicators. Regarding *process*, most participants intrinsically associated the notion of creativity to thinking. Other participants also defined creativity as developing different approaches, solving problems, exploring something, and transforming/changing something that already exists into a new form. Only one participant referred to *press* in her definition of creativity. This participant mentioned that it is vital to prepare an environment that allows children's creativity to thrive. However, she did not provide more elaboration specifically. Overall,

Kirişçi (2023) concluded that participants' definitions of creativity tended to be somewhat limited and not comprehensive.

Although these studies have made significant contributions to the field of education by further exploring how teachers understand creativity, there are two major knowledge gaps that need to be filled. First, to the best of our knowledge, previous studies using Rhodes' 4P model have been conducted predominantly in Turkey. Results from Turkey may not be generalizable to other jurisdictions and countries of the world. Second, previous studies have focused on pre- or in-service teachers, without investigating other important stakeholders, such as principals and teacher educators. Currently, little is known about principals' and teacher educators' understanding of creativity. The present study seeks to obtain data that will help to address these knowledge gaps in an Asian society, specifically Hong Kong.

RESEARCH GOAL AND QUESTIONS

In this study, our goal was to examine how Hong Kong kindergarten stakeholders, specifically teacher educators, principals, and teachers, define the notion of creativity in relation to 3- to 6-year-old children. We posed two research questions:

- Question 1 What are the themes and elements that Hong Kong kindergarten stakeholders (i.e., teacher educators, principals, and teachers) refer to in their responses when defining the notion of creativity?
- Question 2 How do these stakeholders differ in their responses when defining the notion of creativity?

METHOD

Participants

A total of 50 local kindergarten stakeholders working in different tertiary institutes and kindergartens were recruited across Hong Kong SAR China, which is an urban city with around seven million people. Given the exploratory nature of the study, the participants included 20 teacher educators in ECE (18 females, two males), 10 kindergarten principals (nine females, one male), and 20 kindergarten teachers (18 females, two males). The disparity between the numbers of female and male participants is because the ECE sector in Hong Kong has an over-representation of women, especially in the positions of kindergarten teachers, principals, and university lecturers (Census and Statistics Department, 2022). Regarding working experience in their respective roles, 36% of them ($n = 18$) had 5–9 years of experience, followed by 22% ($n = 11$) with more than 20 years, 18% ($n = 9$) with 1–4 years, 12% ($n = 6$) with 10–14 years, and finally 12% ($n = 6$) with 15–19 years of experience.

For the highest level of education, 50% of them ($n = 25$) possessed a master's degree, 32% of them ($n = 16$) possessed a bachelor's degree, 16% ($n = 8$) possessed a doctoral degree, and 2% ($n = 1$) possessed a higher diploma. There were three criteria for selecting the participants. First, all participants had to be familiar with the local kindergarten system. Second, they had at least one year of working experience in the field. Third, they declared their interest and willingness to participate in the study. Table 1 shows the detailed demographics within each group of stakeholders.

Table 1. Demographic information of the stakeholders

	Teacher educators ($n = 20$)	Principals ($n = 10$)	Teachers ($n = 20$)	Total ($n = 50$)
Gender				
Female	18 (90%)	9 (90%)	18 (90%)	45 (90%)
Male	2 (10%)	1 (10%)	2 (10%)	5 (10%)
Working experience				
1–4 years	7 (35%)	1 (10%)	1 (5%)	9 (18%)
5–9 years	4 (20%)	3 (30%)	11 (55%)	18 (36%)
10–14 years	4 (20%)	1 (10%)	1 (5%)	6 (12%)
15–19 years	2 (10%)	2 (20%)	2 (10%)	6 (12%)
More than 20 years	3 (15%)	3 (30%)	5 (25%)	11 (22%)
Highest level of education				
Doctoral degree	8 (40%)	0 (0%)	0 (0%)	8 (16%)
Master's degree	12 (60%)	9 (90%)	4 (20%)	25 (50%)
Bachelor's degree	0 (0%)	1 (10%)	15 (75%)	16 (32%)
Higher Diploma	0 (0%)	0 (0%)	1 (5%)	1 (2%)

Data collection instrument

Data were collected using semi-structured individual interviews. The interview began with demographic questions. We asked participants to indicate their role in the field (i.e., teacher educator/principal/teacher), gender, working experience in their current position, and the highest level of education. We then posed the following question: "How would you define the notion of creativity, in general, in relation to young children? You do not need to give us a formal definition of creativity. Please feel free to use your own words." Rather than asking participants to provide a formal or scholarly definition, we emphasized that we were interested in exploring their own intuitive understandings of this notion. We piloted the interview protocol with six kindergarten teachers and one teacher educator, ensuring that the items were clear to them.

Procedure

Ethics approval was obtained from the Human Research Ethics Committee (HREC) at the authors' university. To recruit participants, we combined the convenience sampling strategy (Etikan et al.,

2016) and the snowball sampling strategy (Mukherji & Albon, 2015). For principals, an invitation email explaining the overall aim of our study was sent to 50 kindergartens in different districts across Hong Kong. These principals were chosen because they had existing partnerships or other work relationship with the research team, making it convenient to approach them for participation in the study. Once the principals indicated their interests and willingness to participate, we asked them to further extend the invitation to the teachers in their respective schools. To recruit teacher educators, a similar invitation email was sent to potential interviewees who worked for ECE Departments of local universities and colleges. Individual interviews were arranged at a time that was convenient to participants. All participants gave us consent and understood the focus and content of the interview. They were informed that participation was voluntary and anonymous, and that they could withdraw from the study at any time without negative consequences. Interviews were conducted and audio-recorded online, via Zoom. All recorded audios were transcribed for analytical purposes.

Data analysis

Content analysis was used to analyze stakeholders' definitions of creativity. First, we used the directed content analysis approach (theory-driven). More specifically, we followed the 4P's model proposed by Rhodes (1961) to categorize stakeholders' definitions into the four non-mutually exclusive themes listed below:

- (1) Person: The stakeholder refers to what makes a person creative at an individual level (e.g., characteristics, traits, attributes).
- (2) Process: The stakeholder refers to the procedure and/or actions used by a person in the creative process.
- (3) Product: The stakeholder refers to the results/outcomes of the creative process.
- (4) Press: The stakeholder refers to the structural characteristics of the environment in which creativity occurs.

Second, we used conventional content analysis approach (data-driven) to analyze the specific elements of definitions associated with each of these themes. In the Results section, we present the 22 non-mutually exclusive elements that emerged from this data-driven analysis.

The first author independently coded stakeholders' definitions into the four themes and 22 elements. Then, an external coder specialized in the field of ECE was trained and coached by the first author in the usage of the various analytical codes. This external coder independently coded all definitions. Subsequently, the first author and the external coder shared their respective codifications and discussed the disagreements until at least 80% of agreements were reached for all codes. Inter-rater reliability (Cohen's kappa) was higher than 0.61 for all themes and elements, which indicates a substantial agreement among the two coders. The codification by the first author was used to determine the final output of the analysis.

Descriptive statistics (e.g., average, minimum, maximum) were conducted to analyze the number of stakeholders that alluded to each of the themes and elements. We used multiple Fisher's exact tests (2x2) to examine whether any specific group of stakeholders would proportionately refer more to certain themes or elements than the others.

RESULTS

Themes

Table 2 and Figure 1 present the frequencies and percentages for different stakeholders under each theme. Overall, stakeholders' definitions of creativity were most frequently associated to process (88%), followed by *press* (48%), *person* (46%), and finally *product* (30%). Notably, the percentages of teacher educators that alluded to *press*, *person*, and *product* were higher than that of principals and teachers. In other words, the definitions given by teacher educators were more comprehensive. In addition, we found that teachers predominantly defined creativity as associated to *process*, but considerably less associated to the other three themes.

Table 2. Overall Frequencies of the Four Themes

Themes	In total	Teacher Educators (n = 20)	Principals (n = 10)	Teachers (n = 20)
Process	44 (88%)	18 (90%)	7 (70%)	19 (95%)
Press	24 (48%)	10 (50%)	5 (50%)	9 (45%)
Person	23 (46%)	16 (80%)	3 (30%)	4 (20%)
Product	15 (30%)	11 (55%)	2 (20%)	2 (10%)

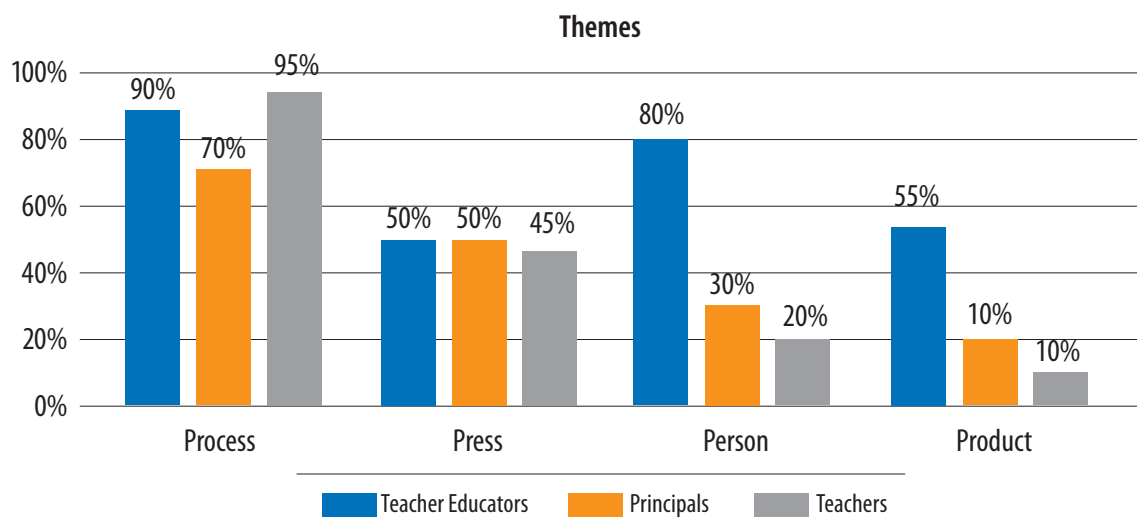


Figure 1. Overall Frequencies obtained by the Four Themes

As assessed by Fisher's exact tests, there was a statistically significant difference ($p < .05$) across different stakeholders who referred to *person* ($p = .001$) and *product* ($p = .006$). Post hoc analysis involved pairwise comparisons using multiple Fisher's exact tests (2×2) with a Bonferroni correction. Statistical significance was accepted at $p < .016667$. We found that the proportion of teacher educators who referred to *person* and *product* was significantly higher than that of teachers.

Elements

As mentioned above, our bottom-up qualitative analysis identified 22 elements as associated to stakeholders' definitions of creativity: Six of them associated to *process* (i.e., *expressing*, *thinking*, *producing*, *exploring*, *solving problems*, and *questioning*), seven associated to *press* (i.e., *freedom*, *space*, *time*, *enjoyable/happy*, *materials*, *child-centered*, and *relaxed*), seven associated to *person* (i.e., *knowledgeable*, *innovative*, *imaginative*, *inborn*, *skillful*, *literate*, and *flexible*), and two associated to *product* (i.e., *new/original* and *reinventive*). In the following sub-sections, we present the definitions and percentages for each element in detail.

Process

Table 3 shows the definitions of the six elements associated to *process*, including *expressing*, *thinking*, *producing*, *exploring*, *solving problems*, and *questioning*.

Table 3. Definitions of Elements Associated with Process

Elements of Process	Definitions
Expressing	Refers to the expression of ideas, emotions, and/or thoughts.
Thinking	Refers to the engagement in thinking processes.
Producing	Refers to the production of something that can be seen and/or heard by others.
Exploring	Refers to the process of exploration with children's five senses and/or bodies.
Solving problems	Refers to the solving daily life problems.
Questioning	Refers to asking questions and/or collecting answers to stimulate thinking.

Table 4 presents the frequencies of these elements in participants' responses. As can be observed, the elements most frequently alluded to within this theme were *expressing* (38%) and *thinking* (36%). *Questioning* (2%) and *solving problems* (14%) were least frequently alluded to within this theme. Based on the results of Fisher's exact tests, there was no statistically significant difference in the proportion of stakeholders across the three groups who referred to these elements ($p > .05$). In addition, note that process was the theme most frequently alluded to by all stakeholders.

Table 4. Frequencies of Elements Associated with Process

Elements of Process	In total	Teacher Educators (n = 20)	Principals (n = 10)	Teachers (n = 20)
Expressing	19 (38%)	7 (35%)	5 (50%)	7 (35%)
Thinking	18 (36%)	9 (45%)	1 (10%)	8 (40%)
Producing	17 (34%)	5 (25%)	2 (20%)	10 (50%)
Exploring	12 (24%)	5 (25%)	3 (30%)	4 (20%)
Solving problems	7 (14%)	3 (15%)	1 (10%)	3 (15%)
Questioning	1 (2%)	1 (5%)	0 (0%)	0 (0%)

Press

Table 5 shows the definitions of the seven elements associated to *press*, including *freedom*, *space*, *time*, *enjoyable/happy*, *materials*, *child-centered*, and *relaxed*.

Table 5. Definitions of Elements Associated with Press

Elements of Press	Definitions
Freedom	Refers to an environment where children have the freedom to do what they want.
Space	Refers to an environment where children are given enough space for creativity to emerge.
Time	Refers to an environment where children have sufficient time to engage in creative tasks.
Enjoyable/happy	Refers to an environment where children's enjoyment and/or happiness are emphasized and valued.
Materials	Refers to an environment where children have sufficient materials for exploration and/or creation.
Child-centered	Refers to an environment where teaching and/or learning are child-centered.
Relaxed	Refers to an environment where children are relaxed and do not feel pressure for learning.

Table 6 presents the frequencies of these elements in participants' responses. The element most frequently alluded to within this theme was *freedom* (36%). *Space* (12%) and *time* (10%) were rarely alluded to within this theme. Then, *relaxed* (2%) and *child-centered* (4%) were least frequently alluded to within this theme. We found that there was a statistically significant difference ($p < .05$) in the proportion of stakeholders across different stakeholders who referred to the element *materials* ($p = .037$). However, as none of the teacher educators and teachers referred to this element, we were not able to perform the post hoc analysis of pairwise comparisons.

Table 6. Frequencies of Elements Associated with Press

Elements of Press	In total	Teacher Educators (n = 20)	Principals (n = 10)	Teachers (n = 20)
Freedom	18 (36%)	6 (30%)	4 (40%)	8 (40%)
Space	6 (12%)	4 (20%)	1 (10%)	1 (5%)
Time	5 (10%)	2 (10%)	2 (20%)	1 (5%)
Enjoyable/happy	3 (6%)	0 (0%)	2 (20%)	1 (5%)
Materials	2 (4%)	0 (0%)	2 (20%)	0 (0%)
Child-centered	2 (4%)	1 (5%)	0 (0%)	1 (5%)
Relaxed	1 (2%)	1 (5%)	0 (0%)	0 (0%)

Person

Table 7 shows the definitions of the seven elements associated to *person*, including *knowledgeable*, *innovative*, *imaginative*, *inborn*, *skillful*, *literate*, and *flexible*.

Table 7. Definitions of Elements Associated with Person

Elements of Person	Definitions
Knowledgeable	Refers to children having prior/existing knowledge that can contribute to the generation of creative ideas.
Innovative	Refers to the ability to think of ideas that are out of expectation, not ordinary, and/or innovative.
Imaginative	Refers to the ability to use imagination and/or go beyond imagination.
Inborn	Refers to an inborn characteristic of children, indicating that children are born with or without creativity.
Skillful	Refers to children having prior skills that can support their creative processes.
Literate	Refers to children having language skills such as sufficient vocabulary to support their creative processes.
Flexible	Refers to children being sufficiently flexible to support their creative processes.

Table 8 presents the frequencies of these elements. Overall, the elements most frequently alluded to within this theme were *knowledgeable* (20%) and *innovative* (18%). *Flexible* (2%) and *literate* (4%) were the least frequently alluded to within this theme. There was a statistically significant difference ($p < .05$) in the proportion of stakeholders who referred to *innovative* ($p = .046$). *Post hoc* analysis involved pairwise comparisons using multiple Fisher's exact tests (2×2) with a Bonferroni correction. Statistical significance was accepted at $p < .016667$. The proportion of teacher educators who referred to *innovative* was statistically significantly higher than the proportion of teachers.

Table 8. Frequencies of Elements Associated with Person

Elements of Person	In total	Teacher Educators ($n = 20$)	Principals ($n = 10$)	Teachers ($n = 20$)
Knowledgeable	10 (20%)	6 (30%)	2 (20%)	2 (10%)
Innovative	9 (18%)	7 (35%)	1 (10%)	1 (5%)
Imaginative	5 (10%)	3 (15%)	0 (0%)	2 (10%)
Inborn	4 (8%)	4 (20%)	0 (0%)	0 (0%)
Skillful	4 (8%)	2 (10%)	2 (20%)	0 (0%)
Literate	2 (4%)	1 (5%)	1 (10%)	0 (0%)
Flexible	1 (2%)	1 (5%)	0 (0%)	0 (0%)

Product

Finally, Table 9 shows the definitions of the two elements associated to *product*, including *new/original* and *reinventive*.

Table 9. Definitions of Elements Associated with Product

Elements of Product	Definitions
New/Original	Refers to the results/outcomes of creativity processes being new and/or original.
Reinventive	Refers to the results/outcomes of creativity processes being reinventive, building upon and/or combining existing ideas.

Table 10 presents the frequencies of these elements. As can be seen, *new/original* (18%) was slightly more frequently alluded to within this theme, compared to *reinventive* (16%). Based on the results of Fisher's exact tests, there was no statistically significant difference in the proportion of stakeholders across the three groups who referred to these elements ($p > .05$).

Table 10. Frequencies of Elements Associated with Product

Elements of Product	In total	Teacher Educators ($n = 20$)	Principals ($n = 10$)	Teachers ($n = 20$)
New/Original	9 (18%)	6 (30%)	1 (10%)	2 (10%)
Reinventive	8 (16%)	6 (30%)	1 (10%)	1 (5%)

DISCUSSION

By using the 4P's model (Rhodes, 1961), we found that all kindergarten stakeholders had a relatively partial understanding of creativity, as they tended to associate creativity to only certain aspects of the notion. Specifically, similar to Sali and Özbay Özdemir (2023), we found that most stakeholders intuitively linked creativity to the strand *process* and tended to overlook the importance of *product*. Our findings revealed that creativity is a *fuzzy* notion that is difficult to define, even for stakeholders with more training and experience (Mohammed, 2018). Indeed, several studies have shown that educators worldwide commonly encounter similar difficulties in defining creativity (Kirişçi, 2023; Sali & Özbay Özdemir, 2023), given that this notion is highly complex, multifaceted, domain-specific, and even age-specific (Han, 2003; Hui et al., 2019). Our findings may also reflect the phenomenon of social desirability (Holden & Passey, 2013), specifically the belief that demanding children to come up with products to show their creativity is inadequate or undesirable. In recent years, scholars have increasingly elaborated on the importance of free exploration, self-investigation, and questioning to foster children's active construction of knowledge (McDevitt & Ormrod, 2014; van Liempd et al., 2018). These ideas may have somehow led stakeholders to a misconception that generating final products (e.g., paintings, music compositions, dance movements) is unrelated or insignificant to

creativity development. As a result, although generating products is actually essential for children to exhibit their creativity (Tan, 2019), stakeholders seem to overlook or neglect this component, perhaps to avoid giving the impression of being product-oriented. This belief is problematic, as it would result in pedagogical activities that do not provide children with opportunities to create tangible products or ideas, as a result of creative processes (Li & Li, 2019).

Among the various stakeholders, teacher educators appeared to have the most comprehensive or sophisticated understandings of creativity. In fact, the proportion of teacher educators who referred to the strands *person* and *product* was significantly higher than that of teachers. Teachers focused primarily on the learning processes (i.e., what to do with children?) and learning environments (i.e., what are the most conducive classroom setups?), but their levels of attention to person and product were lower. This could be related to the fact that teachers received less theoretical training in ECE compared to teacher educators (Yeung & Bautista, 2023), hence they have a relatively shallow understanding of how children develop and exhibit creativity through tangible outcomes (Sali & Özbay Özdemir, 2023; Yeung & Bautista, 2024). These findings indicate that, while creativity is a central notion in the Hong Kong curriculum framework (CDC, 2017), there is no agreement among stakeholders regarding what creativity means in relation to young children.

Furthermore, even though teacher educators defined creativity more comprehensively than the other stakeholders, they still encountered difficulties in providing a complete definition for this notion. Only half of the teacher educators referred to the strand *press* when they defined creativity. This is not positive for the field of ECE, as teacher educators play a crucial role in shaping the knowledge and skills of teachers (Loughran & Menter, 2019). If teacher educators themselves do not have sophisticated understandings of creativity, they might not be able to effectively convey the importance of creativity to pre-service teachers and kindergarten principals. Also, they may not adequately equip teachers with the knowledge and skills necessary to foster creativity, which can eventually hinder children's creativity development (Ariffin & Baki, 2014). To acquire a sophisticated understanding of the notion of creativity, stakeholders would require advanced training that is specific to the teaching and learning of creativity.

We attribute stakeholders' lack of complete understanding of creativity to two specific reasons. First, Hong Kong has adopted the notion of creativity without conceptualizing it thoroughly in the curriculum. Due to the influence of globalization, Hong Kong has adopted many educational notions (e.g., creativity, play, interactional quality) proposed by international organizations such as OECD (2017) and the United Nations Educational, Scientific and Cultural Organization [UNESCO] (2014). However, when these notions were adopted in the Hong Kong curriculum, they were not thoroughly defined and conceptualized based on local values, beliefs, and cultures (Bautista et al., 2021). Particularly for the notion of creativity, it seems that there has not been a comprehensive effort to establish shared understandings among Hong Kong ECE stakeholders. For instance, the term creativity is mentioned in the curriculum without specifying concrete learning objectives, standards, or teaching directions (CDC, 2017). Therefore, stakeholders seem to struggle to interpret the essence and meaning of creativity, leading to ambiguity and varied interpretations.

Second, pre- and in-service ECE teacher preparation programs do not provide sufficient depth for participants to fully understand the notion of creativity (Alkuş & Olgan, 2014; Kampylis et al., 2009). Currently, the emphasis in Hong Kong's teacher preparation primarily lies on enhancing pedagogical competencies in areas such as literacy, numeracy, sciences, language competency, etc. (Rao et al., 2018). These areas are considered central to children's academic performance, which are highly valued in a competitive education system like Hong Kong (Cheung, 2017). The focus on how to foster creativity in each of the learning areas tends to be low (Yeung et al., 2022). This may contribute to hindering stakeholders' understanding of creativity and, therefore, their ability to implement effective strategies to foster children's creativity in the classroom.

Conclusion and significance

Through the lens of 4P's model (Rhodes, 1961), we conclude that ECE stakeholders have a relatively superficial understanding of creativity. Our findings provide further evidence that creativity is a fuzzy notion that is difficult to define (Mohammed, 2018), even for stakeholders with higher educational attainment and practical experience. There is a lack of common understanding of what creativity means in relation to young children, and this is possibly because the current curriculum does not clearly define this notion (CDC, 2017) and because existing teacher preparation programs do not sufficiently prepare stakeholders to fully understand it in depth (Bautista et al., 2024). Our findings provide valuable insights for curriculum designers and professional development providers, serving as a starting point for the development of relevant strategies to move forward. Stakeholders need to understand that creativity is not just a process, but it also requires the existence of conducive learning environments, the traits of a person, and ultimately creating products, be it tangible or intangible. It is therefore a timely and critical moment to reform creativity education, given the central role of this notion in ECE curriculum frameworks.

Limitations and future research

This research has several limitations. First, the study is based on a single data source (i.e., individual interviews), hence it would be essential to triangulate the findings with other data sources (focus group interview, survey). Second, we do not know the extent to which our results reflect what stakeholders do in their practice. Observational studies could be conducted in kindergarten to investigate how teachers and principals foster children's creativity (Eckhoff, 2011), as well as universities, to explore how teacher educators train teachers. Third, this study focused only on the Hong Kong context. Our results might not be generalizable to other jurisdictions and countries around the world, particularly to those in Western societies. Future comparative studies should be conducted to investigate how stakeholders in other contexts define the notion of creativity. Finally, participants in the study were mainly female, which reflects the characteristics of the ECE population in Hong Kong (Census and Statistics Department, 2022). However, in future research, it would be positive to over-represent the number of males to explore potential differences between the understandings of males and females in both Hong Kong and other jurisdictions.

Practical implications for curriculum and professional development

This study has two practical implications for curriculum and professional development, which would be relevant to curriculum designers, professional development providers, kindergarten principals, and teachers. First, we recommend that curriculum designers adopt well-structured frameworks to clearly articulate the meaning of creativity, as this notion is poorly conceptualized in the curriculum at the moment. While there are multiple creativity frameworks, the 4P's model (Rhodes, 1961) used in this study can be appropriate and powerful due to its simplicity and comprehensiveness. Curriculum designers may incorporate the various components of creativity, introducing the standards and expectations related to *process*, *press*, *person*, and *product*. Specifically, they shall outline the procedure and/or actions that should be used by children to develop creativity (Kozbelt et al., 2010). Clear explanations of the environmental characteristics and classroom conditions that are conducive to creativity shall be described (McDevitt & Ormrod, 2014). The personal traits and attributes necessary for creativity shall be highlighted (MacKinnon, 1966). Lastly, the importance of tangible learning outcomes shall be emphasized (Tan, 2019). We believe that the 4P's model (Rhodes, 1961) constitutes a powerful frame for the different ECE stakeholders to better understand the multiple components of creativity, with high potential to help them to conceptualize creativity in more sophisticated and holistic ways.

Second, universities and colleges should revise their pre- and in-service ECE courses and provide participants with deeper knowledge about what creativity means in the different learning areas (Blase & Blase, 2000). These courses should cover multiple theoretical perspectives, research findings, and practical strategies for integrating creativity into ECE classrooms (Bautista et al., 2024). Hands-on experiences (e.g., micro-teaching activities) can also be incorporated to promote participants' reflective practice. Furthermore, we acknowledge that not all teacher educators may possess a comprehensive understanding of creativity, therefore it would be positive for each university and college to designate at least one faculty member who specializes in children's creativity development. This faculty member would be responsible for ensuring the development and implementation of creativity courses in kindergarten education (Albert & Swapna, 2015). As a final remark, creativity is vital to children's development and future learning. While creativity is a fuzzy and multifaceted notion (Mohammed, 2018), we believe that our proposed implications for curriculum and professional development would contribute to the enhancement of creativity education across countries and jurisdictions, including in Hong Kong.

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