

Out of the Shadows: Interacting and responding to the creative experience in pre-service teacher education

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Abstract

This paper explores how the creative experience and related dispositional outcomes can be fostered in undergraduate primary generalist pre-service teachers through the development of innovative learning approaches to visual and creative arts education. The main purpose of this paper is to discuss the results and show how creative thinking and action can be fostered in pre-service teachers. I argue that the creative arts courses offered in teacher education programs need to design for levels of creativity by developing an understanding how the creative experience generates different dispositional outcomes during experiential studio-based workshops. Building on Eisner (1998) developmental work on creative dispositional outcomes, the paper explores how pre-service teachers develop their 'creativity' through flexibility and risk-taking attitudes; mindfulness and avoidance of premature closure and a willingness to visualise new possibilities through inquiry learning approaches.

This paper reports on the findings of 350 pre-service teachers as part of the Creative Arts program offered at a Sydney-based university. The focus of the mixed-method approach was on how the creative experience affects participants' opinions and experiences of creativity. Pre-service teachers' creative expressions were queried before and after the studio-based workshops. Firstly, a questionnaire was given to the total cohort, followed by participant observations made during the creative activities using video footage. Twelve participants then contributed in qualitative semi-structured interviews; this follow-up part of the research was aimed at evaluating the impact of the creative experience specifically, the participants' changing opinions of creative experiences and how new approaches can be developed with children.

The significance of this study is that it connects to a socio-cultural framework that works with a community of practice model. In this model, the core role of the teacher is to facilitate the development of primary school children's creativity learning in informal classroom settings. Consequences of this study suggest that pre-service teachers need to become more aware of the different levels of creativity and how to develop creative dispositional outcomes. The outcomes suggest that studio-based workshops encourage participants to become more mindful of the artistic creative experience and how to visualise new approaches to use with children.

Out of the Shadows: Interacting and responding to creative expressions in pre-service teacher education

Introduction

This research addresses the question of how creativity can be fostered in undergraduate primary pre-service teachers who are undertaking visual and creative arts programs at a Sydney-based tertiary institution. It examines pre-service teachers' creative expressions, interactions and responses to innovative pedagogical approaches in visual arts education. This article is part of a larger doctoral research into the preparedness of pre-service teachers to teach effective learning approaches that foster creativity in primary classrooms. The purpose of this article is to discuss what has been found in the research and how this relates to pre-service teachers' creative experiences. The article considers the core role of pre-service teachers as facilitators of innovative pedagogical approaches.

Literature review

Kampylis (2010) found there have been limited studies that examined in-service or pre-service teacher's conceptions and implicit theories of creativity and recommends that further research is required in this area. Additionally, Beghetto (2010) argues that there is a disconnect occurring between creativity research in teacher-preparation and teacher's professional development even though there is wide research that supports the importance of creativity as a future goal for twenty-first century education. Similarly, Sternberg and Kaufman (2010) advise that: "Unless educators, policymakers, and the general public can see a clear connection between creativity and learning, barriers to creativity in classrooms will be likely to continue." (p. 459).

The theoretical framework used in this research draws on the original theories of Taylor (1959) and Torrance and Wu (1974) and Sternberg (1999). The five levels of creativity says Taylor (1959) have different dimensions. The first level of creativity is self-expression this level is similar to child-like improvisational play. The second level is the development of techniques and skills referred to as 'reproductions'. This level is used when exhibiting one's artworks/artefacts to an audience. The third level is 'inventing', which involves discovering old things in new ways. Recycling materials to create new possibilities happens at the third level. The fourth level is 'innovation' which aims to move from new discoveries into a more abstracted unknown area of visual arts. This fourth level is rarely achieved and is where more complicated arts practices become simplified or abstracted. The final fifth level of creativity according to Taylor is 'emergent' creativity, this is about developing open-mindedness, and where creative thinking has the potential to change the way society perceives art and culture. Taylor suggests few artists actually venture into these later more profound dimensions of creativity. However, Kaufman and Beghetto (2009) points out that most researchers are looking for BIG creativity in little creativity areas.

Torrance's (1974) notion of creative dispositions and tendencies found there are six main elements that could be used when identifying creative tendencies: fluency, flexibility, originality, elaboration, humour, and avoidance of premature closure. Assessing and evaluating pre-service teacher's creative tendencies in artworks/artefacts or creative outcomes has proven to be problematic (Eisner, 2006), probably due to the subjective nature of the expressive arts. The working definition of 'creativity' has been defined in earlier publications Wade-Leeuwen (2013) and for this study; creativity is viewed in terms of Taylor (1959) and Torrance (1974) theories and extends across the creative person, process, product and environment. The working definition of creativity in this study combines Sternberg's (1999), Taylor's (1959) and Torrance's (1974) definitions of creativity as: "developing new ideas, approaches and actions caught in a process of becoming sensitive to problems, gaps in knowledge and disharmonies."

Method

Arts-based inquiry learning approach Barone and Eisner (2012) was chosen to investigate pre-service teachers' creative expressions and tendencies in order to emphasise how pre-service teachers developed their own artistic creative experience. The empirical material was drawn from both third and final-fourth year primary pre-service teachers participating in the Creative Arts Program at a Sydney-based university. This mixed-methods research Creswell (2012) used predominately qualitative methods to triangulate the data through a pre-workshop questionnaire, participant observations during studio-based workshops, together with semi-structured interviews conducted after the workshops. A multiple case study (Stake, 2006, 2010; Yin, 2009) approach was used with one case study exploring Australian Aboriginal artists and the other case study investigating contemporary Chinese brush painting artists. Constructivist grounded theory (CGT) according to Charmaz and Bryant (2011) was considered as the most appropriate way of analysing the data because it allowed the researchers to ground the different participants' perspectives on how they construct their 'value' knowledge of creativity. For the purpose of this study, all participants were seen either as novices or more experienced artists.

Opening Vignette

The research uses the metaphor 'bring out of the shadows and into the light' to illustrate the interplay of darkness and the shifting towards visibility which can be imagined when this participant who was an artistic novice reflects on her creative experience:

Creativity used to be something you create like visual things but that's it. [In the Workshop] it was something that went beyond that and made a story from it which looked so clear, before I wouldn't even think about it and another thing that I really, really liked - I can't get over it - is having different items where you can try and explore and create other ways instead of just a brush stroke, so it's so many things, it's impossible to explain (NM).

This final-fourth year pre-service teacher questioned her prior knowledge and implicit theory of creativity, indicating her limited understanding and knowledge of the creative process. The participants had been educated in another country where visual arts were not offered during her schooling. The participant was unable to precisely express her meaning through words; however, she felt the activities in the workshops had helped release her inhibitions and made her more curious to know more and to go beyond her normal practices. Another participant expressed a similar sentiment saying the only problem was experiencing this workshop now and she felt sad that this was her final year of teacher education study. Initially, it was assumed that the majority of the third and final-fourth year pre-service teachers felt competent within themselves to teach Visual and Creative Arts to the expectations of the Australian Curriculum ACARA (2014). However, it quickly became apparent after analysing the initial questionnaire given to the total cohort (n=350) that the majority (or 80%) of pre-service teachers at this tertiary institution felt limited in their capacity to teach visual Arts education. Moreover, they indicated limited understanding about the nature of creativity and what was needed to teach or assess it in the classroom. The article will now discuss the research questions and results of the study to understand how creative expression is being fostered in pre-service teachers.

Learning to work together, to know, be and do

The research focuses particularly on pre-service teacher's creative expressions, opinions and abilities. The research draws on the knowledge gained through the Delors (1996) Report called 'The Treasure Within'. UNESCO's International Commission on Education for the Twenty-First Century Watson (1999), presented four interconnecting principles of learning: learning to work together, to know, to be and to do. These four principles of learning were integrated into the contributing questions in the study and then used to analyse the data. The questions being discussed in this article are:

- i. Learning to work together: What collaborative interactions occurred during the studio-based workshops?
- ii. Learning to know: What are the different pre-service teachers' attitudes towards creativity?
- iii. Learning to be: What creative expressions are used during the workshops?
- iv. Learning to do: Is there only one form of creativity practiced during the studio-based workshops?

Learning to work together

What collaborative interactions occurred during the studio-based workshops?

The workshops encouraged group activities by working closely with selected artists within an environment of cultural communities of practice (Lave & Wenger, 1991; Wenger & Snyder, 2000). The workshops were designed to teach the participants about new and old technologies for example, the multiple case studies (Yin, 2009, Stake, 2010) were designed to learn about the ancient traditions of the Aboriginal and Chinese Arts and culture. The pre-service teachers were encouraged to adopt roles as risk-takers, creators and playmates (Wright, 2010) while they interplayed socially with the different cultural tools such as drawing, painting, printmaking and modeling. Vygotsky (1978) found the following:

Any function in the child's cultural development appears twice, or on two planes. First it appears between people as an interpsychological category, and then within the child as an intrapsychological category. This is equally true with regard to voluntary attention, logical memory, the formation of concepts, and the development of volition . . . [I]t goes without saying that internalization transforms the process itself and changes its structure and functions. Social relations or relations among people genetically underlie all higher functions and their relationships. (p. 227-228).

From a Vygotskian perspective, the cultural development first appears on the social plane, and then on the psychological plane. For example, during the workshops the participants responded to an Aboriginal Elder Artist telling a story about 'country' while being centered at his exhibition space. The participants were then encouraged to internalise their emotive responses to the story by spontaneously image-making by drawing with charcoal on paper. The creative process shifted further into an abstracted space when the participants represent their drawn images through modeling with clay. The creative process allows for the participants to shift from the interpsychological space that joined space with others experienced through an engaged interaction of art and play towards a more intrapsychological space or an internalised space where the participants individually experiences how art and play can be recreated into new image-making. Brooks (2009) builds on this aspect of Vygotsky's framework by examining the relationship between thought and drawing and how drawing can be a powerful cultural tool for learning. Other scholars who are researching this pedagogical approach are McArdle and Wright (2014), who perceive art and play as the first languages of children and it is this first language that underpin the child's understanding of their second languages of reading, writing, and numbering.

One participant discussed how she felt there was value in working beyond classroom walls by extending professional development through art and a cultural community of practice:

By connecting pre-service teachers classrooms to the real world experiences and allows the learning not to remain inside the classroom but extend beyond it. So what children experience in the classroom links with the reality of the world around them whether it be art gallery visits, or even having professional artists coming into the school and demonstrating how they do the art not even just talking about it so that they can experience it. Quite frankly, reflect exactly what I feel I lack, some 'hands-on' experiences to encourage teachers to feel the freedom to explore their own creative identities. (MS).



1 Figure: Artist discussing his work at an exhibition.

Learning to work together in this study represents a theme that provokes new possibilities of inter-relationships and connections with material practice. The 'hands-on' workshop sessions were designed to align with pedagogical approaches and curriculum content material that teachers could implement in the classroom. This was achieved through integrating a cultural community of practice model (Lave, 1991; Wenger et al., 2000) and by provoking participants to venture into the invisible through sensory engagement first through self-expression with others and then to encounter a more abstracted forms of meaning-making in their own individual artworks. It is obvious from the interviewee comments that this section of the research was innovative and thought provoking.

Learning to know:

What are the different pre-service teachers' attitudes towards creativity?

The different attitudes towards creativity varied in this cohort. The results from the semi-structured interviews indicate these pre-service teachers came from diverse backgrounds with several being educated in other countries before coming to Australia. The diverse backgrounds included pre-service teachers predominately from Australia and then the Asian Pacific Region countries such as Mainland China, India, Korea, Sri Lanka and Taiwan, followed by fewer students from Euro-American countries.

It is interesting to note, traditional 'Eastern' concepts of creativity are more concerned with community values of expertise and as McArdle and Wright (2014) express, and 'Eastern' concepts of creativity tend to focus less on innovative productivity. Generally, from the primary researcher's perspective of Arts education, 'Eastern' countries perceive creativity to be linked more to socio-cultural learning approaches gained through continuous study of traditional skills, techniques and competencies that have been learnt through the interactions with knowledgeable others. For example, one interviewee explained:

I can say from my experience being a Sri Lankan person, you're taught that art is not important. It's what your parents say; I didn't actually get to choose Arts from 9, 10-11-12. In my culture there is the restrictions of particular subjects, the view is that Visual Arts is not important which I don't believe in, so I don't have much prior knowledge because of it (SV).

The diverse backgrounds of the pre-service teachers in this study came to the university Creative Arts course with their own personal conceptions and implicit theories about their construct of creativity. The construct of creativity depends largely on the person's prior-knowledge and personal experience. Creativity according to Taylor (1959) has multifaceted dimensions and can be communicated as self-expression, technical skills, knowledge and competencies, inventiveness, innovation or emergent creativity. Understanding the different pre-service teachers' attitudes and implicit theories of creativity, depends on their definitions of what they believe creativity is and the questionnaire indicated that their understandings of creativity were diverse and varied. For example, 60% of the total cohort (n=350) believed creativity was a form of self-expression a typical response said:

Creativity is expressing yourself - is my ultimate definition of creativity. I think its expression and more of the physical expression rather than that academic knowledge sort of thing. (AA).

Other definitions of creativity included technical skills or freedom and an ability to think 'outside the box'. The initial findings showed these pre-service teachers often lacked the skills and knowledge of visual arts education, and five of the twelve participants in the semi-structured interviews expressed they felt limited in their confidence to teach visual Arts education. Another initial finding was that fewer than 3% of participants believed creativity was connected to creative thinking skills or imagination. An example of the difficulty with the complexity of defining creativity was clearly expressed by this pre-service teacher:

I don't think I could define creativity in one way, just means everything. It's your choice, your way, the way you imagine things. You can't define it because everyone's creativity is individual and I think creativity also links to freedom. In a way it's your freedom to express things. (SV).



2 Figure: Learning how to build up layers in artworks.

Learning to be

How do the participants imagine teaching creativity through the visual Arts education?

‘Learning to be’ addresses the question of how the pre-service teachers imagine teaching creativity in and through the Visual Arts in teacher education. This section relates to the foundational key competency for 21st-century learning and teaching in schools UNESCO (2013) and to the Australian Curriculum (ACARA, 2014). The pre-service teachers in the research expressed a general feeling of inadequacy in their professional training at university. This was specifically in the area of visual and creative arts education and most was not confident to foster children’s creativity during classroom activities. Moreover, several pre-service teachers pointed out they had limited opportunities to learn about the nature of creativity and time was rarely allocated to reflecting on their own artistic practice. It was surprising to find most participants found difficulty in defining or understanding the different dimensions of creativity. As seen in this statement:

I don't think I could define creativity in one way, just means everything. It's your choice, your way, the way you imagine things. (AK).

This comment relates to Taylor’s (1959) theory that states contradictory definitions of creativity exist and that teachers ought to become more aware of the nature of the creative process. Taylor further expressed that teachers need to feel confident in their own abilities to foster creativity within themselves before they can possibly teach any form of creativity to children. Taylor (1959) maintained creativity needs both fantasy associations and relaxation for unconscious play to occur. However, if pre-service teachers are not exposed to possibilities of experiencing their own creativity then barriers will continue to manifest in the curriculum. In the literature, it has been widely documented that minimal time allocation to visual and creative arts education during schooling, actually, undermines the teacher’s confidence to teaching Visual Arts education (Hudson & Hudson, 2007; Price, 2010). McArdle and Wright (2014) clearly found in their research that art and play, “the first languages should not be discarded or replaced” (p.21) in young people because the Arts are central to their curriculum. Coincidentally, limited time allocation to Visual and Creative Arts means that teachers are less able to model creativity in classrooms however this is a mandate of the NSW Board of Studies (2006), Creative Arts (K-6) Syllabus and explicitly states, teachers need to model creativity to children. The Creative Arts Syllabus encourages:

Modelling creativity and using as many opportunities to show and display visual arts and relating it to other subjects, so integrating it into all kinds of teaching experiences. (p.9).

Darling-Hammond (2014) discusses how the current Arts: Australian Curriculum needs to focus more on developing modelling approaches that develop 21st century skills like problem-solving, critical and creative thinking skills. However, this study has found evidence to the contrary. For example, one typical comment by a participant highlights how she perceived the current situation in a NSW school during her two-week praxis experience:

I see in the classroom it is hard for children to just do what they want. They have to be given a lot of direct instruction because they're afraid to be free to experiment in their art. There should be some form of modelling but that modelling should not limit what they have to do. (KN).

The research suggests pre-service teachers need to model new learning approaches and develop strategies that scaffold integrated creativity experiences across the curriculum. Many participants reported how they found the school children limited in their self-expression and lacked confidence in their technical knowledge and skills. Taylor (1959) points out that it is only when the teacher or in this case, pre-service teachers, tap into their intuition and experience their own form of self-expression can any type of creativity occur. This raises the case for more modeling to occur during the pre-service professional development or this could also happen during their praxis experiences at school. A typical comment from one of the participants highlighted:

My previous teacher she was also from an Indian or Sri Lankan background and- I'm not sure, that is why she didn't like, she didn't engage in art, or dance at all. At my current school, there's a lot of integration, there's a lot of artwork ...she really relates to creativity. (SV).

The limited engagement of teachers in schools and lecturers at tertiary institutions appears to be related to teachers' own lack of prior knowledge in the visual and creative arts. Another interrelated finding was that pre-service teachers found that because they were novice educators, the time needed to prepare curriculum documentation and implementation, often without proper guidance from teachers in the classroom tended to inhibit their own sense of creativity. However, the Arts-based inquiry revealed:

The workshop showed me how the teacher taught creativity and how teachers can teach and adapt workshops in our classrooms. (SV).

Linking to the literature, it is generally agreed by scholars that creativity has the potential to develop life-long learning (Boden, 2009; Bowell, 2012) and see publication ((Wade-Leeuwen, 2011). It is generally agreed that creativity in and through the Visual and Creative Arts can be integrated into other learning domains such as Science, English and Mathematics (Atkinson & Dash, 2005; Bamford & Dennis, 2007; Gardner, 1983). Another participant commented:

Exposure to all forms of creativity in their life experiences, just by trying to do it! Exposing children to the different ways people can be creative. Showing them that it's not just in the Arts but pretty much everything they do. (JKM).



3 Figure: Modeling how to create a silkscreen print.

However, the research has shown that many Australian schools and tertiary institutions tend not to value visual and creative arts education so without exposure to the different levels of creativity and integrating it into other discipline area means that long-term changes in society are unlikely to occur. One participant discussed how he resolves these challenges when he is imagining teaching:

Exposing children to the Arts as much as possible so maybe have music running in the classroom, have artworks up, have - as many forms of the creative Arts involved in the classroom as possible. And make it ongoing so the students feel comfortable with it and can express themselves. (LM).

Linking these challenges to the literature, Edwards, Gandini, and Forman (2012) comments on how Vygotsky's concept of Zone of Proximal Development (ZPD) can be used in approaches to learning:

The Zone of Proximal Development (ZPD) works with the child's level and their potential level attained with the teacher's help "the child is about to see what the adult sees. (p. 71).

The challenge for the pre-service teachers then is to be able to imagine what creativity is, and expect to see it. Edwards, et al., (2012) point out that when educators allow time in their planning for creativity to emerge they are assisting children's learning and thereby encouraging: "Children climb their own mountains, as high as possible. No one can do more." (p.71). This statement verifies the sentiment expressed by some of the pre-service teachers during the interviews as voiced below:

Fostering children's creativity is pursuing all the higher order thinking levels of Blooms Taxonomy (1956) and Anderson, & Krathwohl (2001). It includes self-discovery, its exploration, its extension, its problem solving. That's how I would define Creative Arts as entwined in all our everyday life experiences and how we solve issues. For some problems or learning experiences are rarely defined to one content area in a world live situation. (MS).

This participant perceives visual and creative arts education as being linked to higher order thinking skills. Mason (2006) points out creativity need to be relevant to the socio-cultural context and the physical, emotional environment. In light of these findings, the thesis uses the metaphor of 'bring out of the shadows and into the light' the relationships between pre-service teachers' prior-knowledge and

the creative experiences juxtaposed against the Australian Curriculum expectations of everyday practice in the primary classrooms. One participant expressed learning about the levels of creativity in visual arts is important for teachers to see that creativity leads not just to visual arts but to so many different aspects of your life.



4 Figure: Scaffolding learning where participants adopt a risk-taking attitude.

The literature according to Sternberg (2006) perceives creativity is an attitude towards life as well as ability. Creativity is complex and hard to measure and many conflicting misconceptions exist about creativity. The literature found that creativity as creative thinking and action can be taught; therefore, it is concerning those schools and tertiary institutions are not teaching children and teachers how to think creatively. Sternberg (2006) found the following:

Creativity is as much a decision about and an attitude toward life as it is a matter of ability. Creativity is often obvious in young children, but it may be harder to find in older children and adults because their creative potential has been suppressed by a society that encourages intellectual conformity. (p. 93).

In Australia primary teachers are employed to teach all school subjects. In the privately funded schools, specialised teachers are often employed to teach specific subject matter such as music, Visual and Creative Arts and foreign languages. Furthermore, primary teachers can be divided into two distinct groups, those that are experienced and those that are novice. This study confirms previous research (Kampylis, 2010; Bamford, 2005) that primary pre-service teachers need to be educated in understanding the different levels and dispositions of creativity in order to foster children's creative thinking and action.

Learning to do:

Is there only one form of creativity practiced during the studio-based workshops?

In this study, the pre-service teachers demonstrated how they were able to transform a variety of

artistic cultural tools used in the workshops from simple line drawings to more elaborate sculptures and then transform those ideas into a series of contemporary printmaking with new and different meanings and interpretations. Throughout the creative process, the pre-service teachers demonstrated in their thinking, flexibility of thought and freedom from functional fixedness (Torrance, 1974). The participants were able to adopt a 'spirit of play' (Edwards, et al., 2012) to produce diverse and unique responses.



5 Figure: Participants displaying and discussing their creative acts.

In order for creativity to occur, pre-service teachers need to become sensitive to drawing out aesthetic problems points out Eisner (1972) through sensory engagement with materials. Moreover, Sternberg (1988) suggests creativity is a dynamic process involving “transformation of thought, reinterpretations, and freedom from functional fixedness in order to derive unique solutions” (p. 46). This study contributes to the work of Taylor (1959), Torrance (1974) and Sternberg (1999) who argues that by understanding the basic principles of creativity educators can enhance their own creative ability and the ability of others. The underlying premise according to Sternberg (2006) is that we can teach human beings to think and act more creatively. However, if an individual is to master a practice says Sternberg (1999) they can then transform it from one state to another. The pre-service teachers developed their own artistic creative experience in the two-hour workshops but they were unable to venture into the more complex dimensions of creativity because of the limited time. One participant discussed the benefits of ‘hands-on’ studio-based workshops as a valid learning approach in the curriculum:

As a consolidation, visual arts are good because it's tactile and it's hands-on so children really get into it. I've noticed anything that's hands on, they're constructing, and they are more involved. (KN).

During the workshops the researcher observed different types of creativity being practiced. One type of creativity according to Vygotsky (2012), was the repetition of practices previously known to the learner and the other was the exploration of innovative ideas, approaches, and actions (Sternberg, 1999) that were previously unknown to the participant. For example, one participant expressed how this creative experience was an eye-opener to her because she had no prior knowledge of different types of creativity. She also commented on how the creative experience opened up different types of art forms including abstract art. The participant commented:

The actual materials used in the Workshops, the different types of brushes, it just shocked me how something so every day, like a toothbrush, like the different forms of lines we created with that, and how the stick just connected to a paintbrush, created a whole different line, a whole different effect on the paper. (LM).

Exploring how the materials lead the artists was an important segment of the research. The artistic material exploration consisted of recycled materials, such as drawing with toothbrushes and sticks. This form of discovery learning through material exploration links to Taylor's level I (self-expression) and level III (Inventing) where these materials interplay in new ways of creating. An example of this can be seen through the experience of grinding the Chinese black ink stick into the stone and then using the black ink they made to make intuitive mark-making by drawing with long sticks on long sheets of rice paper as illustrated in the image below.



6 Figure: Participants discovering different forms of lines.

Another element was the stone. I was just so fascinated about how the people get the soot and they form it into the rock and stirring it with the water and leaving it on the side because if you leave it in the middle it creates a dent and that was just so different to me. Just simple black paint we used for a whole two hours and we created so much, like you don't need a whole box of pencils and I really appreciated that. We used one thing in so many ways for two hours and you really begin to value your materials. (SV).

Moreover, by allowing 'the materials to lead you' connects to the theories of Taylor (1959), the Reggio Emilia philosophy Edwards et al. (2012) and Eisner (1972) typology of creativity where the participants began to value the aesthetic materials they were using and realised that one cultural tool could be used in so many diverse ways. Another participant commented:

I liked learning about the in-depth of the force and the energy. The force that we have in our strokes been something that was profound...it showed, like you said, it linked to culture and how they said it shows your weak and where you aren't concentrating. How you could read that into someone's mood or his or her personality. (SV).

Material exploration opens up new possibilities where insights can be gained through emotions and personalities. In the workshops, 'Eastern' concepts such as working with the energy force, or 'chi' (qi) is the Chinese term (van Leeuwen, 2000) this is where participants use their own internal energy flow in interplays and also when exploring their own individual energy. Energy flow is an important element used in the two case studies and links to deeper levels of creativity where innovation and emergent creativity are possible.

Furthermore, most of the participants in the interviews reported that they have limited access to material exploration and other Visual Arts resources. This finding provides evidence for tertiary institutions to address the needs of pre-service teachers' preparedness to teach Visual Arts education. This can be achieved through artistic material exploration, unconscious play, and fantasy associations in order to foster pre-service teachers' own creativity, imagination and transferability to others. Another 'Eastern' concept is that of 'uncertainty' or referred to in this article as 'happy accidents'. One typical comment from a participant was:

For me it's all about experimenting. And then you can either, get ideas from other artists or yourself. The first brush stroke is always the hardest and once you get that done the rest should be easy because you're just going along, experimenting and that's what I think too, like, I love it when I make mistakes, because that can enhance your art work. (KN).



7 Figure: Participant experimenting through meaning making.

Assessing the creative process and creative tendencies in artworks/artefacts has always been problematic because of the subjective nature of the visual and creative Arts. Torrance (1974) said six main elements could be used when identifying creative tendencies. These are fluency, flexibility, originality, elaboration, humour, and avoidance of premature closure. In the studio workshops the participants were asked to identify the creative tendencies that they were displayed in the artworks/artefacts they created. It became obvious from observations made during the workshops that from a Vygotskian lens (Vygotsky, 1928/2004), there were two archetypical forms of creativity. The first form was repeated and linked to the past and the other formed creations of new possibilities and linked to the future.

The pre-service teachers adopted roles as risk-takers, creators, and playmates (Wright, 2010) as well as inventors. Once the participants were aware of how the six elements of creativity: flexibility and risk-taking, mindfulness and avoidance of premature closure and visualisation with fantasy associations could be used to identify creative artworks/artefacts, participants began to relax and play with the six elements during the assessment process. Relaxation is one of the key themes emerging

from the analysis as being important in visual arts education. Visual arts can be used as a form of relaxation in contrast to many of the other key learning strands. For example, the participants spoke about having 'space' to explore suggesting they needed the time and relaxing environment to gain greater depth of meaning during the creative process. Other references to relaxation included: "Just having that broad space," "allowing space," "open minded and supportive, allowing space", "a little bit of time and space for children to explore" is what is needed in a quality visual arts education program.

Conclusion

The paper has considered the core role of pre-service teachers as facilitators of innovative pedagogical approaches within a socio-cultural framework. The findings suggest that pre-service teacher's need to be aware of how to design for teaching the levels of creativity and identifying dispositions such as flexibility of thought and risk-taking attitudes, mindfulness and avoidance of premature closure and the ability to visualise through fantasy associations. These dispositions become obvious when creativity is defined as an ability to sense deficiencies and gaps in knowledge when problem seeking. This does not mean that all people who adopt these dispositions will behave in a highly creative manner; however, these dispositions can increase a person's chance of behaving creatively and should be encouraged in teacher education. Additionally, the study found that by understanding the different levels of creativity pre-service teachers could connect to possibilities as they emerge out of their own creative experiences.

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