

**Programmes, policies and practices which hinder/augment Singapore-based
teachers' intentions to further increase their pedagogical creative capacity:
A sequential exploratory approach**

Thesis submitted in accordance with the requirements of the
University of Liverpool for
the degree of Doctor of Education

by
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May 2020

STATEMENT OF AUTHORSHIP

This thesis has not been previously submitted to meet the requirements for any other award or credit at this or any institution of higher education. To the best of my knowledge, the thesis is wholly original, and all material or writing published or written by others and contained herein has been duly referenced and credited.

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ABSTRACT

Students' effective learning and creativity development is an important agenda, especially for Singapore. Human capital being the only natural economic resource Singapore has, it is important that teachers are able to teach students effectively. Whilst teachers in Singapore are prepared with creative pedagogical strategies for use in the classrooms, this may not be a sufficient approach if the aim is to increase the quality and capacity of future creative capital. This study aims to uncover how Singapore based teachers' intention to further develop their pedagogical creative capacity may be increased through development programmes, policies and practices.

A mixed method approach was utilised for this study. Employing an exploratory sequential design, qualitative data was first collected using semi-structured interviews (n=16). Based on the resultant themes, items were incorporated into the quantitative phase of data collection (n = 14). Analysis of quantitative data was carried out using the non-parametric Kruskal-Wallis test and Spearman's Correlation.

Participants agreed unanimously that creativity is an important part of the teaching profession. It was also evident that Singapore-based teachers have yet to be creators of pedagogies. Majority of the participants were not aware of government policies, programmes and practices aimed at developing teachers' creativity. The participants were also found to have a strong level of intention to develop their pedagogical creative capacity. Peer influence was also found to be more impactful than directives from the higher hierarchy.

Professional development programme designs need a structure to provide incremental development on the pedagogical creative capacity continuum. These programmes can be designed to provide understanding and awareness of the creative concept at the novice level to complement the more independent level of sparring of ideas with a mentor. Support is needed from the school leaders to educate parents on the importance of creative learning and not simply pursuit of grades.

Keywords: teachers' intention; pedagogical creative capacity; mixed method approach; exploratory sequential design.

ACKNOWLEDGEMENTS

My sincere thanks to Dr. Martin Gough, my primary supervisor for his patience, gentle pushes and encouragement on my thesis writing journey. I would also like to give my heartfelt thanks to Dr. Viola Manokore for her pertinent and critical comments which helped shape my writing further. I believe through this combination of supervisors it has helped me persevere to this end point. Special appreciation is also given to Dr. Lucilla Crosta for always being there to provide administrative solutions.

Acknowledgement and appreciation is also given to the Ministry of Education (Singapore) and gatekeepers of the three education institutions for giving approval for data collection from the respective organizations. My sincere thanks to participants from the various education institutions for their time and willingness to participate in this study.

Last but not the least, my heartfelt gratitude and appreciation to my spouse, Arkadiusz, for always being there for me. Thank you for being my mountain of strength and lighthouse when things all seem too much to shoulder.

TABLE OF CONTENTS

Abstract	iii
Acknowledgements	iv
Table of contents	v
List of appendices	x
List of tables	xi
List of figures	xii
Glossary	xiii

CHAPTER

ONE INTRODUCTION	1
Overview.....	1
Impact of creative teaching.....	2
Defining creative teaching for today's environment.....	2
Concept of creativity.....	3
The pedagogical creative capacity concept.....	5
Justification for this study.....	9
A brief on Singapore's education reform purpose.....	9
Pedagogical creative capacity and the nation's future.....	10
Singapore's education system and teachers	12
Identification of the research problem.....	14
The overarching research question.....	15

Significance of the study.....	17
Organisation of the research study.....	18
TWO LITERATURE REVIEW.....	20
Introduction.....	20
Teachers' motivation and professional growth.....	21
Intention/motivation to continue growing.....	22
Beliefs and challenges to practising creative pedagogies.....	28
Professional development programmes.....	36
Motivated by a collaborative environment.....	39
Content of professional development programmes.....	43
Embedded time for development programmes.....	47
Duration of development programme.....	49
Policies and practices.....	51
Economic driven policies, practices and teachers' autonomy.....	54
Policy and leadership practices.....	56
Summary.....	59
THREE METHODOLOGY.....	61
Introduction.....	61
Truth through the lens of a Pragmatist paradigm.....	62
Combining research methods.....	64

Qualitative research method.....	64
Quantitative research method.....	66
Reasons for choosing the exploratory sequential design.....	69
Recruitment process and purposeful sampling.....	73
Method of data collection and analysis.....	77
Phase 1 Qualitative data collection.....	77
Phase 2 Quantitative data collection.....	79
Construction of Phrase 2 quantitative questionnaire.....	80
Similarities and differences with Ajzen's questionnaire.....	80
Likert scale choice.....	83
Internal consistency of Direct Measure items.....	84
Attitude's internal consistency.....	85
Perceived Behavioural Control's internal consistency.....	85
Subjective Norms' internal consistency.....	86
Behavioural Intention's internal consistency.....	86
Indirect Measure Data.....	88
Analysis of Indirect Measure data using unipolar scale.....	90
Internal inconsistency of Indirect Measure items.....	90
Choice of testing tools for Phrase 2.....	91
Summary.....	96

FOUR QUALITATIVE AND QUANTITATIVE FINDINGS.....	97
Introduction.....	97
Findings from qualitative data.....	99
Awareness of pedagogical creative capacity concept.....	99
Importance of teachers' creative capacity.....	99
Developing pedagogical creative capacity.....	103
Awareness of Government policies and support.....	104
Gaps in policy implementations.....	105
Uneven implementation of policies at ground level.....	107
Awareness of policies, programmes and practices.....	109
Effectiveness of professional development programmes.....	112
Challenges faced by teachers.....	116
Time constraints.....	116
Leadership and a conducive environment.....	118
Lack of push for pedagogical creativity.....	119
Teachers' self-development of pedagogical creative capacity.....	120
Self-development practices taken by teachers.....	120
Confidence in pedagogical creativity enactment.....	122
Summary of qualitative data findings.....	126
Findings from quantitative data.....	128
Analysis of Direct Measure data using Kruskal Wallis H Test...	128
Analysis of antecedents	130

Correlation between salient and latent beliefs.....	137
Correlation between Direct and Indirect Measure data.....	139
Correlation between Behaviour Intention and Predictors.....	143
Summary of quantitative data analysis.....	144
Overall summary of findings.....	145
FIVE DISCUSSION, CONCLUSION & LIMITATIONS.....	147
Introduction.....	147
Discussion on main findings.....	148
Teachers' understanding of pedagogical creative capacity.....	148
Programmes, policies and practices hindering intentions.....	151
Programmes, policies and practices promoting intentions.....	153
Existing Intention to develop.....	155
Conclusions and suggestions.....	157
Limitations.....	163
Significance of this study.....	165
Further studies.....	166
REFERENCES	167

LIST OF APPENDICES

Appendix A: Ethics Approval.....	188
Appendix B: Verification letter from MOE Singapore.....	190
Appendix C: Approval for data collection.....	191
Appendix D: Authorisation Letter to Gatekeepers.....	192
Appendix E: Participant's Information Sheet.....	194
Appendix F: Participant's Consent Form.....	198
Appendix G: Interview Protocol.....	200
Appendix H: Survey Form.....	203
Appendix I: Items used for Direct Measure.....	216
Appendix J: Items used for Indirect Measure.....	219

LIST OF TABLES

Table 1: Profile of participants.....	76
Table 2: Confidence range for pedagogical creativity	123
Table 3: Analysis of belief weightings using Indirect Measure data...	131

LIST OF FIGURES

Figure 1: Antecedent beliefs driving towards Intention.....	25
Figure 2: Exploratory Sequential data collection process.....	70
Figure 3: Percentage of Attitude weight range.....	132
Figure 4: Percentage of Perceived Behavioural Control weight range	133
Figure 5: Percentage of Subjective Norms weight range.....	134
Figure 6: Comparison of organisation's Attitude.....	135
Figure 7: Comparison of organisation's PBC.....	136
Figure 8: Comparison of organisation's SNB.....	137
Figure 9: Spearman's correlation coefficient.....	138

GLOSSARY

Attitude	: The positive or negative view towards the further development of pedagogical creative capacity
Creativity	: The ability to include/devise novel and useful ideas, practices or artefacts.
Creative learning	: Creative learning requires a wide array of pedagogical strategies and approaches to stimulate students' diverse imagination, curiosity, cultivating their habit of questioning, making connections and seeing multiple possibilities.
Creative capacity	: The level of sophistication and complexity in the creative ideas, practices or artefacts.
Direct Measure data	: Comprises predictors of Behavioural Intention – Attitude, Perceived Behavioural Control, Subjective Norms
Domain general creativity	Creative skills are essentially the same across different disciplines and may be applied across disciplines.
Domain specific creativity	: Creativity skills or talent are demarcated by specific discipline. For example, creative verbal skill is limited to composing literary works rather than culinary outputs.
Intention	: A set of self-perceived beliefs motivating a change in action or behaviour. According to Ajzen (1991), "intentions are assumed to capture the motivational factors that influence a behavior; they are indications of how hard people are willing to try, of how much of

	<p>an effort they are planning to exert, in order to perform the behaviour" (p. 181).</p>
Normative Beliefs	<p>The perceived behavioural expectation of school leaders, reporting officers (line-managers), colleagues and loved ones.</p>
Perceived Behavioural Control	<p>The ease of developing pedagogical creative capacity. This infers to "beliefs about availability of resources and opportunities" (Ajzen & Fishbein, 1980, p. 197) to develop pedagogical creative capacity.</p>
Pedagogical creative capacity	<p>: The ability to devise sophisticated and new pedagogical approaches spontaneously, catering to the diverse learning needs of students. Approaches are not confined to the teaching of academic content and knowledge but encompasses the ability to resolve issues within the classroom, school structure and environment.</p>
Professional development	<p>: Programmes which would allow teachers to grow in knowledge in relation to their profession. These programmes would essentially help develop their pedagogical knowledge, strategies as well as subject knowledge. Professional development in the context of this research study refers to any variants of development for teachers.</p>
Teaching creatively	<p>"Professional creativity which related to the sensitive eclecticism involved in an appropriate response to the curriculum and to the needs of groups and individuals" (NFER, 1998, p. 6).</p>

CHAPTER ONE: INTRODUCTION

Overview

A widely held belief is that creative teachers serve as one important influence on effective student learning and high-performance standard. Although it is naïve to believe that “everything depends on the teacher” (Goodlad, 1984, p. 167), the important role that a teacher holds in the development of students’ creativity and effective learning cannot be denied. The end-product from good creative teachers is highly promulgated. Yet, to achieve quality or high pedagogical creative capacity in creative teachers, there are inextricable and complex dynamics with effective professional development programmes, supported by appropriate policies and practices. These three external components play a prime role in influencing teachers’ intention to continue with their growth of professional creativity.

Reviewing the extant of literature on creative capacity and teachers’ intention to further develop pedagogical creative capacity has revealed the limited studies on the former and an absence of the latter. The paucity of such studies integrated with the attenuating factors caused by programmes, policies and practices may be attributed as a factor stagnating advancement of the creative concept. More importantly, it is posited that the absence of such studies is an impediment to promoting teachers’ intention to engage in further development of their professional creative potential.

This thesis aims to contribute to the literature by filling the gap through examining how Singapore-based teachers’ intentions to further develop their pedagogical creative capacity are impacted by programmes, policies and practices.

Impact of creative teaching

Much has been written about the benefits of creative teaching. Researchers assert the positive correlation between teachers' creative teaching and students' creative learning and development (Al-Suleiman, 2009; Jeffrey & Woods, 2003; Park et al., 2006; Torrance, 1977; Wiles, 2017). Other scholars have also found a correlation between creative teaching and students' joy of learning, cognitive development and students' academic success (Freund & Holling, 2008; Gregerson, Synder & Kaufman, 2013; Orr & Kukner, 2015; Palaniappan, 2008).

Defining creative teaching for today's environment

A forerunner and seminal article on "teaching creatively and teaching for creativity" was provided by Jeffrey and Craft (2004). Their article has served as a pillar if not the cornerstone of ensuing scholarships in teaching students' creativity (Gregersen, Synder, & Kaufman, 2013). Teaching creatively was defined as "using imaginative approaches to make learning more interesting and effective" for students (NACCCE, 1999, p. 89). In the NFER 1998 report, "creative practices" entailed "professional creativity which related to the sensitive eclecticism involved in an appropriate response to the curriculum and to the needs of groups and individuals" (p. 6). For many scholars who have examined and studied the concept of 'teaching creatively', the focus has been more influenced by the NACCCE's (1999) definition rather than that of NFER (1998). Arguably, scholars may have narrowly interpreted "make learning more interesting and effective" to core subjects, discounting the impact of the learning environment for students.

It is postulated that NACCCE's (1999) definition may have been feasible in the early days of creativity development. In the present day and in the context discussed in this thesis where the policy of inclusivity and student well-being is exercised, it is posited that NFER's (1998) definition of creative practices /creative teaching may be more apt. In contrast to the NACCCE's (1999) definition, NFER (1998) offers a more encompassing explanation suitable for the present-day education environment and context.

In this research study, the creative teacher would not only have an array of pedagogical approaches to teach the required subject content knowledge interestingly but also the ability to spontaneously create pedagogical approaches that truly meets the diverse learning needs of students within the same classroom. Diversity in the present-day learning environment embraces disparities of cultural, emotional, personal aspects as well as students with special needs.

Concept of creativity

The definitions on creativity are frequently oversimplified and do not provide a holistic presentation of the concept. Edwards (2013) defined creativity as "the ability to find new solutions to a problem or new modes of expressions" (p. 276). Robinsons (2009) advocated that it is a "process of having original ideas that have value" (p. 67). Csikszentmihalyi (2007) described creativity as "any act, idea or product that changes an existing domain or that transforms an existing domain into a new one" (p. 28). Kaufman and Sternberg (2006) believed that "creativity involves thinking that is aimed at producing ideas or products that are relatively novel, and that are, in some respect, compelling" (Kindle edition, Location 65). Stein (1953) espoused that "creative work is

a novel work that is accepted as tenable or useful or satisfying by a group in some point in time" (p.322).

These definitions while not incorrect are nevertheless presenting a narrow perspective of the creativity phenomenon. There is little mention of the purpose nor intent of action, outcome or end-product besides the element of novelty. More importantly, the notion of novelty is mingled with the concept of originality.

Lassig's (2009) definition provides us with an awareness and clearer understanding of the complexity involved in the study of creativity and the creative phenomenon itself. Creativity according to Lassig (2009) is defined as "the optimal interaction among personal, process, and social and environmental factors by which an individual or group produces an idea or product that is judged to be novel and appropriate by experts of a relevant context" (p. 230).

While it is certainly arguable whether the judgement of the novelty and appropriateness should be carried out by the experts – and what actually constitutes sufficient level of expertise to be considered as one - Lassig highlights the involvement of social interaction, environment as well as the process by which individuals or groups can produce new ideas or products. In each of them, there is a common inference of the need for cognitive skills and the transformation of an existing outcome or output into a newer dimension.

In spite of this wider perspective of the creative concept, there is little reference to the level of originality or sophistication in complexity of any of the following: thinking, outcome or end-product. The point of departure used to assess the level of originality is similarly unclear. Kelly (2016) advocates benchmarking the young learner's level of originality as "relative to past creative production outcomes of the learner" (p.3). As he

judiciously points out, “it is educationally inappropriate and unrealistic to compare a young learner to creative practitioners” (Kelly, 2016, p.3). Contrary to this assertion, the researcher of this present study believes that it would be equally appropriate to be used for adults not familiar with the concept of creativity. The different levels of originality should be clarified for the adult learner.

The concept of novelty versus originality needs to be differentiated. In the context of this study, novelty refers to the element of *newness*. This element of *newness* is taken to refer to the individual's past creative production but not new to the community of a field of study. In contrast, originality involves a *newness* in comparison to the community or a field of study. Originality involves “changing the domain” (Jackson, 2006, p. 199).

The pedagogical creative capacity concept

From the above definitions of creativity, the phrase ‘pedagogical creativity’ is an extension to the concept of creativity. Pedagogical creativity thus refers to the teacher's ability to devise new pedagogical approaches and ideas. The aim of which is to be creative in teaching to bring about effective learning in students whilst developing their creativity. This would encompass learning within the classroom as well as activities outside of the classroom. Zivitere, Riashcenko, and Markina (2015) defined ‘pedagogical creativity’ as “interaction between subjects of the educational process (teachers and students), due to the specificity of psycho-pedagogical relationship between them, the way of building students' creative personality and improving creative pedagogical work of a teacher” (p. 4071). Ehsonova (2016) posits that

pedagogical creativity is “the ability of creating new ideas, which serve for efficiency of educational process and solving existed pedagogical problems” (p. 2).

Few mainstream Western research studies on creativity have invested interest into how teachers would develop their own pedagogical creativity and why teachers would continue developing pedagogical creative capacity. Similarly, the creativity development continuum of teachers is little addressed by existing literature. This has arguably led to a misconception that creativity is a static phenomenon.

The concept of pedagogical creative capacity may be seen as an expansion to the sparse collection of literature on creativity continuum. One of the more prominent models of creativity continuum is that espoused by Kaufman and Beghetto (2009). Their ‘Four C’ model of creativity brought more focus to the presence of a creativity continuum. Their model imbued with different levels of creative capacity indicates the need to consider elements of sophistication, complexity, and impact of the creative product on the field of discipline as well as on the society. The Four C model of the creativity continuum begins with ‘mini-c’ at the less complex end of the continuum to the ‘Big-C’ level at the most complex level of creative capacity. This fourth ‘C’ involves changing the perspective of a specific domain of study.

Kirton (1976) identified the spectrum of creative skill to range between those having the ability to “make things better” to the ability “to do things differently” (p. 622). At the two opposing ends of this Kirton’s (1976) creativity continuum are the labels of “adaptor” and “innovator” (p. 622). Cohen (2012) presented “seven levels of continuum of creative behaviour” (p. 12). Beginning with learning something new for oneself, proceeding to level seven where creativity aids in the transformation “of a field” of study (p. 11). Polish creativity scholars, Nečka, Grohman, and Słabosz (2006)

proposed a four-level creativity model. Beginning with a “fluid” level, it moves through the “crystallized, mature and eminent” levels (Kindle Location 128).

In Kelly's (2016) model of creative development, placed specially in the context of developing teachers and students' creativity involves eight stages of development. At the initial level, the individual engages in collaborative-adaptive creations. At level eight the individual would have developed a sustained creative ability, specifically “the capacity to sustain recurrent iterations of idea generation and experimentation through prototyping over time against a backdrop of greater discipline complexity in the initiation and engagement of original research and production” (Kelly, 2016, p. 17). Admittedly, these may be seen as creative styles or behaviour rather than creative capacities. Nevertheless, the dichotomy and the differentiated levels identified by all these studies reveal the aspect of differentiated creative sophistication or capacities.

Ibragimkyzy et al. (2016) delineated specially five “levels of pedagogical creativity” (p. 5295). In the first level, Ibragimkyzy et al. (2016) described teachers as assimilating and reproducing information of other teachers, possessing effective analytical “decisions in specific situations” (p. 5295). The “adaptive-predictive” level or second level of pedagogical creativity, Ibragimkyzy's et al. (2016) asserted the teacher's ability to “transform the information known to him/her” (p. 5295). At the same time, the teacher is also able to apply different modes, methods, and techniques to interact with students based on their profile. When a teacher is able to manage “complex, non-standard educational tasks” with the ability to find solutions that are the most ideal, unique and original, the teacher is described as having reached the third or rationalization level in his/her pedagogical creativity. In the fourth level, the teacher is able to conduct his/her own research, “develop his/her own system of activity” to make

improvements (p. 5295). Ibragimkyzy et al. (2016) accords this level as the “highest teachers’ category” (p. 5295). In the fifth level of pedagogical creativity, Ibragimkyzy et al. (2016) describe the teacher as being able to “introduce significant changes into the education system, to transform it” (p. 5295).

The element of frequency or fluency in displaying the pedagogical creative capacity is not explicitly accounted for in this set of descriptions. Similarly, Kelly (2016) only defined creative capacity as the “level of complexity at which one can engage in creative practice at a point in time” (p. 9).

To ascertain the individual’s level of pedagogical creative capacity, it is necessary to consider the frequency of sophisticated solutions, ideas or approaches that has been demonstrated. The argument that geniuses only create one impactful and discipline transforming idea in a lifetime may perhaps be seen as an attempt to sweep aside the many instances of creations that were considered as ‘insane’ along the journey towards this one ingenious revolution or simply discarded by the creators themselves as unworthy further exploration.

Drawing essence from the various definitions and models of creativity development /capacity, pedagogical creative capacity in this present research study would encompasses three dimensions. First, it is defined as the teachers’ ability to spontaneously create new or original strategies and approaches to deal with difficult issues in the inclusive learning environment of today. Through this ability, there is optimal learning for students with their diverse needs. Next, the level of creative capacity is delineated by the frequency of idea generation, quality of originality and sophistication as well as impact on the breadth of the community. Lastly, pedagogical

creative capacity subsumes teachers' pedagogical subject knowledge and technological knowledge to bring about pedagogical efficiency and productivity.

Justification for this study

A brief on Singapore's education reform purpose

Inception of the creative and innovative education policy was first introduced in 1998 by the Singapore government. Singapore's Senior Minister Mr. Peter Chen's speech at the 43rd International Council for Small Business World Conference highlighted Singapore's strive towards creative development. He spoke of the need for "quality of inventors, innovators and technopreneurs in the years to come" (Chen, 1998). In 1997 then Prime Minister Mr. Goh Chok Tong spoke of the need to have a nation of continuous learners. "Innovation at every level of the society" (June 2, 1997) and for schools to develop students creative thinking. These needs provided the fundamental directions for the "Thinking Schools, Learning Nation" movement. Besides aiming for students to be active learners, "teaching will itself be a learning profession" (point 23). In 2005, the "Teach Less, Learn More" education movement was implemented in support of these goals. A further 20% of curriculum content reduction was applied to the previous 30% curriculum reduction. This latter move was synchronized with development of teachers' pedagogies.

Aimed at developing creativity and innovations in her citizens, the Singapore Government made heavy financial investments over the last twenty years. Almost a decade of stepped-up development has taken place, aimed at providing quality teaching force to prepare a workforce of the future to sustain - if not improve - the nation's global economic competitiveness and to mold a nation of creative individuals. Investments in

education may be seen through the setting up of the Academy of Singapore Teachers (2011), dedicated to the professional development of in-service teachers as well as building the infrastructure to support technological facilities in education institutions. 89% of the teaching force hold a basic degree (MOE, 2018). Teachers employed by the Singapore government are often privileged with fully sponsored professional development programmes.

New pedagogical strategies are shared through formal professional development programmes, Community of Practitioners from different schools or informal platforms such as respective school department meetings. Novice and experienced teachers alike are encouraged to participate in local education conferences, the fees for which are supported by full or partial subsidies. Schools are also privileged with technological equipment provided by government funding. It is common to find non-tertiary or post-secondary schools equipped with numerous facilities to enhance technological usage in and out of classrooms.

Pedagogical creative capacity and the nation's future

Governments across the world are similarly calling on their education systems to develop students' creativity. They have acknowledged that the result of students' creative development has a great impact on the nations' future creative capital. In 2008, through the Arts Policy Council, President Obama advocated the need for American education system to "reinvigorate" America's innovation and creativity to remain globally competitive. EU leaders, in 2009 initiated the European Year of Innovation and Creativity with the aim to "equip the European Union for the challenges ahead in a globalised world" (European Academy, 2009). One recommendation made was the

interaction between "economic actors and education establishments" to develop the creativity of graduate students (European Academy, 2009). In the same year, Australia launched its Creative-Australia movement. Australian Minister for the Arts, Simon Crean wrote about how a "creative Australia will make a difference to the diversity and competitiveness of our economy" (p. 3).

Creativity scholarships assert the important role that teachers' play in the development of students' creativity (Davies et. al., 2014; Esquivel, 1995; Jeffrey, 2006; Mrayyan, 2016; Paul & Kaufman, 2014; Soh, 2017; Woods & Jeffrey, 1996). Davies et al., (2014) emphasize that teachers "have a key role to play in structuring and maintaining" a conducive environment for creative development. Radclyffe-Thomas (2011) highlights that individual teachers serve as "gatekeepers for the designation of creativity" (p. 155). Tan and Majid (2011) accord teachers the role of "change agents" in the context of students' creativity development (p. 173).

It is hard to dispute these assertions of the key role teachers play in the development of the present generation of students and future creative capital. It is posited by this researcher that for teachers to be effective in teaching and developing the next generation of creative capital, it is necessary to consider development of teachers' own professional creative capacity. In order to teach creatively the teachers must possess fundamental knowledge and understanding of the creativity concept. A number of researchers have asserted a similar view. For instance, Seo, Lee and Kim (2005) asserts that "teachers who wish to foster creativity among their pupils may find better results if their own understanding of creativity reflects the complexity of the concept itself" (p. 100). Hope (2010) similarly maintains that "teachers must understand and be able to do these kinds of things themselves, as well as to

demonstrate them, in the ways they work with students, specific subject matter, and the things that students create" (p. 42). Chan and Yuen (2014) also assert the need for the teachers to have clarity in the creativity concept. As noted by more recent studies, to develop students' creativity, teachers must first "possess creativity, because as good brings good, creativity develops through creativity" (Zivitere, Riashcenko & Markina, 2015, p. 4072). Kelly (2016) extends further by advocating the need for teachers' creative capacity to "be greater than the general creative capacity of learners in their trust" (p. 166).

Researchers across time have come to the same conclusion – that of the need for teachers to have their own creative ability and capacity in order for them to be more effective teachers in optimising students' learning and creativity development.

Singapore's education system and her teachers

The efforts by the Singapore government have most certainly played a major role in elevating the Singapore's education system to be "the best in the world" (Simonds, August, 2018). Teachers in Singapore government schools have been able to raise their students' reputation as strong academic performers in international standardized tests such Progress in International Reading Literacy Study Tests (PIRLS), the Programme for International Assessments (PISA) and Trends in International Mathematics and Science Study (TIMSS). In the last several years, Singapore's students have consistently outperformed her Western counterparts in these international standardized tests by occupying the top positions. This has allowed Singapore's education system to be recognized as a model system in the world. Such academic achievements must also be

attributed to the quality of teachers engaged within Singapore's education system rather than exclusively to the investments in the technological domains of education.

Academic prowess and successes should not be conflated with innovation capabilities. While the ability to excel in international standardized tests needs to be acknowledged, there should not be an assumption that the same set of cognitive skills, which aid in achieving such academic standards, are used for innovation or creation. This postulation is supported by the data provided by the annual Global Innovation Index.

Investment in tertiary education is one of the indicators for Innovation Input sub-ranking in the Global Innovation Index (GII). Since 2014 Singapore has consistently retained its top position in the world for Innovation Input sub-ranking. By the 2018 GII report, Singapore has moved up to 5th position in the world for the component of Innovation Output sub-ranking. There is no denial that such results are highly appreciated, especially in such a young nation whose independence barely exceeds the duration of 50 years. Yet, in terms of Creative Outputs, Singapore is positioned in the 35th position (GII, 2018). According to the Schwab's (2018) Global Competitiveness Report, Singapore needs to work on its "innovation capability" (p. 26) where it is presently ranked 14th in the world.

Economic competition is on the raise as more second world countries escalate their efforts to compete along-side with first world economic markets. With human resource as the only natural resource of Singapore, the nation requires creative and innovative thinkers for its economic well-being and sustenance. As pertinently observed by Sinnakurupan (2017), while Singapore's education system is producing top performers in comparison with the United States and United Kingdom, these latter

countries are often more creative and innovative as evidenced by the OECD innovation output report. When compared with China, it is not uncommon to hear the defence that the much smaller population of Singapore is the cause of the limitation and that due to this factor it is inevitable for Singapore to have a less than optimal creative output. Admittedly, this reason is not entirely illogical. There is also no doubt that there can be many other factors contributing to the less than proportionate return of innovation capability/ creative output. However, the fact that Singapore students are among the top performers should be sufficient evidence that it is not about the size of the population but the pedagogical approaches by which students are taught.

Identification of the research problem

It is possible for a handful of teachers who are 'born' good or great teachers. The majority become good or great teachers through a number of factors. The teacher's personal positive attitude and disposition to constant improvements; the professional ethos and values embraced; culture of the organisation and the leadership within it; professional support in terms of policies, practices and development programmes.

Evidence of the positive investment by the Singapore Government to develop a force of quality teachers is clear and recognized by international authorities. Availability of professional development programmes such as courses, workshops, conferences, professional sharing sessions are made available to all teachers in government schools. This to a larger extent has helped shaped the quality of teachers in the system as indicated by the accolades and successes of Singapore students as top performers on platforms such as PISA for instance.

With these successes, why would time-strapped teachers be willing / motivated to further develop their pedagogical creative capacity especially when there is still little evidence of the positive impact on academic achievements (Hetland & Winner, 2004; See & Kotkotsaki, 2016; Winner & Stephen, 2013). Both these issues present gaps in the existing corpus of creativity literature.

The overarching research question

Without knowing the demotivators, personal values, or beliefs of front-line teachers in the respective education institutions, impact of the Government's investments in different professional development programmes can be attenuated. Subsequently leading to a less than optimal achievement of the intentions and goals of education policies. This situation necessitates policy and decision makers to have an insight and understanding of the teachers' perceptions of the existing programmes, policies, and practices presently afforded by the Government and school leaders in their support of teachers' pedagogical creativity development.

This research aims to primarily discover the challenges that would potentially deter teachers from having a positive intent towards further development of their pedagogical creative capacity. Of a wider purpose is to optimise students' effective learning through teachers' creative pedagogical capacity. The research objective thus aims to provide policy makers and programme designers with an insight into these challenges faced by teachers. It is hoped that through such an insight and awareness, policy makers and programme designers may explore the possibility of introducing changes to areas in need. With these changes, it is hoped that teachers can be motivated

to develop their own pedagogical creative capacity. At the same time, the study also aims to draw attention to the concept of pedagogical creative capacity not only for Singapore-based teachers but also as a contribution to the presently limited scholarships on development of teachers' pedagogical creative capacity.

The researcher of this study believes that with an understanding and realization of the wider ramifications in the ability to teach creatively, there can be greater aspirations within Singapore-based teachers to take on more self-directed actions to become not only productively efficient teachers but also another source of creative capital for the nation.

This research study thus asks the question: "What programmes, policies, and practices would hinder or promote Singapore-based teachers' intention to further develop their pedagogical creative capacity?" To answer this question, the study is guided by four sub-questions:

(1) To what extent do Singapore-based teachers understand the concept of pedagogical creative capacity?

(2) How are the existing programmes, policies, and practices hindering Singapore-based teachers' intention to further increase their pedagogical creative capacities?

(3) How are the existing programmes, policies, and practices promoting Singapore-based teachers' intention to further increase their pedagogical creative capacities?

(4) What is the existing level of intention in Singapore-based teachers to develop their own pedagogical creative capacities?

Significance of the study

By identifying the present challenges faced by Singapore-based teachers, there would be the opportunity for adjustments to augment these teachers' intention to further develop their pedagogical creative capacity. An understanding of what would impede or excite teachers to participate in professional development programmes to develop this creative aspect is deemed important by the researcher of this present study. This researcher believes that without an insight of the possible challenges faced by the frontline teachers there would be an attenuation of impact on the possible optimal education outcome.

With an army of teachers who have high pedagogical creative capacity raises the potential of providing more productive and effective learning for the students. Arguably, this would in turn contribute in the drive to keep Singapore competitive on the economic world market. However, the teachers' increment in pedagogical creative capacity is highly dependent on the professional development programmes, policies and practices supporting their positive intention to engage with continuous growth in pedagogical creativity.

The next contribution that the findings from this research study could achieve would be information for professional development programme designers. The findings would highlight the needs of Singapore-based teachers to increase their intention as well as their pedagogical creative abilities. It is also postulated by the

researcher of this study that without being attuned to the needs of the teachers, designers will impede the progress in optimizing creative capacity for future creative capital due to inapt content provisions afforded by professional development programmes.

Policies and practices are examined in this research to identify factors which would be delimiting or demotivating teachers' intention to upgrade their pedagogical creative capacity. Such findings would hopefully provide decision and policy makers an insight into the challenges faced by frontline teachers, thus providing the opportunity to design and implement relevant reviews or improvements in policies and practices.

Another significant contribution of this research is directed at the expansion creativity scholarships. Few existing central Western creativity literature have examined teachers' motivation to develop pedagogical creative capacity. Similarly, few scholarships have examined the concept of creativity continuum. While there may be some awareness of creative continuums such as Kaufman and Beghetto's (2009) continuum of 'mini C' to 'Big C', there is little study of why teachers would have a positive or negative intention to further develop from a lower creative level to one that is higher. For this reason, the focus of past studies may thus have been directed to the study of teacher dispositions and strategies to develop student's creative ability. This gap in literature may be due to early assumptions that teachers are innately capable of teaching creatively.

Organisation of the research study

Chapter Two provides a review of existing literature on teachers' motivation in engaging with further the professional development programmes. The chapter will also

look into policy implementation and practices which have been successful in motivating teachers to engage in further professional development programmes.

Chapter Three presents the study design of this research project. Explanation is given for the choice of study design and the purpose of employing a mixed method design, specifically referring to an exploratory sequential approach to data collection and analysis. It also provides an insight into the sample group and how data was collected and analysed.

Chapter Four shares the findings from both qualitative and quantitative data analysis. In view of the exploratory method used in this study, qualitative data is first shown and summarised before quantitative data analysis results are presented. Interpretations from the different analysed data are summarised individually before an integrated summary is presented at the end of the chapter.

Discussion and conclusion of the study is designated into Chapter Five. Recommendations are also suggested, based on the information gained from the data findings. Limitations are identified and suggestions for future research are included in the last section.

CHAPTER TWO: LITERATURE REVIEW

Introduction

The importance of growth in teachers' pedagogical creative capacity was espoused in Chapter One. The need for teachers to undertake further development of their pedagogical creative capacity was explained from an economic perspective. High pedagogical creative capacity was defined as teachers' having a high level of creativity in their teaching approaches and interaction with the classroom of diverse learners in today's classroom environments. Teacher's creative teaching was also posited as inextricably linked to students' creative and effective learning. Teachers' high pedagogical creative capacity is thus believed to have the ability to impact the nation's economic and creative capacity.

The purpose of this literature review is to provide readers with an insight into the literature examined and used to frame an understanding for the topic chosen in this research study. The following paragraphs of literature review is constrained by the dearth of scholarships on programmes, policies and practices directly related to teachers' intention to further develop their pedagogical creative capacity. With this limitation, the ensuing review will be carried out using literature which discusses teachers' motivation to change due to development programmes, policies and practices from a more general perspective.

Literature selected for review is categorised under three main topics: Teachers' perspectives and beliefs on creativity and creative teaching; theories explaining teachers' decision-making to engage with continuous learning; impact of development programmes; policies and practices.

Teacher's motivation and professional growth

There is a surmountable volume of literature prescribing how teachers can teach creatively by adopting appropriate dispositions, pedagogical strategies (Sharp, 2005; Sternberg, 2000) and creation of supportive environments (Cremin et al, 2006; Fasko, 2001; O'Brien, 2012). Similarly, there is a corpus of literature holding consensus that professional development programmes play a critical role in bringing change to teachers' knowledge, beliefs and practices in their classrooms (Crawford, 2017; Darling-Hammond & McLaughlin, 2011; Herrington et al., 2011; Mizell, 2010).

In spite of this acknowledgement, there is a scarcity of studies on why teachers would voluntarily continue with professional development (Bigsby & Firestone, 2017; Ng, Nicholas & Williams, 2010; Palermo & Thomson, 2019), specifically in the aspect of pedagogical creative capacity, another scarcely studied area in the existing literature. This may perhaps be due to the still present struggle with understanding the concept of creativity (Skiba et al., 2010) as well as a system for assessing creativity in schools (Baer & McKook, 2009; Lucas, Claxton & Spencer, 2013) outside of the arts disciplines.

Effective professional development programmes cannot exist in a vacuum. It requires teachers' willingness to attend and be engaged with professional programmes to realize the wider national education objectives and goals. It is posited that professional development programmes will also impact the teachers' decision to undertake further development in their professional skills such creative teaching.

Teachers' voluntary involvement with continuous learning or professional development can be hindered or promoted by a number of factors. These promoting or hindering factors lead to different decisions within the individuals, mediating their readiness to learn and grow further professionally. An intent or cognitive decision to

move from one's present position to another is driven by internal and external values set by the individual concerned.

Intention/motivation to continue growing

Different motivation theories can be used to explain why adults continue with professional learning. Seminal motivation theories such as Adam's (1965) Equity Theory; Hull and Spence's (1943) Drive Theory; Maslow's (1943) Hierarchy of Needs theory; McClelland's Needs Theory (1961); Locke's (1990) Goal-setting Theory; Vroom's (1964) Expectancy Theory provides framework for understanding human motivation. Research studies into human motivation have leveraged on some of these earlier theories. For instance, Alderfer's (1969) ERG theory or theory of Existence Needs, Relatedness Needs and Growth Needs bears similarities to Maslow's Hierarchy of Needs theory. Growth Needs may be affiliated with Maslow's self-fulfilment level. Similarly, McClelland's (1961) theory on the need for Achievement, Affiliation and Power bears similarities to Maslow's Hierarchy of Needs.

In more recent times, the Self-determination Theory (Deci & Ryan, 1985) has often been used to understand why teachers engage in certain behaviour or change in behaviour (Basikin, 2016; Gorozidis & Papaioannou, 2014; Crawford, 2017). The theory espouses three psychological aspects as the driving force for intrinsic motivation. The individual's view of autonomy; opportunity of forming and enjoying good social interactions and self-efficacy as important motivational factors. These factors are perceived as human instinctive needs and when met, can provide the intrinsic self-motivation and mental well-being for the individual (Deci & Ryan, 2000). Intrinsic

motivation from this perspective is believed to be the enabler of “enhanced performance, persistence and creativity” (Ryan & Deci, 2000, p. 69).

The Self-determined Theory also espouses how extrinsic motivation is mediated by the internalising process, which has an impact on an individual's three psychological needs. An individual's extrinsic motivation may be regulated in four ways: external, introjected, identified and integrated. The external and introjected regulation may be perceived as being on the lower end of a motivation continuum. Both these internal regulation processes motivate the individual to enact a behaviour to avoid a negative outcome. For instance, external regulation requires the individual to attend mandatory creativity development programmes to avoid elimination from performance bonus ranking. On the other hand, an individual who attends a creativity development programme to avoid guilt or low self-esteem, is an example of introjected regulation.

The identified and integrated regulation sees the individual on the positive end of the regulation continuum. The individual who performs under an identified regulated action does so because of the perceived benefits to be achieved at the end of the task. For instance, teachers who attend creativity professional development programmes because there is the potential that it will make their teaching more productive. The integrated regulation will see the individual participating in a creativity development programme because there is an alignment between the individual's valued goals and life activities (Vallerand et al., 1992). At the opposite end of this motivation spectrum is amotivation. An amotivated individual is neither extrinsically nor intrinsically motivated. There may also be a sense of incompetency and/or control of themselves. Under such conditions, these individuals are likely to stop participation at any point (Deci & Ryan, 2000).

In juxtaposition with the Self-determination Theory, there are a number of similar tenets with the Theory of Planned Behaviour. While both theories hold volition as an important factor, the disparity lies in the end purpose for each paradigm. The Self-determination Theory focuses on goal-fulfilment as a need factor. This contrasts with the Theory of Planned Behaviour which aims at predicting enactment of a certain behaviour. This latter theory gives focus to goals rather than self-fulfilment.

The Theory of Planned Behaviour explains intention as “motivational factors that influence a behaviour; they are indications of how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behaviour” (Ajzen, 1991, p. 181). Intentions help to propel the individual’s decision-making towards acting or otherwise. Whether the individual subsequently chooses to enact or not enact a behavioural change is dependent on the individual’s level of positive intention towards the behaviour.

This theory espouses an individual’s Attitude towards a certain behaviour or act as a contributing factor in the individual’s intention to engage with the behaviour (Fig.1). Undergirding Attitude is the individual’s antecedent Behavioural Beliefs and Behavioural Evaluation Outcome Beliefs that can influence enactment of the behaviour. The individual’s intention to enact is also swayed by the individual’s perceived social pressure. Ajzen (1985) identifies this as the individual’s Subjective Norm beliefs. Subjective Norm encompasses the individual’s personal belief of the social pressure/expectation in relation to the behaviour in context. This belief may not be a reality but a personal perception or interpretation. While there is social pressure, the theory highlights the value of the individual’s Motivation to Comply with the referent or significant other. The Motivation to Comply eliminates the assumption of

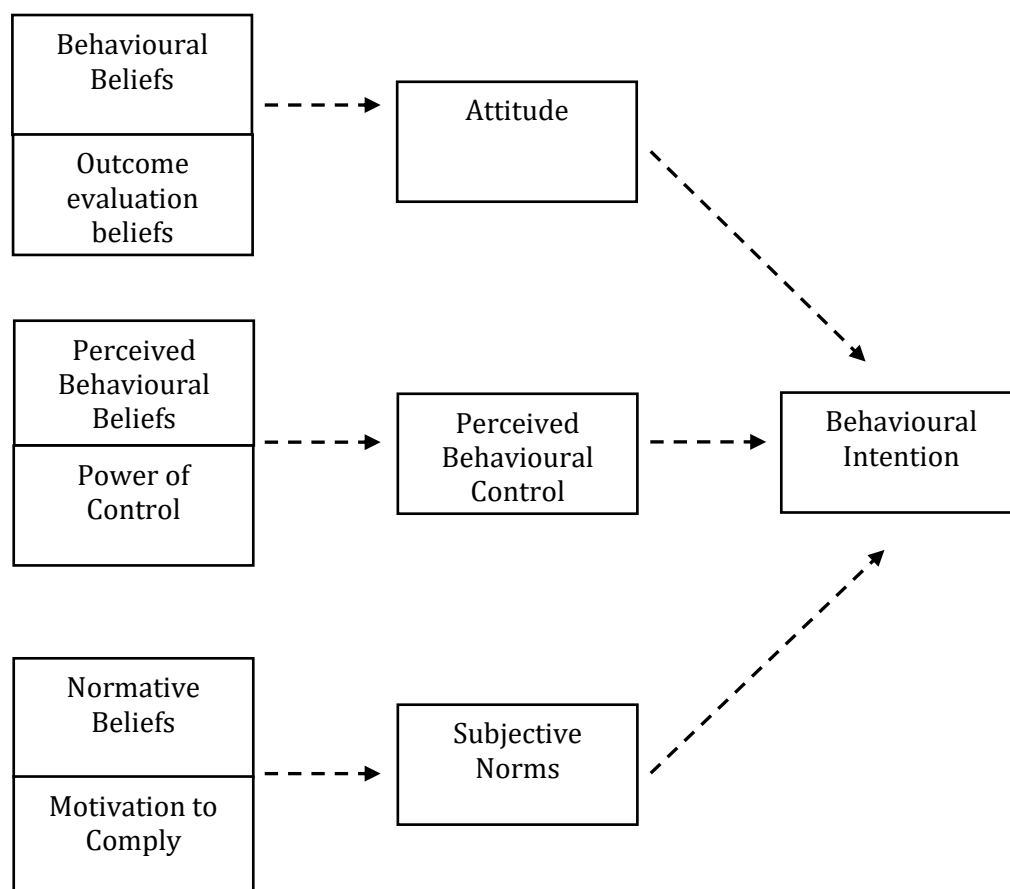
Figure 1. Antecedent beliefs driving towards Behavioural Intention

Figure 1: Antecedent beliefs undergirding Attitude, Perceived Behavioural Control and Subjective Norm Beliefs.

compliance by the individual. In contrast this is not explicitly stated in the Self-Determination Theory but may be inferred through the internal regulation components highlighted earlier. The Perceived Behavioural Control is the last component of the Theory of Planned Behaviour. It encompasses the individual's self-efficacy beliefs and also external factors which are within or outside the control of the individual. The inclusion of Perceived Behavioural Control provides accountability for circumstances that are beyond individual's "volition control" (Ajzen, 1991, 181). This aspect provides greater lucidity and coherence in the context of educational organisations or

institutions where skill competency may be impeded by infra-structures or organisational policies.

The outcome of a positive intention is dependent on the individual's set of self-constructed beliefs from which his/her evaluated outcomes are based on. Beliefs are subjective, relying on the "individual's judgement of the truth or falsity of a proposition" (Pajares, 1992, 316). The positive intent to act is a "causally self-referential representation of its conditions of satisfaction" (Cohen & Levesque, 1990, p. 217). The individual would intend to act if the evaluated outcomes are deemed satisfying to the individual. This infers a "subjective probability of a relation between the object of the belief and some other object, value, concept, or attribute" (Fishbein & Aizen, 1974, p. 131).

Both internal and external stimuli contribute to the individual's mental plan whether to exert effort towards to the behaviour in context. Internal stimuli may refer to the individual's past experiences or personal satisfaction from undertaking the behaviour whilst external stimuli may refer to the organisational culture. These stimuli may in some cases be a reality rather than interpretation of the individual. For instance, the lack of manpower or technological resource may be a reality at a point in time rather than an interpretation by the individual. The experience of not having sufficient manpower or technological resources forms the individual's attitude towards the context. Attitude is thus a "learned predispositions to respond to an object or class of objects in a favourable or unfavourable way" (Fishbein, 1967, p. 483). The same stimuli can shape the individual's beliefs toward the behaviour in context. Beliefs are thoughts which an individual arrives at based on knowledge which have yet to be confirmed but which is sufficient for the individual to act with some confidence. Beliefs / intentions

arguably are malleable with the appropriate development programmes, policies and support.

Critics assert that the individual's emotions of fear, anxiety and threat are neglected in this theoretical framework (Conner & Armitage, 1998; Redmann & Kotrlik, 2004). This is seemingly untrue since the application of emotions is applied when considering the component of Intentions albeit in the background. Another criticism of this theory lies in the claimed accuracy in predicting actual behaviour based on Intentions (Sniehotta et al., 2014; Hardeman et al.). Sniehotta et al., (2014) postulated that "TPB was considerably less predictive of behaviour when studies used a longitudinal rather than shortitudinal design" (p. 1). There is concurrence with this observation in that attitudes and beliefs can change over time due to the complex dynamics with external factors. This is especially so in the present volatile environment thus making the TPB to be more useful for immediate responses rather than development intervention purposes.

Sniehotta et al.'s (2014) criticism of the theory's focus on rational reasoning is seemingly limited in soundness. If reality is uniquely constructed by the respective individuals which leads to their individual beliefs, rational reasoning becomes a unique and subjective evaluation. At the same time, as espoused by Ajzen (2015,), the theory does not posit for the "objectivity or veridicality" of the antecedent beliefs (p. 133) but advocates that beliefs have an impact on an individual's intention and action. Another criticism raised was the inconsistent successes observed in behavioural change (Sniehotta et al., 2014). It seems rather implausible that the Theory of Planned Behaviour can be highly accurate in ascertaining the actual enactment of a behaviour. Logically, the numerous factors which can impact an individual's belief system is

beyond inclusion into the theoretical framework. However, the theory provides a logical framework by which beliefs of the non-motivated can be identified. These can lead to more effective modifications to bring about change in intention and possibly behaviour. Ajzen (2015) similarly defends his theory by espousing that “imperfect predictive validity” (p. 132) can highlight new attributes that would influence Intention and Behaviour. From this perspective, despite the fallible constructs with respect to reliability and validity, there is utility of the theory in helping to identify beliefs which would be hindering positive intentions.

Beliefs and challenges to practising creative pedagogies

For policymakers to provide the appropriate policies and support of motivating teachers to increase their pedagogical creativity requires an understanding of some of the challenges in practising creative teaching /pedagogies. There is an existing corpus of literature on teachers' dispositions (Abramo & Reynolds, 2014; Chan & Yuen, 2014), pedagogical practices (Collard & Looney, 2014) and the necessary environmental provisions (Chan & Yuen, 2014; Davis et al., 2013, Savelyeva, 2014) required to develop students' creativity. While this volume of scholarships answers the questions of 'how', there is a scarcity of literature of 'why' teachers would want to develop their pedagogical creative capacity.

Literature review indicates teachers' generally positive belief towards creative pedagogies (Aljughaiman & Mowrer-Reynolds, 2005; Huang & Lee, 2015; Olivant, 2015). Research studies also indicate that teachers believe it is necessary to develop students' creativity (Aljughaiman & Mowrer-Reynolds, 2005; Cohen, 1988; Lynch & Harris, 2001) and teachers play a critical role in developing students' creativity

(Gralewsky, 2019). Findings from creativity studies have nevertheless identified a gap between what teachers believe in and what they do in their classrooms (Chan & Yuen, 2014; Cheng, 2010; Mullet et al., 2016).

The contradiction or misalignment between teachers' beliefs and actual teaching practice in classrooms (Bereczki & Kàrpàti, 2018; Chan & Yuen, 2014; Cheng, 2010; Mullet et al., 2016) is not surprising. While a teacher may believe in the value of creativity in students it may be difficult with the actual practise of teaching creatively in a classroom. This divergence between knowing the important role teachers have in relation to students' creativity development and the actual practice of teaching creatively can be attributed to a number of factors.

The lack of understanding or knowledge of the creativity concept and processes of teaching creatively is likened to be a fundamental issue. Researchers up to the last five years, have found teachers in Australia still grappling "with understandings of creativity and what it means for their practice in their discipline" (Selkrig & Keamy, 2017, p. 318). This finding was corroborated by another independent study of Australian higher education teachers who are only now beginning to experiment with creative pedagogies in the disciplines of Science, Technology, Engineering, and Mathematics (Pollard, Hains-Wesson & Young, 2018). Similarly, Savina's (2015) study of teachers in Russia, revealed a passive response to creative teaching. This has been attributed to the lack of methodological support.

Another factor obstructing teachers' engagement with creative teaching is prevalence of standardized testing. These assessments are promulgated by researchers as diminishing the teachers' space for flexibility, diversified teaching or having "personal and professional growth" (Crocco and Costigan, 2007, p. 529). With time

constraint and necessity of completing subject content, the inclusion of creative activities is highly limited (Craft, 2003; Longo 2010; Nicoll & McLellan, 2008) if not foregone. Standardized and/or high-stake assessment is also perceived as a major obstacle to teachers' willingness to explore and take risks with new and creative pedagogical approaches (Gralewsky, 2019; Jones et al., 2003; Rubenstein, 2018, Sawyer, 2004).

Inextricably linked with standardized and/or high-stake testing is the issue of accountability. Scholars believe that the need to meet expectations of the various stakeholders has contributed to the teachers' unwillingness to practice creative pedagogies in their classrooms (Aktaş, 2016; Burnard, & White, 2008; Glăveanu, Sierra, & Tanggaard, 2015). Such an environment reduces the teachers' ability and space for exploring creative teaching approaches. This education setting presents a tension between "standardization and professionalism, as well as performativity and creativity" (Olivant, 2015).

These postulations while a reality can nevertheless adopt a different perspective. The main issue is not the testing but how tests are being structured and implemented. The lack of presence and/or emphasis on creative thinking skills in high-stake or standardized testing can cause creativity skills to be undervalued, marginalizing creative teaching and creative learning in actual teaching practices. In their time-strapped curriculum, teachers often focus on teaching the necessary skill sets to produce high-level performance in high-stake standardized testing. Teachers veer away from the use of creative pedagogy in their classroom practices due to an absence of accountability for creativity development.

Arguably, the present literature highlighting the difficulty in creativity assessment (Baer & McKook, 2009; Lucas, Claxton & Spencer, 2013) is promulgating a seeming trepidation to include testing creativity in standardized and/or high-stake exams. There are different ways and tools of measuring the individual's creative cognitive skills such as that of the Torrance Test of Creative Thinking (1962) or the Kirton Adaption-Innovation Inventory Test (1976) tests. The creativity test by Kirton for instance, measures the style of creating solutions. These tools of measurement are essentially divorced from subject content knowledge, presenting a gap in creative teaching literature.

Kuhn (1970) and Simonton (1999) have nevertheless promoted the viability of using Amabile's (1996) Consensual Assessment Technique as a method to assess creativity in any subject. This method requires students to produce a product based on a given topic. Assessment is carried out by a panel of experts who would do their evaluation independently.

A limitation to this creativity assessment model is the emphasis placed on evaluating the end-product (Baer & McKool, 2009). Emphasizing on the end-product especially one that is tangible in the early phases of creativity development can discourage or limit students' development of creative thinking and imagination. Having the ability to ideate creative ideas should not be discounted as a component of creativity. Afterall, an individual's ability to create a musical theme is not the same as the ability to create an entire film music. An individual may thus be assessed on his/her "fluency in creative ideation" (Preiss & Strasser, 2006) rather than based on a single end-product.

Conflating the difficulty in assessing creativity, is also the issue of domain specificity and domain general creativity. The indecision of whether creativity should be assessed as one or the other or a combination has been given some consideration by seminal creativity scholars (Amabile, 1983; Baer & Garret, 2010; Plucker, 1998; Sternberg, 2006). Sternberg (2006) suggests that development of “creativity is neither wholly domain specific nor wholly domain general. It has both domain-specific and domain-general elements” (Location, 66). Amabile (1983) in her Componential Theory of Creativity espouses the need to have domain-relevant skills, creativity-relevant skills as well as task motivation.

Of greater pertinence to teachers would be Baer and Garret’s (2010) observation that “creativity and content knowledge and skills are not (or need not be) orthogonal variables. They interact, and creativity is dependent on domain knowledge and skills” (Baer & Garret, 2010, Location 403). The common divorce between content knowledge and that of creativity skill may be due to the absence of a universal definition for creativity, parameters to be used for assessing creativity or a lack of knowledge in creative teaching (Hennessey, Amabile & Mueller, 2011). Such factors may also have contributed to a stagnation of advancement in the concepts and practices of creative teaching and learning. The lack of studies into designs of testing domain specific creative skills have seemingly led to the acceptance that creativity should not be assessed in an education context.

Teachers engage with certain pedagogical approaches to bring about better results for their students. However, in the literature of teachers’ creativity beliefs, there is little mention of the correlation between creativity and academic performance results. There is still an ongoing debate if creativity has in reality an impact on

academic results. In the few research studies available, their findings have not been able to provide a confident consensus of a positive and significant correlation between creativity and academic successes. Some studies suggest that there is hardly any correlation between creativity and academic achievement (Marjoribanks, 1976; Palaniappa, 2007; Yamamoto, 1964). An and Runco's (2016) study goes a step further to assert that there is no significant relationship between academic achievement and domain-general creativity. In contrast to these findings, Palaniappan's (2008) study found a positive increment of academic achievement in Malaysian student-participants after creativity enhancing intervention activities. Palaniappan (2008) suggests the possibility that certain creativity activities may have "a higher influence on academic achievement" (p. 275). His study found "Figural Creativity, Figural Fluency, Figural Flexibility and Figural Originality" to have brought about a higher effect on the Malaysian sample than the American counters (Palaniappan, 2008, p. 275).

In spite of this positive finding, there is still a shortage of evidence to convince teachers of the potential positive correlation between creativity and academic achievements. For the time-strapped teachers, there would be little desire in engaging with creative teaching nor consider developing their pedagogical creative capacity. There may even be a stronger amotivation for the more experienced teachers who have always succeeded using teacher-centred pedagogies. Such experiences and success make them less malleable to developing their own pedagogical creative capacity.

Teachers' lack of enthusiasm in engaging with creative teaching approaches may be due to their personality traits or cultural influences. Literature review evidences teachers from both Asian and Western cultures hold the same perception that creative students can be a challenge and non-conforming in behaviour (Beghetto, 2005; Chan &

Chan, 1999; Cropley, 1992; Gralwesky, 2019; Kennedy, 2005; Ng & Smith, 2004; Scott, 1999; Torrance, 1972). On top of this, in comparison with Western teachers, East Asian teachers are identified as less positive in their attitude towards creative students who are questioning and non-conforming (Chan & Chan, 1999; Kwang & Smith, 2004). Such differences are often attributed to the influences of Confucianism (Kwang & Smith, 2004; Ng, 2001, Niu, 2012).

This assertion by researchers while having certain truth is nonetheless not entirely accurate. Arguably, the teachings of Confucius have been selectively chosen by scholars. For instance, Confucius did not advocate unquestioning obedience or compliance. He advised men when in doubt to focus “on questioning” (Eno, 2015, p. 92). Such questioning should nevertheless be guided by the value of respect. Respect would in this case be interpreted as politeness, adapting “speech, behaviour and countenance according to changing social demands” (Tan, 2016, p, 1237) rather than absolute submission. Creativity scholars have also given focus to Confucius encouraging the young to abide by the wishes of the older even if there are differing views (Eno, 2015, p. 16) positing this as a hindrance to the development of creativity. Gardner (1996) for example, espoused it as an obstacle towards more “revolutionary” type of creativity. In counterpoint to Gardner’s (1996) perspective is the postulation that the individual has chosen to exercise a form of creativity that is more useful and of value to the wider community rather than a creation which is more individualistically self-fulfilling or gratifying. As such, it is not an inability to reach higher creative capacity. Jack Ma, founder of the successful Alibaba internet business for instance, created his business with the aim of serving the needs of the people in China and social betterment (Allen, 2014).

Another misconstrued teaching of Confucius pertains to the characteristic association of rote-learning in these Asian societies. Confucius did not advocate memorising *per se*. He was in fact critical of men who were unable to creatively apply them at the appropriate social contexts after memorising 300 odes (Eno, 2015, p. 86). Next, referring to Analect paragraph 11.22, Confucius espoused the need for teachers to know the profile of the individual student to extract the appropriate potential (Eno, 2015, p. 55). At the same time, he did not advocate the practice of a 'sage on stage'. Students were expected to question and "contradict" his teachings (Tan, 2016, p. 1234).

Arguably, the selective interpretation of Confucius teachings by past scholars present a formidable challenge to overcome for creativity development. To change a culture would require not only bold and persistent drive to remove these invisible lids on the society but also a change of perspective. Rather than viewing Confucius teachings as the obstructive archaic and less positive cultural influence on creativity, it may be a case of teachers' personality and work style preferences.

Studies indicate that teachers' personality traits can impact on their creative teaching approaches in class. (Chan & Yuen, 2014; Cropley & Cropley, 2000). Teachers who are accustomed to traditional teacher-centric pedagogical approaches generally prefer intelligent, unquestioning and compliant students (Beghetto, 2006; Runco, 2003). This perception can explain why teachers from both East Asian and Western cultures find students with higher creativity to be disruptive and not among their favourite students (Westby & Dawson, 1995; Scott, 1999).

The less positive attitude adopted by the East Asian teachers may well be due to class size. In comparison with American middle school class size with an average 25.7 students, Korean middle school class size average 27.4 students, Japan's average class

size for lower secondary level is 32.2 (OECD, 2016) while Singapore's secondary classes holds an average of between 36 to 40 students. This difference should not be discounted as a plausible cause for the less favourable view of creative students taken by East Asian teachers.

The above paragraphs have highlighted some of the issues contributing to teachers' passive responses to teaching creatively. Mapping these challenges onto Ajzen's Theory of Planned Behaviour framework, teachers' lack of enthusiasm or passive response to engage with creative teaching may be explained from the perspective of low Power of Control due to the external ecological factors such as national mandated high-stake assessments and its appending accountability. Perceived Behavioural Control is posited to be weak due to a lack of clarity in teaching and assessing processes. Without strong evidence of positive impact on creative teaching in relation to students effective learning as demonstrated through students' academic achievements, Behavioural Beliefs and Outcome Evaluation values would similarly be low. This would have negative impact on the teachers' Attitude towards the further development of pedagogical creativity.

Professional development programmes

Professional development programmes are accorded as "powerful tools" (Adam, Harlow & Dominguez, 2015, p. 1) to bring about change not only in teachers' beliefs but also change or reformation in an education institution (Fullan, 2016) or the nation's education system. Such programmes provide the necessary and important vehicle by which teachers' beliefs and practices are transformed, leading to improvements in

classroom practices (Garet et al., 2001). Professional development programmes are especially important for in-service and experienced teachers.

Walter, Wilkinson and Yarrow (1996), states that “the quality of teaching depends on the quality of teachers which, in turn, depends to some extent on the quality of their professional development” (p. 41). This statement is explicit in emphasizing the importance of professional development programmes to students’ effective learning. Postholm (2012) defined teachers’ professional development “as teachers’ learning: how they learn to learn and how they apply their knowledge in practice to support pupils’ learning” (p. 1). Hoyle (1995) defines professional development as “the process by which teachers acquire the knowledge and skills essential to good professional practice at each stage of a teaching career” (p. 42). Professional development programmes carve opportunities for pedagogical and behavioural modifications that are directed at facilitating better and more effective learning for the students (Darling-Hammond et al., 2009; Desimone, 2009; Hayes, Wheaton, & Tucker, 2019; Hirsh, 2009; Mizell, 2010; Archibald et al., 2011, Luneta, 2012; Snell, et al., 2013; Yoon et al., 2007; Zide, & Mokhele, 2018; Aldahmash et al., 2019). Southerland et al. (2016) asserts that the primary aim of professional development programmes is to foster “learning and change in practice” (p. 1).

Studies examining teachers’ motivation to engage with professional development programmes cite a variety of reasons. From the teachers’ perspective, effective professional development programmes are enablers for growth in teaching and learning (Adam, Harlow, & Dominguez, 2015; Calleja, 2018; McMillan, McConnell & O’Sullivan 2016; Palermo & Thomson, 2019). It is a source from which they can learn pedagogical strategies which can potentially make their teaching more effective and

students' learning more meaningful. Professional development programmes are oases from which teachers can quench their thirst for new pedagogical knowledge and approaches. Other motivating factors can include career advancement, culture of organisation, positive feedback from peers (McMillan, McConnell & O'Sullivan 2016), beliefs in the effectiveness of the programme, and teachers' belief of a need to change their own practice (Calleja, 2018).

The goals, potential benefits and necessity of engagement with professional development programmes is clear. The willingness of teachers to participate in further professional development programmes in spite of the potential benefits to be gained cannot be taken for granted. Professionalism leading to ownership of continuous upgrading of skills should not be assumed to be an inherent quality in all teachers. The varying degrees of professional ethos and identity of a teacher can impact their willingness to enhance their pedagogical prowess through professional development programmes. Research has evidenced that teachers on occasion "simply do not learn" or are "not learning" (Van Eekelen, Vermunt & Boshuizen, 2006, p. 408) professionally even when provided with the opportunity.

Teachers' unwillingness to participate in professional development programmes arguably may not be due to a lack of professionalism or identity but deem development programmes not meeting their professional needs. Studies show that teachers at the different stages of their teaching career, require different professional development support (Masuda, Ebersole & Barret, 2013; Van Waes et al., 2016). The needs of a beginner teacher with a midcareer or late career-teacher is found to be widely different. The continuum of learning needs span from pedagogies which serve as a toolkit for

'survival', moving into a stage of improving pedagogical skills to learning skills due to new initiatives (Masuda, Ebersole & Barret, 2013).

Researchers have identified different motivating factors features of successful professional development programmes, some more effective than others. From the perspective of programme designers and policymakers, effectiveness of a development programme can be identified by a change in the teachers' beliefs and their eventual classroom practices. Not all professional development programmes succeed in bringing about change in teachers' beliefs or instructional practice nor impact students' learning (Bautista et al., 2018, Garet et al., 2011, Ekinici & Acar, 2019).

Motivated by a collaborative environment

Professional development programmes are of different designs. For instance, mentorship or internship schemes, workshops, formal platforms such as conferences or degree courses; informal platforms such communities of practitioners or school-based job embedded programmes. Irrespective of the design, professional development programmes aim to grow and develop teachers.

In recent times, there is a seeming inclination towards the 'social-cultural model' of programme design. This type of design provides participants with the opportunity to socially create knowledge with their peers (Crawford, 2017; Ekinici & Acar, 2019), leading to more authentic knowledge gained for immediate classroom application (Callejia, 2018, p.7).

The inclusion of a collaborative environment is postulated as a necessary tool for effective professional development programmes for teachers (Clement & Vanderberghe, 2000; Ekinici & Acar, 2019; Grace, 1999; Guskey, 1995). Webster-Wright (2009) asserts

that learning communities afford critical inquiry that can “facilitate transformative learning” for teachers (p. 727). Besides increased learning, such communities provide support to sustain pedagogical change and/or education reforms. Communities of learning also minimise isolation of teachers and provides emotional support through affordance of a “listening ear” (Hubbard & Power, 2003, p. 23). Hur and Bush’s (2009) study supports this assertion by identifying “emotional support and new knowledge” (p. 300) gained as reasons for teachers’ motivation to participate in self-organized online communities. Harris and Anthony’s (2001) article on “collegiality” further supports the call for collaborative designs for teacher development. They reasoned that such platforms would help move-away from an isolated solo development of the teacher whilst enabling learning of new teaching strategies. In Camburn’s (2010) study, he found teachers having greater learning due to more effective reflective practices when it involved “collaboration and working with instructional experts” (p. 485).

When learning communities are widened to include administrators and school leaders, there can be greater understanding due to the sharing of different perspectives and insights (Guskey, 1995). At the same time, such compositions in the learning community can provide the necessary push for teachers resistant to change. The pressure to improve or change may be motivated by the need to comply with school leaders’ suggestions due to power structure or compliance with peers to avoid tension (Ajzen, 1991).

In the context of creativity development, literature has often promulgated collaboration as a feasible if not necessary tool for innovative developments (Amabile, 1996; Kamyliis, Berki & Saariluoma, 2009). This view is supported by other researchers who posit that highly creative works are often done collectively and are

interdependent, moving beyond specific discipline and organisational boundaries (Mumford et al., 2002). Oddane (2015) has argued against the perspective that creativity is an “individual phenomenon” (p. 38) asserting instead that creativity is “a distinct collective phenomenon (p. 38). Further support is also given by Howkins (2009) who asserts that “collaboration doesn’t obviate individual talent or ignore the light bulb moment” (p. 66).

Howkin’s (2009) statement is received with trepidation. The positive perspective of collaborative platforms in the development of creativity should not waylay our consideration of the complexities and dynamics involved in learning communities. Admittingly, collaboration can bring about professional and emotional support, creation of new ideas, beliefs as well as strategies. Logically, based on past research findings, these benefits would meet the needs for most teachers attending professional development programmes - that is, greater confidence in completing the intended task or behaviour. Based on the tenet of Ajzen’s Perceived Behavioural Control, this positive aspect would potentially lead to a higher value for the antecedent Perceived Behavioural Belief. *Ceteris paribus*, a higher value for Perceived Behavioural Belief would lean more positively towards the Behavioural Intention.

Composite of the collaborative group or team members can be an attenuating factor rather than promoter of further learning for teacher-members. Even in a small group collaboration such as that between mentor and mentee, learning and development can be greatly diminished. The close collegiality in such communities can diminish growth opportunities due to the avoidance of conflict (Kelchtermans, 2004). Arguably, the avoidance of disharmony can lead to less optimal solutions or change. Conversely, there can arise the case of dependency if power and learning structures are

not appropriate. In such a situation, development of creativity may be stagnated due to the follow-after me process, leading to a replication of the mentor's ideas rather than advancement of ideas by the mentor-mentee relation. In such a situation, it is possible that the teacher may become demotivated and unwilling to carry on with the development programme.

Mentoring provides not only a role-model but also an "intellectual sparring" partner who can provide emotional support (Subotnik, et al., 2010, p. 716). According to Torrance (1984) a good mentor-mentee relationship contributes to the mentee's successful creative achievements. This is evidenced by how Nobel Prize winners build upon the knowledge of their mentors to achieve new and higher levels of inventions. Arthur Askin, 2018 laureate of the Nobel Prize in Physics attributed having mentorship and guidance from Hans Bethe who was himself the 1967 Physics Nobel Prize winner. In a mentor-mentee collaboration, there needs to be an agreement between mentor and mentee about the common goal and partnership to be successful (Zachery, 2009) and more importantly, the learning style of the mentee.

The power structure and struggles can also be a reality for the bigger groups. For effective collaboration to take place, there needs to be consideration of the group dynamics. Creative ideas by individuals may be pushed aside due to leadership dynamics or "resistors" (Flessner & Stuckey, 2013, p. 42) within the group or team members. Such collaborative environments can be a significant hindrance to teachers' development. The inability to make progress or learn due to power struggles can derail the original aim of "having open and honest dialogues" about creativity (Davies, et al., 2014, p. 40). It is postulated that such environment can reduce teachers' desire from

continuing with the programme or attend future professional development programmes.

A lack of diversity in creative pedagogy expertise can lead to limited learning and stagnant development (Van Waes et al., 2016) for the novice and the non-expert but experienced teacher. Without participants higher in creative expertise in the group, the collaborative learning environment may become nothing more than sessions of venting and sounding board of dissonances. Arguably, for those with higher creative pedagogical expertise, there is the possibility of lapsing into an “arrested development” (Van Waes et al., 2016, p. 305) unless there is further expanded developmental support provided for them.

Rationally, time for ‘expert’ creative teachers in community learning groups are likely to be limited like all other teachers. With time as a precious commodity, they are likely to prioritise their time to engaging in activities that would help them into being more efficient and productive in their work like any of their peers. It is anticipated that this group of ‘expert’ creative teachers would be discouraged from attending further professional development programmes especially when learning and progress is deemed unfulfilling or not meeting their needs.

While the mode and style of knowledge delivery is important to teachers’ engagement with learning, content included in these development programmes are equally important.

Content of professional development programmes

With time availability being a bane to many teachers, their voluntary involvement in professional developments are often directed by what they believe to be of value and

applicable to their classroom practices (Van Eekelen, Vermunt & Boshuizen, 2006; Masuda, Ebersole & Barret, 2013). According to researchers, teachers value programmes which would help increase their “knowledge of academic content and how to teach it to their students” (Darling-Hammond et al., 2009, p. 10). Programmes with subject-specific content which allows for “meaningful changes in their classroom practices” are more valued by teachers (Garet et al., 2001, p.920). Development programmes which provide content coherence/alignment with national education policies and local school context/curriculum are observed to be more valued (Darling-Hammond et al., 2009; Masuda, Ebersole & Barret, 2013; Penuel et al., 2007). Non-domain specific content or content of generic nature which do not address the needs of teachers are generally not well received by teachers (Bautista et al., 2018; Garet et al., 2001; Desimone, 2009; Ekinici & Acar, 2019).

This last aspect has been observed by researchers to be impacted by the different stages of teachers' career (Eros, 2011; Masuda, Ebersole & Barret, 2013; Van Eekelen, Vermunt & Boshuizen, 2006). Teachers who are in the second phase or passed the ‘survival’ years look to improving and sharpening their pedagogical knowledge to be more effective teachers. At this phase of their profession, teachers seek knowledge which would improve their skills in delivering effective lessons, shifting from the needs of self to needs of students (Eros, 2011). This assertion by Eros (2011) is seemingly supported by Ekinici and Acar's (2019) study which used teacher-participants with 4 – 35 years of teaching experience. The study found that content provided in the programme were “too shallow” and “did not reach the application level” (Ekinici & Acar, 2019, p. 115) leading to learning disengagement and non-stimulated curiosity.

In Hosseini's (2008) study, teachers participating in the creativity development programme were provided with specific information on creativity and the alternative approaches. "90 percent of the teachers" (Hosseini, 2008, p. 76-77) in the programme agreed that they were positively impacted in knowledge, attitude and skill. The content of the training course that was used to bring about this positive change in belief and attitude included information on the "essence of creativity and principle fundamentals in creativity" (p. 71). Content also included creativity teaching methods and research methods in class and school. In another study conducted by Laius and Rannikmäe (2004), teachers were involved in an 8 months intervention study programme to develop students' creativity in the domains of science and technology. Teachers in this study were required to create their own teaching materials. At the end of the study which entailed pre and post testing, result reported "positive change of teacher's understanding and ownership of STL teaching philosophy" as well as students' creativity ability (Laius & Rannikmäe, 2004, p. 71). The absence of attrition rate report allows for the possible inference that content of the development programme was meaningful and purposeful to the teacher-participants.

These two studies suggest the importance in providing in-depth content in the development of creative teaching practices. While the teacher-participants may have found the content to be of a relevant level in these two studies, it cannot be ascertained if there is a correlation between the participants' career phase. In spite of this, it can be surmised that teachers' perception of "pedagogical utility value" (Palermo & Thomson, 2019, p. 206) is of utmost importance in the continuation of professional development.

The variation between the three studies suggests that content needs to provide participants with a sense of value of the new knowledge gained. When participants do

not hold a positive perception or belief that the development programme has provided them with pedagogical utility, there is little motivation to engage with the programme and even lesser intention to join further development programmes. This postulation resonates with Ajzen's tenet of Outcome Evaluation in his Theory of Planned Behaviour. The most well-designed professional development programme exists in a vacuum if there are no teacher-participants, nullifying the intended purpose - changing teachers' beliefs or teaching practices to impact students' effective learning.

It is thus not surprising for Kampylis, Berki, and Saariluoma (2009) to call upon development programme designers to have "a clear image about teachers' conceptions and implicit theories of creativity" (p. 27) to identify the suitable "supportive tools" teachers need to facilitate not only students' creativity but also their own creative development. Supportive tools for in-service teachers may include developing teachers' awareness of how their dispositions or even fundamentals of role-modelling creativity through attitude, behaviour and cognitive processes. At the more independent levels of creativity development, supportive tools must go beyond that of technology utility, technique and ideology. These elements should not be the limiters of creativity (Hope, 2010) in teachers.

Literature also found empowering teachers with a choice of development programmes to attend as an important motivator for professional development (Kampylis, Berki, and Saariluoma, 2009; Ekinci & Acar, 2019; MaMillan, McConnell & Sullivan, 2016; Masuda, Ebersole & Barret, 2013). Kampylis, Berki, and Saariluoma's (2009) question of providing teachers with their "own continuing professional development" allows for the interpretation that at certain levels of creative capacity, it may be viable to go beyond domain-specific content development.

Embedded professional development

Professional development programmes embedded in teachers' work schedule is another recurrent feature identified by researchers for effective professional development (Corcoran, 1995; Croft et al., 2010; Yoon et al., 2007). These embedded development programmes may take both formal and/or informal designs, allowing for the social interaction among colleagues of the same organisation. Such designs privilege teachers' development with direct relation to their immediate school context and classrooms (Camburn, 2010; Croft et al., 2010; Penuel et al., 2007;), augmenting students' learning through teachers' quicker access to solutions for their day-to-day teaching instructional issues. Such site-based learning arguably brings more relevant and meaningful professional development as it is based on the teacher's specific teaching enactment (Penuel et al., 2007). Social-cultural theory posits that knowledge is distributed within a specific context. As such the transference of knowledge between context may not be able to bring about immediate results (Camburn, 2010).

The many opportunities for learning and collective reflection are posited as important advantages of job-embedded professional development programmes. By situating specific time within the teachers' work-schedules it provides a defined space for collaborative reflection with colleagues and the sharing of ideas for further improvement. Logically, based on the tenet of Outcome Evaluation in Ajzen's (1998) Theory of Planned Behaviour, this high relevancy of content and knowledge derived from such site-based learning should bring about greater motivation and intention for teachers to participate in professional development.

According to the above research studies, collaborative environments provide teachers with social interaction opportunities to reflect on their teaching practices.

Reflection, in itself is often perceived as the key to learning and growth in a teacher's practice (Camburn, 2010; Penuel et al., 2007) especially that of critical reflection (Webster-Wright, 2009). Without partaking in this cognitive action, the benefits of embedded professional development programmes can be attenuated.

While the researcher of this study concurs with literature espousing the positive strength of shared reflection in the social setting afforded by collaborative platforms, there is an assumption of an inherent willingness in teachers to share their issues or knowledge with others. In the experience of this study's researcher, there will be a minority of teachers who are not willing to communicate openly of their teaching issues. This is especially so for teachers who have been succeeding in the past achieving high performance rate in high stake standardized assessments. As such their reflection is likely to be a contrived and politically correct with little intention to follow-through in their classroom practices. The reluctance to share and reflect collectively is not localised to a Singaporean context but has also been observed by McArdle and Coutts (2010) in non-Asian societies. Participants in these learning platforms were observed to be reluctant in challenging each other's views but "often express uncritical admiration for the good practice of others" (McArdle and Coutts, 2010, p. 205). This view resonates with Day and Sachs (2004) who asserted the lack of conflict due to close collegiality as a professional growth and learning diminishing factor. Arguably, the converse of this would lower the teacher's valency evaluation of the platform for learning – lower intention and motivation. A sincere collegiality would provide opportunities for the exchange of ideas and conflicting perspectives, thereby widening number of possible solutions and optimising quality of solutions.

Duration of professional development programmes

Besides the importance of having time dedicated to professional development as evidenced by studies, (Futrell et al., 1995; Sprott, 2019), the length and duration of development programmes is attributed to having impact on development effectiveness for teachers. Researchers identified professional development programmes with short durations to be less impactful on teachers' learning and development (Boyle, Lamprianou & Boyle, 2005; Loucks-Horsley & Matsumoto, 1999; Pianta, 2011). Short one-hit workshops for instance are posited as least effective (Boyle, Lamprianou, & Boyle, 2005; Hawley & Valli, 1999; Pianta, 2011) in bringing about change. Short one-hit workshops are perceived to only provide an awareness of the goals and directions of the changes in practice or system. Such programme designs do not provide teacher-learners with the opportunity to experiment and master new approaches, content and practices. It also does not provide the ability to work with the same team over an extended period of time "on the same theme and issues" (Postholm, 2012, p. 418).

Understandably, programmes with longer duration would enable more "in-depth discussion of content, student conceptions and misconceptions, and pedagogical strategies" (Garet et al., 2001, p. 921) and the opportunity for teachers to "try out new practices in the classroom and obtain feedback on their teaching" (Garet et al., 2001, p. 922). These perspectives are also supported by other researchers (Corcoran, 1995; Hayes, et al., 2019; Luneta, 2012).

In the context of creativity development, two studies provide support for longer and more intense type of development programmes. In Hosseini's (2008) study, teachers spent a total of 70-hours engaged in a creativity development programme. Time was broken down to 15 hours of learning principles and fundamentals of

creativity, 25 hours spent on developing creativity teaching methods and 30 hours researching methods in class and school. 90 percent of participants indicated positive learning with change in their beliefs, knowledge and attitude. Hosseini and Watt's (2010) study provides evidence that development of teachers' creativity had a positive correlation with students' higher creative scores. Of pertinence to this present research study is the strong evidence from Hosseini and Watt's (2010) study on the need for a wide coverage of focused content over a period of time to bring about the appropriate creative development in teachers. This development inevitably cascades its positive impact down to students' learning and achievement. In Laius and Rannikmäe's (2004) study, the intervention programme stretched for 8 months. Such intense and continuous development, engendered in teachers a sense of ownership, relevancy and meaningfulness.

Length of development programme, however, must not be assumed and equated with quality of learning. As espoused by Cohen and Hill (2000) "more time is no guarantee of more substantial content, [but] it creates the opportunity for substantial work" (p. 306). This assertion is also supported by Boyle, Lamprianou & Boyle (2005) who argued that longer durations need not lead to better results in teacher development. Nevertheless, positive impact of deeper learning for teachers cannot be achieved in "a day or a few hours" (Cohen & Hill, 2000, p. 306). Professional development programmes such as workshops which are not content-focused will not bring about the necessary and desired effects sought by reformers (Cohen & Hill, 2000).

Observations by these researchers have highlighted the importance of longer duration for professional development programmes to be effective. At the same time, there is also the need for continuity. This perspective is supported by other research

studies (Clandinin & Husu, 2017; Darling-Hammond et al., 2009; Ng, 2019). Guskey (1995) for instance, positions teacher professional development as requiring “regular opportunities”, “continuous improvement and experimentation” (p. 18). The claim that professional development is “a process, not an event” (Guskey, 1995, p. 18) is supported by other researchers (Corcoran, 1995; Luneta, 2012; Scribner, 1999; Zide, 2018).

This perspective is highly rational especially in today's 21st century environment. With the advancement of new technology and trends growing constantly, it is deemed necessary that new learning and teaching skills be evolved to advance if not at least cope with these changes as well as prepare for the future. It is no longer about learning and teaching of subject content only but the necessity for teachers to have the cognitive ability to come up with solutions when confronted with an obstacle. From these perspectives, professional development programmes require a continuum of development rather than fragmented episodes of collaboration to update and/or renew teachers' pedagogical skills as well as knowledge.

Policies, practices, teachers' voice

To build a culture of career-long learning and development in teachers, it is postulated that education policies from both national to organisational levels are of one voice and one understanding. There needs to be policy coherence (Ryder & Banner, 2013) to support teachers in their drive towards continuous learning as nations move away from the industrial model of education. In the context of this research study, it infers that national education policy of developing creativity in students and the respective education organisation policy and practices needs to be aligned.

To achieve this culture, dialogue and involvement of the different stakeholders in the development of policies, decision-making and practices needs to be undertaken (Appova & Arbaugh, 2018; Argyris, 2000; Avidov-ungar, & Reingold, 2018). More importantly, there needs to be clarity in the intention and goal of teachers' professional development. According to Spillane, Reiser and Reimer (2002), policy implementors can only make sense of the policy when there is understanding of the purpose and the need for action. Aptly put by these researchers, it is not sufficient that "implementing agents choose to respond to the policy but also what they understand themselves to be responding to" (Spillane, Reiser & Reimer, 2002, p. 49). In the context of this research study, teachers must be able to make-sense of why their development of pedagogical creative capacity is important.

Studies have indicated that with "communication and compromise", "a culture of experimentation and risk taking" can be achieved (Scribner, 1999). Imposition of professional development policies by school leaders without teachers' involvement in decision making, deprives them of a voice (Almeida, 2017; Burnard & White, 2008). This can remove the sense of ownership in the implementation processes.

Providing teachers with the opportunity to learn about the objectives and aims of new education policies in creativity is important. Cohen and Hill (2000) advocate that by allowing teachers to know "what the policy implies for instruction is a crucial influence on their practice" (Cohen & Hill, 2000, p. 2). They further highlight the need for aligned relations in five components: professional development curriculum, reasons and objectives of policy, students' curriculum, teachers' knowledge of assessment and the assessments. Through this symbiotic implementation, teachers were found to

exercise appropriate practises that was “closer to the aims of the policy” (Cohen & Hill, 2000, p. 32).

Literature also highlights the need to give focus to context, diverse learning needs and different stages of knowledge in members of the teaching fraternity. Existing professional development practices are found to be in tension and misalignment with the needs of teachers. There is an assumption of a uniformed context with a narrow conception of professional learning. This diminishes consideration of “individual variability in professional ways of being that shape learning” (Webster-Wright, 2009, p. 728). Such a perspective is supported by other researchers who also assert the need for greater consideration to be given to meeting the individual needs of teachers (Hall & Thomson, 2005; Hope, 2010).

The deference of unique needs and context as background features of education policymaking (Hardy, 2012; Phillips, 2005; Henry et al., 2001), discounting the contextual readiness and needs of teachers as well as school leaders may arguably be impediments to building of knowledge economies. The advancement of technology and the drive for collaboration with institutions across the globe to grow knowledge, has led to the common phenomenon of ‘policy-borrowing’ practices. Hope (2010) rationalizes the need for greater use of local knowledge through his analogy of the education system as a farm that has to deal with differing weather conditions. He reasons that weather and soil conditions vary across the world. As such, local knowledge plays a critical role in policy-making and implementing instead of “technical systems engineered at a great distance (p. 45). Engineering farm production is not the same as that of the Ford factory. His view of the need to have localized knowledge is also asserted by other researchers (Lochmiller & Hedges, 2017)

In the context of this research study, it may be speculated that an imposition of top-down policy to develop pedagogical creativity without hearing from the teachers of their needs can result in disengaged learning. Of a greater detriment would be the lack of motivation to sustain a continuous learning and development of their creative capacity.

Economic driven policies, practices and teachers' autonomy

National educational policies which are driven by global economic forces result in education policies that are economically and managerially directed (Hardy, 2012). Policies constructed this way are accused of leading to subsequent over-emphasis on data-based outcomes and accountability (Appova & Arbaugh, 2018; Hardy, 2012; Ryder & Banner, 2013). Teachers' professionalism is reduced in the course of providing evidences of achievements. Accountability requires teachers to demonstrate their competency in observable and quantifiable ways. Imposed by high stake assessments, accountability diminishes teacher autonomy and creative space. It also essentially discourages teachers from taking risks with creative teaching (Olivant, 2015). The "quest for certainty" (Webster-Wright, 2009, p. 717) becomes the priority for teachers rather than dispositions essential for creativity development – tolerance for ambiguity. A teacher's professionalism embraces not only their responsibility, knowledge but also their autonomy and authority in their area of work (Hardy, 2012; MacLaren, 2012; Olivant, 2015; Ryder, 2015).

From the perspective of policymakers, professionalism is instilled and ensured through enforcing accountability and standardization. These practices are evidenced by research studies to be counterproductive to the learning intentions of this century's

knowledge economy. Research findings assert that education policies driven by economic and managerialistic goals present a tension between “standardization and professionalism”, as well as “performativity and creativity” (Olivant, 2015). When teaching actions are restrained by “regulated systems” (Burnard & White, 2008, p. 674) and consequences received for failing to meet success criteria, it discourages teachers from experimenting with new pedagogical approaches. Standardization is posited as not only presenting an obstacle to creativity development for both teacher and students but is essentially a counterpoint to the teachers’ professional autonomy and professional discernment (Olivant, 2015). The opportunity cost for accountability is “active participation on the part of the teachers own learning” (Hardy, 2012, p. 25) and motivation to learn new knowledge unless leading to centrally accepted quantifiable outcomes. The call to return autonomy to teachers (OECD, 2018) is prevalent in literature.

A lack of balance between appropriate measures of accountability and professionalism is posited as possibly reducing teachers’ policy enactment or the commitment to support national education policies on creativity development within the respective education organisations. “Tight boundaries and narrow accounting lines discourage teachers from reflecting on school wide goals or the needs of individual children” (Darling-Hammond and Mc Laughline, 1995, p. 4). The over-emphasis on accountability presents a disconnect between intention behind developing teachers’ professionally and the actual learning/growth in teachers to impact students’ creative and effective learning. In the context of this study, such a condition resonates with Ajzen’s Theory of Planned Behaviour where the individual may accord a much lower Outcome Value to creative teaching and the development of pedagogical creative

capacity. The lack of balance between accountability and professional autonomy is also posited as likely to lead to a lower value in the aspect of Power of Control for the teacher. It is posited that such conditions discourage teachers' intention to further develop pedagogical creative capacity due to the lack of autonomy and space to experiment as well as fail.

Policies and leadership practices

Successful implementation of education policies requires school leaders to have clarity of the respective policy. It is essential that school leaders are able to provide coherent and convincing explanation of the purpose and goal of the policy. Spillane, Reiser and Reimer (2002) assert that "if implementing agents construct ideas that misconstrue policy-makers' intent, then implementation failure is likely" (p. 419). Literature also assert the need for collaboration and communication between school administrators and teachers to assuage tension and conflict brought about by policy implementation (Guskey, 1995; Lochmiller & Hedges, 2017).

Policy coherence is crucial for the main implementors – teachers (Ryder & Banner, 2013). With the inclusion of teachers' in decision making on the policy, it is posited there can be greater willingness and ownership to enact the advocated policy. With more insight and knowledge, it would logically have greater policy coherence within the organisation, leading to a higher chance of positive impact on intended goal of the policy. For instance, advocating the necessity for teachers to develop their creative teaching with the policy of mandatory professional development programmes that do not give guidance or support for the development of students' creativity. This scenario would simply be a provision of a superfluous structure or a "technicist

framework" (Kwek, Albright & Kramer-Dahl, 2007, p. 74) which does not couch the relevant intent nor deep learning for the teachers. As Wilson and Berne (1999) indicated, such implemented programmes, structures and practices can become "a patchwork of opportunities –stitched together into a fragmented and incoherent curriculum" (p. 174) where teachers are not truly supported to enact the imposed policy. In Henriksen, Creely and Henderson's (2019) examination of why advocated creativity policies are failing in Australia and United States suggests the lack of aligned support for teachers' actual practices. They assert that "unless a concept is clear, defined, actionable, and grounded in practical ideas for teaching and learning context, it is of little value" (p. 9).

Under these circumstances, teachers' attendance of professional development programme is likely to be perceived as irrelevant to their needs and may come to view professional development advocated by school leaders simply as extra work rather than a progress and growth opportunity. Without understanding the development needs of teachers, an inappropriate school culture can arise. Subsequently diminishing the intended goals of teacher development. From this perspective, teachers' intention to truly engage with further professional developments seems unlikely to occur.

Researchers have not come to a consensus which form of leadership practice would bring about greater commitment to change in teachers. Research studies have nevertheless promoted transformational leadership practices to have a positive link with development of teachers' creativity (Çekmecelioğlu & Kaya, 2016; Liu, 2015; Sang et al., 2013, Tse, To & Chiu, 2017). The characteristic practice of empowering, friendliness and cooperation has been found to "promote employee creativity" (Çekmecelioğlu & Kaya, 2016, p. 243). Sang's et al., (2013) study for instance found that

transformational leadership practices had a greater impact on teachers' development of creative level especially when complemented by a school climate "where teachers' work engagement and knowledge creation practices are greatly encouraged" (p. 51).

Variables such as the individual's culture, age, environment and the strategy used can mediate the impact of transformational leadership to bring about change in the individual (Liu, 2017). Transformational leadership may be more effective due to characteristic practices that are elements required for a creativity nurturing environment (Tse, To & Chiu, 2017)

It is not uncommon that there will be individual teachers resisting engagement with further pedagogical development. In such cases, effective leadership would exercise a certain amount of pressure whilst providing support, structural or otherwise to those ready to be on-board the journey of reformation. Corbett and Wilson (1991) in their study found that a certain level of pressure is necessary for teachers who lack the drive for change. This group of teachers were found to become more serious and attentive in undertaking pedagogical change when pressure was applied.

Arguably, Corbett and Wilson's (1991) suggestion of pressure to align those resisting change would yield results fairly fast. On the other hand, the application of pressure to drive change is reliant on systems of monitoring, opening the question if the change in teacher-practices would be sustained in the absence of monitoring systems. It is opined by the researcher of this study on the impetus to bring this small group of resistors on track to avoid perception of inequity by those who are compliant but not fully convinced.

Summary

The chapter has highlighted features of professional development programmes, policies and practices which can augment or decrease teachers' intention to engage with further professional development programmes. The researcher of this study has opined possible issues in relation to some of the identified "effective" features of professional development programmes and present practices. The review has highlighted the importance of content of programmes, duration and the social environment commonly desired by participants. The researcher support findings that professional development programmes should not be a 'one size fit all' design.

To increase teachers' intentions to further develop their pedagogical creative capacity, existing professional development programmes, policies and practices should provide teachers with the rationale, appropriate levels of knowledge and support. Literature review in the early part of this chapter has demonstrated that studying variables in isolation will likely still present hindrances to teachers' desire to continue with professional development – in the context of this research, develop their pedagogical creative capacity.

The researcher rationalized that without engaging in creative teaching, teachers would have a lower intention to develop their pedagogical creative capacity. The examination of the impact of policies and practices was carried out through a review of issues that impeded teachers' enactment. This section of the review gave an insight into how economic driven policies can be an obstacle to creative teaching. Distal decision making was suggested as a hindrance to teachers' learning needs. Economic driven education policies have been criticized for discounting teachers' autonomy in the classrooms, subverting the opportunity to explore and experiment with creative

pedagogical approaches. Practices of transformational leadership was found to be impactful in bringing about higher levels of creativity in teachers. This is contingent on variables such as a positive and supportive environment.

The review has generally inclined towards understanding more of the structural aspects that are important in promoting an intrinsic drive. As such, it has not reviewed on the impact of monetary reward practices undertaken by school leaders.

CHAPTER THREE: METHODOLOGY

Introduction

Two of the education organisations involved in this study are situated in a middle to low social strata district of Singapore. Both these secondary schools provide a four to five-year secondary education to approximately two thousand or more students. While the management team for each school is different from the other, they are all considered personnel of the Ministry of Education. Admission to these two schools requires of the students to meet a certain aggregate point or possess a special talent in the form of sport or arts. Both these secondary schools are noted for their distinction in the development of the performing arts. The third education organisation involved in this study is a higher private education institution, specialising in various art disciplines. It provides no less than thirty programmes ranging from diplomas to post-graduate studies.

The researcher of this study is a current Subject Head of Aesthetics in one of the education organisations. Involvement with the performing arts in one way or the other has been a life-long activity. With the visual and performing arts as forerunners in the development of creativity, there was a persistent gnaw within this researcher that more can be done to develop students' creative capacity and effective learning in schools. Being an insider to the industry, it was felt that the existing pedagogical approaches are an impediment to the students' creative learning and growth.

As the researcher of this study has been immersed in the arts discipline for a long time, her perceptions of the boundaries between the various facets of reality have inevitably become more fluid rather than a distinctive dichotomous approach.

Truth through the lens of a Pragmatist paradigm.

This research study thus embraces a Pragmatist paradigm. A researcher approaching from this perspective recognizes that reality is transient and situated. Knowledge and reality are built on the basis of socially constructed beliefs and habits (Yefimov, 2004). The experience of each individual participant in this research study contributes to their own unique beliefs and reality about creative teaching and the need to develop their pedagogical creative capacity. No two individuals will achieve a precisely identical experience. While views may not be exactly the same, a pragmatist can accept that realities may be single or multiple (Creswell & Clark, 2007). The individual's environment and their experience play an important role in shaping reality for them (Morgan, 2014; Tashakkori & Teddlie, 2009).

Experience does not exist in a sterile and static laboratory. Instead, it interacts within a precarious and organic social environment/context. A pragmatist approach asserts that reality cannot simply be attributed to cognitive processes alone. It accepts that reality is usually more complicated than desired. More importantly, experience exists on a growth continuum. With each experience, an individual surpasses the past experiences. Human action becomes a function of beliefs and knowledge built from these past and present experiences.

For the pragmatist, knowledge is accepted as truth when it meets the purpose set by the individual or what has served as recurrent utility over time (Kaushik & Walsh, 2019). Truth remains as long as it meets the demands of real life. Additionally, new knowledge is a product of the inability of our habits to harvest any further successes. When habitual actions or ways fail to deal with matters in real life, the individual's inquiry process will be stimulated in an attempt to problem solve.

The Pragmatic philosophical stance of 'truth' is sometimes criticised for being counterfactual (Popper, 2014). The Realist accuses the Pragmatic philosophy of "neglecting falsification, and stressing application" (Popper, 2014, p. 152). Critical Theorists argue that Pragmatism essentially "evaluates existing reality according to its capacities for efficiency, expediency, and predictability" (Kadlec, 2006, p. 528).

These criticisms are in dissonance with this present research study. As asserted by Dewey, knowledge in itself is of little use if it cannot be applied to bring about growth. As this researcher is a practicing teacher and also a student-researcher, such a dictum expresses a personal and professional philosophy which is close to her heart. To this extent, Pragmatism resonates not only with the intentions of this study but allows the findings itself to be considered as knowledge. Yet, without further human action either to expand the study or apply the findings, there is little use of this knowledge. Knowledge without further application becomes a matter of 'so-what'.

Additionally, with the existence of vast epistemological and ontological diversities, potentially unique to every individual, defining the ultimate 'forms' of new knowledge or reality cannot be ascertained. This is also true in the situation of presenting the study findings to the readers. Each of the readers is likely going to be guided in their acceptance of the new knowledge by their idiosyncratic epistemological and ontological stances. Some of the readers, such as the policy- or decision-makers, who form a part of the intended reader audience, may be influenced by their burden of having to make funding decisions. Within the teaching fraternity, acceptance of new knowledge may be heavily influenced by tribalistic cultures and cognitive styles nurtured by the respective disciplines they engage in teaching/learning. The author of this study does not therefore assume that either quantitative or qualitative findings are

sufficient to persuade or convince the readers about the accuracy of the findings. From a Pragmatist's perspective, "instead of methods being important, the problem is most important, and researchers use all approaches to understand the problem" (Tashakkori and Teddlie, 2003, p.10). A mixed method approach is thus posited as having the best potential of achieving the purpose and intent of this study. Polarizing the "research into qualitative and quantitative is neither meaningful nor reflective of the realities of research" (Ercikan & Roth, 2009, p. 14). Accepting the findings from this study would depend on how confident the readers can be about the information generated from this study. The pragmatic mixed-method approach is adopted as the methodology in the belief that it will provide more relevant or holistic (Teddlie & Tashakkori, 2009) knowledge and information to the diverse group of this thesis readers.

Combining research methods

Qualitative research methods

The qualitative approach gives emphasis to the notion that human beings do not respond mechanically to external stimulus. Unique personal narrations, descriptions, and expressions become accessible to the researcher, thus lending greater validity in the findings (Denzin, 1989). Such idiographic properties inherent and privileged to qualitative studies should not be ignored as they vastly increase depth of understanding of the context matter that is being investigated.

The qualitative research also offers a unique advantage of providing a potential opportunity to uncover outlying elements which may not avail themselves through the number-based quantitative approach alone. The use of an objective quantitative

approach would not yield the real view of the participant's world or reality as seen through the lens of their life experiences (Lincoln & Guba, 2013).

It has been suggested by some authors that the qualitative research may be prone to the researcher's bias (Schulz, 1971; Wegener, 2014). However, the qualitative approach "begins with assumptions and the use of interpretive/theoretical frameworks that inform the study of research problems addressing the meaning individuals or groups ascribe to a social or human problem" (Creswell, 2014, p. 44). As such, it is not entirely 'free-form'. Rather, it follows a certain defined methodology which allows for a rigorous interpretation of the results while permitting a certain degree of flexibility. With new themes emerging during the analysis process, the researcher's bias and imposition of his/her personal views can be reduced further.

This research study followed a certain framework which had been pre-defined before commencement of the research. The existence of such a framework combined with open-mindedness to the new emerging themes were the important factors in reducing the researcher's bias. The author of this study works in the same environmental context as the research participants. Without allowing for the unattenuated voices or perspectives of the participants directly involved in the context that is being studied to be raised, it could have been possible that the researcher might have interpreted the responses through the lens of her own experiences of the similar working context. This might have resulted in certain misinterpretation of the participants' responses and therefore a researcher's bias. However, the researcher of this study consistently maintained open-mindedness and attentiveness to the opinions expressed by the participants as well as to the emergence of the new, unexpected themes in order to reduce the interpretative bias and "see the research topic from the

perspective of the interviewee, and to understand how and why they come to have this particular perspective" (Cassell & Symon, 2004, p. 28).

Quantitative research methods

For several decades there seemed to have been an unspoken yet persistent trend to rely on the quantitative research methods even in the social sciences. It has been pointed out, however, that the human existence encompasses too wide a gamut of experiences and details to be expressed truthfully and exhaustively through the statistic-based methods alone. Nevertheless, in spite of a decline in the push for quantitative research approaches over the qualitative ones, a resistance from the school of positivists still exists. Quantitative researchers attempt to find the objective evidence of the investigated phenomena through the scientific processes based on reason and logical deductions. Their findings are deduced from numbers and statistics.

Admittedly, quantitative research methods such as questionnaires and surveys provide unambiguous data. However, such instruments are less likely to be able to find unexpected but important contextual variables due to their customary close-ended question structure. Although there is certainly some pertinence in Silverman's (2014) caution to qualitative researchers to be mindful of "contextual sensitivity" (p. 19) and "romanticising the pursuit of participant's meaning and experiences" (p. 19), it is posited here that quantitative research findings may be faced with similar difficulties. The probability that a quantitative researcher may exclude variables that matter to the study would be much higher than that of the qualitative researcher. This is attributed to the distance between participant and the quantitative researcher limiting opportunities

for expansion or clarification since such studies do not include any narratives. In such a situation, quantitative findings cannot truly claim accuracy or truthfulness.

Another problematic issue with the quantitative methods is that they typically require large sample sizes in order to achieve a widely generalisable results applicable to larger populations. Although the selection of the large sample sizes has provided quantitative scholars with the opportunity to make claims of reliability and generalizability (Henn, Weinstein, & Foard, 2006) it has to be pointed out that the results obtained through the inferential statistics are nevertheless always an approximation. Regardless of the rigour of the statistical error tolerance accepted by the quantitative researchers, there is always a possibility that the inferred results are not accurate. Moreover, the large sample size involved in a study should not be equated with having a representative sample of the bigger population. Skilfulness and mindfulness in selecting a truly representative sample needs to be exercised by the quantitative researcher. Unfortunately, there is no guarantee that the sample will faithfully reproduce the entire population.

Finally, a vast number of other unforeseen factors can impact the both the research process and the findings. Those confounding variables, which are occasionally overlooked in spite of the best intentions of the researcher and the methodological rigour, can distort the results. This is especially true in such a context as teachers operating within a particular system, institution, or class. For instance, understanding why a student is not engaged in learning may require inclusion of many factors which might be within and beyond the classroom. Foreseeing all such possibilities, in order to account for them during the research process, is simply impossible. Combined with the aforementioned inherent limitations of conceptualising a sufficiently exhaustive gamut

of issues underlying the investigated concept one may easily see how the quantitative research methods may be perceived as inadequate in application to the social sciences dealing with such elusive concepts as human interpretations or emotions.

The debate about the supremacy of the quantitative over qualitative methods and vice versa continues into the area of reliability and validity of the qualitative research approaches which do not utilise the strict scientific inquiry methods and procedures (Cohen, 2012). It has been pointed out that validity of qualitative findings is mitigated by the inability to verify participant's personal statements through replication (Atkins & Wallac, 2012). While this observation may be true in the context of single participant case studies based on the participant lived-experiences narratives, validity and reliability of qualitative studies can arguably still be high due to the iterative comparisons involved in the process of analysis. It is postulated here that the qualitative findings, while perceived by quantitative researchers to have lower validity and reliability, may still possess a high degree of inference in their ability to serve as "theoretical mirrors" (Labaree, 2004, p. 100) for the participants.

The dispute about the superiority of one research method over the other does not seem to be possible to be ever concluded convincingly. However, it is the opinion of this researcher, that in case of the project described here, which explores the human interpretations and perceptions of their environment, intentions, beliefs, and attitudes, the most appropriate research method is the amalgamation of both the qualitative and quantitative paradigms. Such a mixed-method design allows for utilising the strengths of either approach while, at the same time, countering and eliminating each other's possible weaknesses.

Reason for choosing the exploratory sequential design

The mixed-method approach embraces mixed “philosophical positions, inferences and the interpretation of results” (Creswell & Plano, 2007, p. 2). This “third research paradigm” (Johnson & Onwuegbuzie, 2004, p. 14) may use quantitative and qualitative approaches at various stages of the research study. The approach is highly dynamic in that these two research approaches may be applied at different points of the research study. Application may be carried out simultaneously or in phases, as well as during the formulation of research questions, analysis, or interpretation. Utilisation of the quantitative and qualitative approaches can be made “in either a parallel, an integrated, or an iterative manner” (Onwuegbuzie & Teddlie, 2003, p. 353). There is an array of mixed-method designs developed (Creswell & Plano, 2007; Teddlie & Tashakkori, 2003) to provide researchers with a “variety of paths, or ideal design types” (Teddlie & Tashakkori, 2009, p. 139). These designs are frameworks which allow for dynamic combinations and are not advocated as “cookbook recipes” (Creswell & Plano, 2007, p. 60). The choice of the mixed-method design is commonly determined by the questions, purpose of the research study, and researcher’s beliefs and values. These elements determine whether a mixed-method design should be used. They also influence the prioritisation of qualitative over quantitative element or vice versa, application times of these two approaches, and the data analyses processes that will be undertaken.

An exploratory sequential design is a two-phase research method. It places the qualitative method before the quantitative phase for data collection process (Creswell & Clark, 2007). Findings from this qualitative phase allow for the building of questionnaire items in the second quantitative phase. This sequence of mixed method

provides the opportunity to examine similarities and differences of data collected from the different phases. As the primary intention of this study was to explore the phenomenon in context rather than explain the cause and effect, the exploratory sequential design was chosen over the explanatory sequential design.

Figure 2: Exploratory sequential data collection process

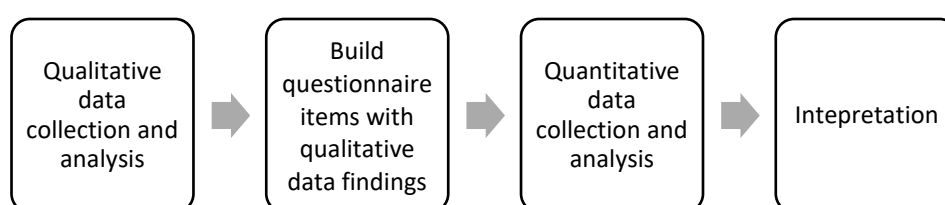


Figure 2. Two phases of data collection sequence.

The decision to adopt the exploratory sequential design for this study was driven by several factors. The absence of an established framework to interpret pedagogical creativity spurred the decision to use an exploratory design for this study. At the same time, the lack of existing literature on the impact the programmes, policies, and practices which may affect the Singapore-based teachers' willingness to further increase their pedagogical creativity was apparent. Consequently, the exploration of the existing state of the matter was a natural choice of the research direction.

In the absence of any knowledge about such interactions it was decided that a qualitative exploratory phase should be carried out first in order to find about the possible factors which influence Singapore-based teachers and the extent of their willingness to increase their pedagogical creativity. Subsequently, the quantitative phase would be implemented in order to corroborate and supplement the findings of the qualitative phase 1 thus increasing the validity of the qualitative findings through

the quantitative instrument. It was not a priority of this research study to produce a generalized theory through the supplementary quantitative approach.

The need for the quantitative phase to be carried out after the qualitative data has been obtained has also been influenced by the lack of an appropriate quantitative instrument which could be used in this study without any modifications. In such a situation, placing a quantitative approach before the qualitative approach would force the researcher to utilise an instrument which would not be fully compatible with the investigated matters. As a result, some potentially crucial information would have been omitted thus severely limiting the researcher's ability to "look at individuals, groups, institutions, methods and materials in order to describe, compare, contrast, classify, analyse and interpret" (Cohen, Manion, & Morrison, 2011, p. 256) and leading to potentially inaccurate findings. Implementing the qualitative phase first allowed for a discovery of several emergent themes which were deemed important by many participants. This, in turn, provided invaluable data which could be used to modify an existing quantitative inventory in order to make it suitable to the participants and contexts examined in this study.

The exploratory sequential design was also found to be more appropriate when compared to the experimental sequential design and explanatory sequential design. As this research was aimed at exploring the phenomenon and not testing an intervention strategy, the experimental sequential design was eliminated as being unsuitable for this study. The explanatory sequential design was not chosen due to the researcher's belief that the participants' opinions and views carried a weightage too important to be discounted or attenuated. Rather than collecting the participants' opinions and subsequently attempting to interpret them, the researcher chose to allow the

participants to voice their opinions and explore the unmodified world of their perceptions. This reduced the possibility of the investigator imposing her own personal assumptions or insider observations thus reducing the researcher's interpretative bias.

The objective of this research study was to provide the relevant information to a diverse group of stakeholders in order to highlight the kind of programmes, policies, and practices which could heighten the intention of Singapore-based teachers' to further increase their pedagogical creative capacity. Two groups of stakeholders were identified as most likely benefiting from this study findings: Those in the ranks of policy- and decision-making institutions and the teacher-practitioners themselves. According to a widespread perception, policy and decision-makers are often believed to be more convinced of findings when presented with statistical and numerical evidence. This may be attributed to the fact that many of these members would be managing the finances and budget. However, such epistemological and ontological inclinations are not exclusive to decision and policy makers; they are also embraced by some members of the teaching fraternity. The quantitative findings would thus provide such stakeholders with clearer and more specific information while the qualitative data would yield the sufficiently broad material for the researcher to interpret. The use of a mixed-method approach would therefore provide a more comprehensive range of findings through combining the strengths of both the qualitative and quantitative research approaches (Creswell & Plano, 2007; Green & Caracelli, 1997; Tashakkori & Teddlie, 1998).

It is evident that both qualitative and quantitative research approaches have their strengths and weaknesses. In this research study, it is posited that finding a perfect research approach to fit the topic is not the most important matter; rather, the most

important objective is deciding on the methodology which would best convey the research study's intent and outcomes.

Recruitment process and purposeful sampling

A total of twenty-seven email invitations to participate in this research was sent to principals of government secondary schools and one to a private higher education institution. Prior to sending invitation emails to the potential participants, approval from Singapore's Ministry of Education was sought to collect data from secondary schools. Approval was given to collect data from four secondary schools, involving a total of no more than 21 teachers, within a period of 12 months commencing from the middle of June 2017. This researcher was also advised by the Ministry not to conduct data collection during peak seasons such as school assessment periods. As the approval from the Education Ministry did not give automatic access to data collecting from the secondary schools, emails had to be sent to principals of the respective secondary schools seeking permission to collect data from their organization.

The chosen secondary schools are fully government-supported schools, situated within the districts considered to be predominantly housing middle income social strata demography. Permission to collect data was granted by two secondary schools' gatekeepers and the higher education institution from the first batch of sent email invitation. An attempt to recruit more potential research participants via an alternative invitation approach was undertaken due to the low response rate via the approached school gatekeepers. Reversing the process of starting with gatekeepers of the organisation, email invitations were sent directly to twenty-one potential participants from another seven secondary schools. It was hoped that with positive responses

received from potential participants, formal invitations to their respective school leaders would see more positive results. Unfortunately, this approach did not receive any responses from willing research participants. Thus, no follow-up action was taken to seek approval from their respective gatekeepers.

Twelve emails were sent out to the potential participants in the two secondary schools. Ten positive responses and two rejections were received. The lack of time due to their workload was cited as the reason for not accepting the invitation to participate. From the higher education institution, eight positive responses were received after twenty-five email invitations were sent to faculty members from the different discipline faculties. There was an attrition of two participants before finalization of data analysis phase. No reasons were provided by the participants.

In compliance with ethical processes, once potential participants indicated their willingness to participate, the Participant Information Sheet was emailed to them. It was emphasized to the participants that participation was voluntary, and withdrawal was an option at any point in time before data analysis. They were also informed that recording would take place during face-to-face interviews and transcripts would be sent to them for verification. Participants were also assured of confidentiality and anonymity. It was envisioned that with clarity of the ethical processes taken to ensure confidentiality and anonymity, there would be a sense of security for the participants to respond more openly.

A purposeful sampling process was carried out for this study. Potential participants were selected based on their ability to provide realistic and meaningful accounts of their organisations' policies, practices, and programmes which may limit or augment their intention to increase their pedagogical creative capacity. The intent of a

purposeful sampling procedure was targeted at finding “information rich” participants who would be able to elucidate on the questions of the research study (Patton, 2002, p. 230). Patton (2002) defined “information-rich” as sources from which “one can learn a great deal about issues of importance to the purpose of the inquiry” (p. 230). As such the selection of participants was chosen to be purposeful. Besides being a source of information, the selection was also aimed at gathering a sample which would be representative of the wider teaching population. With the greater percentage of teachers having left teacher training programmes at the National Institute of Education more than five years ago, one of the criteria for participation was a five-year teaching experience baseline. This criterion of five years or longer teaching experience was set to uncover the experienced in-service teachers’ beliefs and attitudes toward pedagogical creativity. Features, which guided the selection, included the following set of criteria:

- Teachers with at least five years of teaching experience.
- Participants from secondary schools will have had local education background for at least nine years.
- Participants from the higher education institution would be selected based on their cultural background. They would need to have spent at least the first twenty-five years of their lives in either a collectivist or individualist cultural backgrounds.

It is posited that participants in this research study may not display highly disparate individualist and collectivist creativity attributes due to the cosmopolitan Singapore.

Table 1. Profile of Participants

Table 1

Participants' Cultural Background and Length of Teaching Experience

ORGANISATION NO.	PARTICIPANT NO.	YEARS OF TEACHING EXPERIENCE	DISCIPLINE	CULTURAL BACKGROUND
OG. 1 Secondary School	01	9	Core academic subjects	Collectivist
	02	7		
	03	10		
	04	9		
	05	8		
OG. 2 Secondary School	06	12.5	Core academic subjects	Collectivist
	07	10		
	08	13		
	09	14		
	10	39		
OG. 3 Higher Education Institution	11	30	Non-core academic subjects	Collectivist
	12	6		Individualist
	13	>5		
	14	8		Collectivist
	15	>15		
	16	~10		

environment. There may in fact be a narrowing of gap between the collectivist and individualist cultures especially in the context of creative pedagogical approaches. This narrowing of disparity may be due to the Singapore government's emphasis on providing a good education system for the nation by keeping up-to-date on education developments in the world. On the other hand, it may also be due to globalisation and commodification of education. Technology is likened to have also contributed to the easier access of pedagogical knowledge information thereby leading to the use of less collectivist prototypical pedagogical approaches. As such, this researcher envisioned the sample of research participants from both the collectivist and individualist cultures to have similar perceptions of the investigated research topic and similar ways of developing their own pedagogical creativity. Nevertheless, the participants from both collectivist and non-collectivist cultures were chosen to provide a comprehensive selection and to examine the researcher's supposition.

Method of data collection and analysis

Phase 1: Qualitative data collection

There are different methods of data collection that qualitative research studies may adopt. Some of the common methods taken by researchers are on-site observations of participants, conducting interviews or collecting documents and artefacts. The aim of qualitative research methods essentially targets at gaining "construct reality in ways that are consistent and compatible with the constructions of a settings' inhabitants" (Erlandson et al., 1993, p. 81).

With the primary aim of discovering systemic augmenters or hindrances in motivating teachers to further increase their pedagogical creative capacity, the

interview method was chosen to suitably facilitate the objective of this research study. Two modes of interview were planned for implementation in phase 1. An online-based face to face interview through Skype was intended to offer a higher level of anonymity and confidentiality in comparison with physical on-site meetings. This form of interview was thought to also encourage participants to be more open during the interview while still having the personable interaction between the researcher and participant. Email interview was the second mode chosen for this research study. In anticipation of difficulty in synchronizing time to meet online, the email interview option was also included as another possible data collection method.

A review of existing research scholarships indicates a low level of usage for this form of interview although Creswell (2014) indicates this approach as suitable for the “geographically dispersed group of people” (p. 241). It is posited here that email interviews would be a viable mode in this research study as they would allow participants to reply at their convenience, thus circumventing the issue of synchronizing meeting times. The absentia of the researcher may be considered as both a benefit or detriment to the data collection process. While some participants may feel more comfortable with the presence of a researcher, others may find it as an impediment to being more open to express themselves. For this latter group, the privacy afforded by email interviews can provide participants with a comparatively better feeling of security when writing about sensitive matters (Nicholas et al., 2010).

Interviews did not commence until participants reverted with their voluntary willingness to participate in this research study. In phase 1, although participants were offered the option to participate in a face-to-face interview, fourteen of the sixteen participants opted for the email interview option while two of the participants opted for

a non-online face-to-face interview. One of those participants opted to have the interview conducted on-site while the other participant opted to meet outside of the organisation for the reasons of confidentiality and privacy. In both cases, their requests were acceded to and meeting times were arranged accordingly. The interviews were audio-recorded and transcribed by the researcher. Thereafter, both participants were able to have a week or more to read through their interview transcripts and make the necessary amendments before sending it back to this researcher. The semi-structured interview questions (Annex G) prepared by the researcher were used for both the face-to-face and email interview modes.

To analyse the collected qualitative data, numerous rounds of re-reading of the narratives were carried out to identify common themes. In addition, MaxQDA qualitative data analysis software was used to facilitate coding as well as content analysis. Through a combination of recurrent reading and juxtaposing with coding frequencies obtained through the use of MaxQDA, themes were identified from this set of qualitative data analysis.

Phase 2: Quantitative data collection

The primary purpose of the quantitative data collection in phase 2 was aimed at discovering the participants' intention towards the behaviour directed at further developing their pedagogical creative capacity. At the same time, this study also attempted to gain an insight into how different beliefs impacted the decision-making processes of the participants and whether those differed between the three examined institutions. It was deemed that such information could provide the local policymakers or course designers information which would aid in optimizing the design or

modification of the programmes, policies, and practices directed at the development of the Singapore teachers' professional creativity.

The access to participants was highly limited by different levels of gatekeepers as well as the participants' curriculum schedule and rest time. Due to those obstacles, implementation of a pilot study of the questionnaire was not conducted with the same research participants as recommended by some researchers (Francis et al., 2004). In place of the recommended elicitation study, the relevant emergent themes derived from the analysis of the qualitative data obtained in phase 1 of this research were used to construct the items for the phase 2 quantitative data phase.

Ajzen's (1985) Theory of Planned Behaviour provided the theoretical framework for examining the participants' intention to further increase their pedagogical creative capacity. In line with this theoretical paradigm, it was assumed that the intention to perform or avoid a specific action is the determinant of whether such an action will be undertaken or circumvented in agreement with Ajzen's (1985) suggestion that one's beliefs exert major influence over his/her decision towards undertaking an action.

Construction of the Phase 2 quantitative questionnaire

Similarities and differences with Ajzen's questionnaire

Items in the questionnaire used in this study were designed to capture the essence of Ajzen's (1985) Theory of Planned Behaviour. The selection of the emergent themes was guided by Ajzen and Fishbein's (1980) guidelines on determining the importance of certain beliefs held by the participants. In essence, Ajzen and Fishbein (1980) deemed the beliefs or outcomes mentioned with a high frequency as the most essential. A similar notion was espoused by Sutton et al. (2010) who advised selection of the beliefs

that “exceed a particular frequency, for example all beliefs mentioned by at least 10 percent or 20 percent of the sample” or beliefs which can “account for a certain percentage (e.g., 75%) of all beliefs elicited” (p. 237).

The recurring themes found through the qualitative data analysis, such as the level of confidence in one's own pedagogical creative capacity (40%) and the time constraints (35%), were identified as the most relevant items. They were therefore deemed to be representing the insights of the participants' Perceived Behavioural Control beliefs and consequently included in the questionnaire used in the quantitative phase of this research.

It is posited here that the emphasis placed by Ajzen (2002) on careful wording of the questions attenuates the accuracy of the participants' responses related to the Behavioural Intention examined in his studies. Semantic differentials which elicit affective outcomes (like, dislike) and those which elicit instrument outcomes (advantages, disadvantages) have been found to lead to variances in belief results (Herath, 2010; Sutton et al., 2003). Although at the moment of writing this thesis there appears to be no literature pertaining to the reasons behind the existence of such variances, it could be hypothesized that certain domains of one's functioning are likely deemed by the respondents as more important to them. Consequently, the weightage they assign to such issues and therefore the responses they choose may be somewhat stronger than the responses to the other less important items thus creating unintended differences in the responses and the obtained results. While there is a clear attempt by Ajzen (2002) to assuage any biasness through aggregation of affective outcomes and instrument outcomes, the lack of specification in the number of items for the individual intention predictors still opens the questionnaire to a certain bias possibility. As a

result, Ajzen's approach arguably attenuates the validity of the results he had obtained.

According to Francis et al. (2004), the minimum number of items recommended for each construct is three. For studies which intend to find "behavioural simulation method", the entire questionnaire should "consist of a minimum of 40 carefully worded items" (p. 26). It appears that Francis et al. (2004) have an assumption that researchers would accord an equal number of items to each of the Intention predictors. However, it is argued here that with an increment of items with affective outcomes, biasness can be introduced even when results of each predictor is aggregated. Without an explicit instruction of inclusion in a balanced number of affective and instrument outcomes for each Intention predictor, the constructed questionnaire may comprise an uneven number of items pertaining to each examined construct. This can have a potentially serious impact on the Intention results. As mentioned before, empirical studies have suggested that the responses to the questionnaire items, which prompt affective and instrument outcomes, differ significantly from the other items (Herath, 2010; Sutton et al., 2003). It is therefore only natural to expect that an uneven or ill-balanced amount of the questionnaire items could lead to creating a bias set of modal items in the final inventory. As the respondents may be subconsciously assigning a varying degree of importance to the issues, their responses to the issues they are asked about would likely skew the obtained results.

Unlike studies conducted by Ajzen and other researchers of the Theory of Planned Behaviour, this present study does not involve an activity that is inclined towards a personal choice, for instance, boating or exercising. It is posited that as educators, especially in the context of adopting new pedagogical approaches or habits, development of pedagogical creativity it is not a matter of being driven by one's

personal preference or affection but a matter of professionalism which could be equated with undertaking what is necessary to help students learn more effectively. As such, the questionnaire for this study has utilised prompts that are largely directed at obtaining instrumental beliefs rather affective beliefs.

In accordance with Francis et al.'s (2004) recommendation, a minimum of 12 items were extracted from the initial draft questionnaire to conduct a direct measure of the participants' Attitude, Perceived Behavioural Control, Subjective Norms, and Behavioural Intentions (Appendix I). For each component three items were created with the scoring based on seven-point Likert scale. This form of questionnaire with 12 items assessing the Attitude, Perceived Behavioural Control, Subjective Norms, and Behavioural Intentions was considered as sufficient by Francis et al. (2004, p. 27) if the aim was directed towards examining the participants' Behavioural Intentions. A further set of three paired items was also included to examine the participants' Behavioural Beliefs, their individual evaluation of the outcomes in relation to their Behavioural Beliefs, Perceived Behavioural Control with Power of Control, and finally Normative Beliefs with the Compliance Motivation.

Likert scale choice

The initial questionnaire comprised 54 items using the seven-point Likert scale format. Besides aligning with the answer format of the Theory of Planned Behaviour, the seven-point Likert scale was adopted for the purpose of identifying the number of participants with less prominent Behavioural Intentions to increase their pedagogical creative capacity. While agreeing with Peabody (1962) that Likert scales essentially measure the direction of the participants' responses and "only to a secondary degree

actual differences in intensity" (p. 73), the researcher of this present study posits that it is important to have a gauge of how the intensity varies. As such, the choice of the Likert scale format was deemed as suitable. Despite this possibly attenuated accuracy in measurement, having a seven-point Likert scale increases the opportunity for individual participants to better express their self-evaluated level of behavioural intention. Withstanding the arguments of possible response style bias, it was felt that the ability to identify levels of Behavioural Intention intensity in this study would allow for greater consideration into what could be further improved in planning of the programmes, policies, or practices. A binary response scale, for example, a "yes / no" would have, on the other hand, severely limited the possible responses and thus eliminate any opportunity of identifying the different bands of Behavioural Intention intensity.

Internal consistency of Direct Measure items

As the items in this study's questionnaire were crafted with a slight difference to those of Ajzen's sample questionnaire, a check for inter-item relatedness or item homogeneity in the respective components was undertaken. The Cronbach's Alpha reliability test was conducted for all components in the questionnaire. There was a generally high coefficient for Direct Measure items in Attitude ($\alpha = .84$), Perceived Behavioural Control ($\alpha = .86$), and Subjective Norms ($\alpha = .79$). Behavioural Intention coefficient was found to be $\alpha = .59$, which is marginally lower than the value of .6 recommended by some researchers (Francis et al., 2004).

Attitude's internal consistency

The internal consistency for the direct measurement of Attitude was found to be in a healthy range. The Cronbach's Alpha for Attitude yielded a strong internal consistency coefficient of $\alpha = .84$. Three out of six items from the initial questionnaire were chosen for the final data analysis. Semantic differentials included the use of 'extremely unexciting' – 'extremely exciting' and 'untrue' – 'true' for the three items examining Attitude through Direct measure. Items included both instrumental and experiential construct as advised by Francis et al. (2004). Instrumental items refer to items which are associated with an outcome derived through enacting the behaviour. Experiential items are statements relating to affective aspects when performing the behaviour.

Attitude towards an action or behaviour denotes the "personal evaluation of a behaviour" (Ajzen, 1991, p. 199). The evaluation of this phenomenon was further espoused as "the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question" (Ajzen, 1991, p. 188). It is important to note the time factor in the Attitude component. An attitude is generally formed from a past observation or experience of the behaviour. As such, two out of the three items in the questionnaire for this study prompted for experiential responses.

Perceived Behavioural Control's internal consistency

Perceived Behavioural Control may be understood in this study as an individual's subjective self-efficacy evaluation. The participants' evaluation is theorized as fuelled by their perception of whether they are likely to succeed or fail based on their ability to control both the internal and external factors. An individual's skill set is an example of an internal factor and an example of external factor would be control over resources

available to enact the behaviour. Francis et al. (2004) defined this variable as “the extent to which a person feels able to enact the behaviour” (p. 9).

To examine the Direct Measure of the participants' Perceived Behavioural Control, a set of three items was selected from the initial questionnaire. Cronbach's Alpha coefficient checking for inter-item relatedness reported strong coefficient of $\alpha = .86$.

Subjective Norms' internal consistency

Besides taking into consideration the personal evaluation of the act or behaviour, the Theory of Planned Behaviour asserts that individuals also look into the “general social pressure to perform (or not perform) the behaviour” (Armitage & Conner, 2001, p. 474). Opinions of important people such as family members or significant others with whom the individual dwells in socially and professionally are believed to have an impact on the individuals' evaluation of the behaviour. From this perspective, reporting officers (line managers) and organisational culture have been included as important referents in the context of this present study.

Three items were selected from the initial questionnaire of four items. The Cronbach's Alpha test result was used to determine the final three items for data analysis. The Subjective Norms analysis yielded a high internal consistency value of $\alpha = .79$. The items were assessed using two sets of semantics differentials: ‘Strongly agree’ – ‘Strongly disagree’ and ‘Definitely true – Definitely untrue’ (Annex I).

Behavioural Intention's internal consistency

To increase the validity of the participants' responses in this component, the items utilized to collect the data did not adopt Ajzen's format of a single statement item with

varying semantic differentials format. For instance, to evaluate an individual's intention to "walk on a treadmill for at least 30 minutes each day in the forthcoming month is", Ajzen used a variety of descriptors such as "harmful – beneficial", "unpleasant – pleasant", "good – bad", "worthless – valuable" (Ajzen, 2002, p. 5). The author of this study believed that such a mode of item construction, although providing high internal consistency, would lead to low validity. This viewpoint was also espoused by Kline (1979) who wrote that "if one constructs items that are virtually paraphrases of each other, the results would be high internal consistency and very low validity" (p. 3).

To examine the participants' intention to increase their pedagogical creative capacity, three items were included in the final data analysis. The Cronbach's Alpha test reported a slightly lower value of $\alpha = .59$. In contrast to the classical assertion that by including more items the Cronbach Alpha value may be increased (Hattie, 1985), this was not found to be the case in the described study. The inclusion of the item 'I will try to increase my pedagogical creative capacity' proved problematic. Using the semantic differentials 'definitely untrue – definitely true' on a seven-point Likert scale, the Cronbach Alpha test result reported $\alpha = .59$ value for inter-item homogeneity. Deleting this item from the Behavioural Intention component would have increased the Cronbach Alpha value to $\alpha = .60$. This increment was found not to be significant enough to warrant the deletion of the item based on the value of $\alpha > .60$ recommended Francis et al. (2004). The decision to include this item was guided by three factors. Firstly, the elimination of this item would not have improved the Cronbach's alpha value significantly. Next, there are ongoing debates on the validity and accuracy of the Cronbach's Alpha test for item homogeneity (Sijtsma, 2015; Starkweather, 2012) and this item would provide participants with the opportunity to indicate the intensity of

their intention towards developing pedagogical creative capacity. Lastly, having the “breath of content” is important even if this would have an attenuating impact on the internal consistency (Francis et al., 2004, p. 62).

Indirect Measure data

According to the Theory of Planned Behaviour (Ajzen, 1991), positive Attitude comprises the belief (Behavioural Belief) that for a certain behavioural action there will be a certain valued outcome (Outcome Evaluation). A positive outcome evaluation is thus a function of an individual's subjective evaluation, derived possibly from the past experiences and the *accessible* memory.

Based on the Phase 1 qualitative data, analysis found several emergent themes such as the need for professionalism, incentives, and the lack of push for teachers to develop pedagogical creative capacity. This has led to the analysis of the selected questions in Phase 2 quantitative analysis (Annex J).

A significant number of participants highlighted time constraints and surmountable administrative duties as matters of concern with regard to their development of pedagogical creative capacity. This finding was deemed to be a valuable information for policy makers and professional development programme designers. The existence of those participants' concerns has guided the selection of items for final data analysis in the component for Indirect Measure of Perceived Behavioural Control (Annex J).

According to the Theory of Planned Behaviour, Perceived Behavioural Control is attributed to the individual's self-efficacy belief (Behavioural Control) or confidence level in enacting the intended behaviour. This works in tandem with the individual's

evaluation of the resources available or the ability to control factors to facilitate enactment of such intended behaviour. However, items in the Perceived Behavioural Control (indirect measure) for this study, refrained from including items which addressed self-efficacy. Findings from the Phase 1 qualitative data analysis generally indicated participants' generally moderate to high level of confidence in their own pedagogical creative abilities. Confidence was thus interpreted as having self-efficacy. In view of the slight unfamiliarity with the creative capacity concept by participants, it was decided that items in the questionnaire should not be focusing on the participants' belief in the pedagogical creative skill set in itself but to uncover factors which could facilitate development of professional development programmes. The selected items included to measure the participants' Perceived Behavioural Control through Indirect Measure can be found in Annex J.

Next, Subjective Norms was theorized to be the participant's belief in social pressure (Normative Beliefs) with regard to enactment of the behaviour in context. While the individual is aware of the pressure from the significant others or important persons of reference, the participant's evaluation of the need to comply (Motivation to Comply) with this social pressure would have an impact on the Subjective Norm. It was rationalised that the impact of significant others such as family, school leaders, and the professional social circle would play a part in influencing the participants' motivation to comply. As such, items related to these referents were selected to support this investigation (Annex J).

Analysis of Indirect Measure data using unipolar scale

In contrast to the format of using mean scores for Direct Measure components, the inclusion of the unipolar scale range of -3 to +3 was recommended for the Indirect Measure evaluative items (Francis et al., 2004). This unipolar scale was applied only to the three beliefs for each of the behavioural beliefs under Indirect Measure. As the sample size was small, the previous Likert scale responses were recoded manually. Likert scale responses that were originally with a value of 4 was recoded as '0' in the unipolar scale; the value of 1 was recoded to become a -3 value and the Likert scale response of a 7 was recoded to become a +3. While ease of calculation was cited as the reason for this conversion (Francis et al., 2004), a trial of no conversion to the responses in this present research study did not yield significant changes to the analysis results. The score range of -63 to +63 was obtained through the formula of $(7 \times \pm 3) \times 3 = \pm 63$ which was calculated according to Francis et al.'s (2004) directions. This entire score range was then divided into the different segments with the value of 0 as the neutral point.

Internal consistency of Indirect Measure items

Under the Indirect Measure component of the questionnaire, the Theory of Planned Behaviour elucidated behavioural beliefs together with the participants' individual outcome evaluation. It was theorized that such coupling played a decisive role in the individual's construction of his/her Attitude towards a behaviour. The individual's belief in his/her Behavioural Control and the Power of Control as ascertained by the resources available to enact the behaviour contributes to the Perceived Behavioural Control component. Influencing the individual's Subjective

Norms are the Normative Beliefs. These beliefs are the individual's subjective beliefs of the social pressure in relation to the behaviour in context. While an individual may be aware of this social pressure, there is no certainty that there will be a motivation to comply.

Francis et al. (2004) asserted that it is illogical to tests for reliability using the "internal consistency criterion" (p. 9) for indirect measures. Because it is possible for individuals to hold both negative and positive beliefs, it would be irrational to "eliminate some of these beliefs from overall measures on the grounds of low or negative correlations among them" (p. 9). Although a test-retest procedure would have provided an alternative form of reliability test, this was not carried out due to the limited access to the participants.

Choice of testing tools for Phase 2

With the prevalent acceptance of the parametric tests as robust testing tools (Norman, 2010), it should perhaps not be surprising that some scholars treat the responses obtained on the Likert scale as continuous rather than ordinal data. The results obtained through the use of the parametric tests are commonly viewed as statistically more powerful even if such perceptions have been argued to be fundamentally inaccurate (Knap, 1990).

As a result of such widespread – albeit inaccurate – perception, many policy and decision makers frequently consider the results of the analyses based on parametric tests as unequivocally superior. However, in order for parametric test to yield valid results, six assumptions need to be met. These assumptions include two or more categorical groups of the independent variable, independence of observations,

normality of distribution of the independent variable distribution across all categories, homogeneity of variances, absence of significant outliers, and continuous dependent variable. While an appropriate research design would ensure that some of these assumptions such as independence of observations or two or more categorical groups of the independent variable are met others are beyond the researcher's control.

To establish the normality of variance distribution in the investigated groups the Shapiro-Wilk test was performed for each group of participants in each of the categories. This yielded a total of twenty-one results (twelve in "Direct measures" condition and nine in "Indirect Measures" condition). While the results in the "Indirect Measures" condition indicated data was normally distributed, not all items in the "Direct Measures" condition met the condition of distribution normality. The failure to meet this required assumption by all the items warranted the use of non-parametric tests for analysis.

Levene's test was performed to examine homogeneity of variance for each of the conditions. Similar to the normality of distribution, the results indicated that variances were homogenous in "Indirect Measures" condition but not in "Direct Measures" condition. As the assumptions were not met in all the conditions, the use of the non-parametric test was considered as likely to deliver the more accurate results.

The data obtained in the quantitative phase of this study did not produce significant outliers. However, it should be pointed out that it may be possible to curtail the problem of significant outliers through an appropriate choice of an administered inventory or, more specifically, its scoring. If the responses are scored on a Likert scale and the amount of available options is markedly limited the outliers would be absent.

In a hypothetical situation, where the provided choices would be "disagree", "neutral",

and “agree”, assigning the numerical values to the responses as “1”, “2”, and “3”, respectively, would automatically eliminate the outliers as the algebraic properties of the answers would differ very little. The situation would not change significantly if the number of the given choices was to be increased to a slightly larger number such as 5 or 7. In such a case the only possibility that outliers exist would be in a situation where practically all the responses given by all the respondents centred around a single number on either of the extreme sides of the response scales. However, such clustering of the responses would not reflect the real-life distribution. Instead, it would indicate that all the respondents were displaying a certain bias thus effectively invalidating all the obtained data.

The questionnaire used in this study was based on a seven-point Likert scale. As a result, the absence of significant outliers was practically guaranteed. However, due to the reasons mentioned before, the obtained results may not necessarily fully reflect the possibly wide range of participants' feelings. As such, the obtained results should not be deemed as unequivocally fulfilling the requirement for the use of parametric tests.

Creation of an inventory, in which the number of response items was relatively low, resulted in another issue related to the fulfilment of perhaps the most important requirement of the parametric tests usage. In order for the parametric tests to yield valid results the dependent variable must be continuous or interval. However, the data obtained in the quantitative part of this study comprises responses derived from seven-point Likert scale which is customarily deemed ordinal (Boone & Boone, 2012; Norman, 2010; Sullivan & Artino, 2013). Although it has been suggested that the responses obtained through Likert-based scales could be treated as continuous if there is a

sufficient number of categories, there appears to be no universal agreement on the necessary number of categories except that “increasing the number of points will bring the scales closer to the continuous” (Wu & Lueng, 2017, p. 531).

Consequently, the debate on the validity of results obtained by using parametric tests on non-continuous data has yet to come to a universal consensus. Various authors were found to have arrived at conflicting conclusions (Gregoire & Driver, 1987; Norman, 2010). Although it is theoretically possible to map continuous data onto non-continuous and vice versa, it has nevertheless been pointed out that such transformations inevitably result in a loss of information (Cohen & Cohen, 1983; Rasmunssen, 1989). As a result, analyses of such transformed data are problematic with some existing studies highlighted as misinterpreted (Rasmunssen, 1989).

In regard to the Likert-based scales, it has been repeatedly pointed out that the differences between the descriptive, word-based categories should not be treated as equidistant (Bishop & Herron, 2015; Sullivan & Artino, 2013). It should also be noted that the semantic meaning between the categories may be interpreted arbitrarily and that such interpretations may vary greatly among the respondents. As Bishop and Herron (2015) observed, “In a Likert-response item with choices varying from ‘Strongly Disagree’ to ‘Disagree’ to ‘Neutral’, to ‘Agree’ to ‘ Strongly Agree’, it would appear to be in the mind of research participant whether or not there is an equal distance between each of those choices” (p. 298). Similarly, Sullivan and Artino (2013) suggest that “the differences between ‘always’, ‘often’, and ‘sometimes’ on a frequency response Likert scale are not necessarily equal” (p. 541).

This situation is exacerbated further if the number of offered options was increased, as it was the case in this conducted study. The seven-point Likert-based scale

resulted in such categories as “strongly disagree”, “disagree”, “somewhat disagree”, ‘neutral’, etc. While increasing the number of available options provided the respondents with a wider gamut to express their opinions, it should also be noted that the differences between categories such as “strongly disagree” to “disagree” versus “disagree” to “somewhat disagree” might have been interpreted by the participants as markedly different. As some other items of the used inventory provided answers on a scale such as “Extremely unexciting” to “Extremely exciting” or “Less important” to “Very important”, the semantic-based understanding of such options could have differed even more among the participants. If that was indeed the case the “interval” property of the distances between categories would effectively be invalidated thus rendering them unsuitable for analyses using parametric tests.

Finally, the data obtained during this phase of the research originated from unequal sample sizes. In spite of the effort and care taken to select samples of equal sizes, thus creating equal conditions for analyses, participant attrition resulted in one of the sample sizes differing from the rest. As participant attrition was beyond the control of the researcher, this problem was deemed as an additional reason to select non-parametric tests for the analysis of the quantitative data obtained in phase 2.

Based on these considerations and the attempt to remain true to the participants’ responses, non-parametric tests appeared as more likely to deliver valid results. Such an approach has been suggested by the numerous examples of the literature (Peres-Neto & Olden, 2001). The statistical test of choice was therefore Kruskal-Wallis H test which is regarded as a non-parametric equivalent of one-way ANOVA (Zimmerman & Zumbo, 1993).

Summary

This study utilised an exploratory sequential approach to understand how existing programmes, policies and practices hinder or promote their development of pedagogical creative capacity. This study also identified the participants level of intention to develop their pedagogical creative capacity. Ajzen's (1980) Theory of Planned Behaviour was not used as an instrumental tool. The theory provided a basis for understanding how belief systems impact the intentions of individuals in relation to their development of pedagogical creative capacity.

CHAPTER FOUR: QUALITATIVE AND QUANTITATIVE FINDINGS

Introduction

Chapter 3 presented the study design and the reasons behind the choice for a mixed method approach in this research. The chapter also discussed the possible bias in Ajzen's (1991) Theory of Planned Behaviour's questionnaire and subsequently provided an insight into the design of questionnaire used in the quantitative Phase 2 of this study.

Chapter 4 presents the findings from both qualitative and quantitative data analyses. A mixed method (sequential exploratory) design, comprising both qualitative and quantitative methodologies, was chosen as the most suitable for the conducted research. Although the objectives of the two data collection approaches could have been merged into one comprehensive quantitative-based model to obtain similar information, it was earlier decided that such a process might result in partial obstruction of some potentially important data, such as participants' personal observations and perceptions, thus reducing the authenticity of their opinions obtained through the data collection. The inclusion of the qualitative phase of the research based on the semi-structured interviews with the participants, enabled the researcher of this study to maintain the intended direction while, at the same time, allowed the participants to freely voice their viewpoints on the matters they had deemed important.

Additionally, it was decided that the reliance on the quantitative method alone could have potentially increased the researcher's bias. In the absence of an appropriate inventory examining the constructs investigated in this research a suitable instrument had to be developed by this study researcher. Although utmost care would have been exercised during the formulation of the inventory, the possibility of potential bias

influencing the items by the researcher's insider perspective could not be eliminated entirely. At the same time, it was decided that the reliance on the qualitative method alone might lead to an increased subjectivity of the data interpretation due to the same potential researcher's bias. Finally, the reason for choosing the mixed method was to have a source for data triangulation thus further validating the obtained responses.

Qualitative data derived from face-to-face and email interviews provided findings of the participants' attitudes and beliefs towards the concept of teachers' creative capacity, importance of pedagogical creative capacity, participants' own pedagogical creative capacity development, and their perception of the constraints, support, and facilitations provided by both their government and their respective work organizations in the development and their self-evaluated levels of pedagogical creative capacity. This section also describes the participants' awareness of policies, programmes, and practices that are directed at developing teachers' creative capacities, as well as the preferred modes of professional development that participants deem effective in developing teachers' pedagogical creativity. In the last section, the participants' self-evaluated confidence level in pedagogical creativity and how they have exercised creativity in their classes thus far will be provided.

While the qualitative data provided information on the participants' perception of the support or lack of support in their development of their creative pedagogy, quantitative data looked into the participants' intentions to develop their pedagogical creative capacities.

Findings from qualitative data

Awareness of pedagogical creative capacity concept.

The analysed data indicates a lack of familiarity with or awareness of the concept of pedagogical creative capacity among the participants. Although the participants from all three organisations had a low level of awareness of this concept, the participants from the higher education organisation fared slightly better. Eight out of ten participants from OG 1 and OG 2 indicated that they were not familiar with the concept. OG3/P12 indicated that although there was a lack of familiarity with the concept it could be guessed that creative capacity referred to “the range and how far the person’s creativity can stretch or be pushed to”. In total, eleven out of the sixteen participants did not have a clear idea of what constituted pedagogical creative capacity or had a misconstrued perception of this concept.

Importance of teachers’ creative capacity.

Analysis of the data showed that all sixteen research participants unanimously asserted the importance of creativity in teaching regardless of whether their teaching experience spanned over the period of less than ten or more than twenty years. Participants with more than twenty years of teaching experience would not have had the privilege of being a through-trained students of the creative education movement introduced in Singapore in 1999. For those participants learning creatively or in an education environment endowed with creative teaching would have been minimal if not absent. In spite of this, similarly to the other younger participants in this research study, they have projected the belief that teachers’ creativity would have an impact on students’ learning. Participants asserted that embracing pedagogical creativity as not a

choice but a must-have by those in the teaching profession as attested to by the following quotations from the qualitative interviews.

"Being one of the key influencers of our young, it is critical that teachers themselves are equipped with and exemplify what it means to be creative, so that there is some form of role-modelling for those who are interested."

OG1/ P01

"Why a creative teacher is very important is because of the impact teachers have on students."

OG2/ P09

"I feel it's extremely important. To me as a teacher there are two types of creativity as an educator. One is creativity in my teaching methods and to create a learning environment for my students that encourage creativity..."

OG3/P12

While all sixteen participants asserted the necessity for teachers to have pedagogical creativity, there was a difference in their perceived influence of its positive effects on the students. For many of the research participants in this study, the goal of a teachers' pedagogical creativity was to prepare students for their future. In those participants' opinions, providing students with the creative skills and abilities to deal

with the increasingly volatile and unpredictable world work-environment in the future was the goal of their own pedagogical creativity.

"I firmly believe that developing our teachers' and students' creative capacity is crucial to their functional efficiency & effectiveness in the VUCA world."

OG2/P10

"I think it is extremely important given the technological advances that we are seeing, especially with artificial intelligence (AI). It is predicted that for example, 47% of jobs are at risk in the USA of being taken over by AI."

OG3/P11

In contrast, a smaller number of participants expressed the relevance and immediacy of pedagogical creativity in their daily classroom delivery. These few participants identified the strength of pedagogical creativity in shaping and engaging students' immediate learning rather than emphasize the future work environment.

"I think it is important because the learning methods of the next generation is different, and thus the need to adapt and be creative in engaging them in learning."

OG1/P03

"It's important as it's important to have creative teaching methods. Teaching must not be stagnant. It has to push forward with the demands of the students and to use technology creatively to aid better learning experiences."

OG3/P12

Many of the participants made mention of the use technology in their classrooms. However, OG1/P02 asserted the opinion that creative teaching is not simply about using ICT (technology) in the classroom but how best to effectively 'engage' students learning. OG1/P02 stated clearly that pedagogical creativity is important but it is not simply an inclusion of technology.

"I think it is important because the learning methods of the next generation is different, and thus the need to adapt and be creative in engaging them in learning. But I also think that being creative does not mean big changes, does not just mean the use of ICT etc."

OG1/P02

The concept of pedagogical creativity as a tool to gain professional efficiency was seldom indicated by participants in this research study. A teacher's pedagogical efficiency is defined in this context as the ability to use less resources or time for students to learn and acquire knowledge. Pedagogical efficiency is a function of the amalgamation of the professional identity and pedagogical creativity. At the same time, pedagogical creativity is a tool which teachers can use to help students learn with increased engagement and achieve the favourable results.

OG2/P07 raised this unique perspective of pedagogical efficiency. Pedagogical creativity was expressed as a means by which the teacher can be more effective in their profession. According to several participants, having pedagogical creativity necessitates having the cognitive or intuitive skill set that enables teachers to be more effective in their teaching profession.

"I think being creative is important especially with limited time and resources, teachers need to be creative enough to think of ways to teach their lesson effectively."

OG2/P07

"Teachers who become more creative will be able to think out of the box and find better solutions for teaching problems."

OG3/P13

Developing pedagogical creative capacity

To discover the existence of the possible shortcomings or effective support in developing their pedagogical creativity, the participants were asked about their perceptions of the Government's education policies on creativity and innovation as well as how such policies enacted within the respective organisations. The participants were also asked to describe their preferred types of professional development programmes. They also expressed their 'ground level' perspectives of programmes, policies, and practices they perceive as gateways to increasing teachers' pedagogical creative capacity.

Awareness of Government policies and support

Familiarity with the seed of the creative and innovation education policy was rather absent from the participants. Of the sixteen participants, only one, OG2/P10, showed an awareness of the initial intent behind Singapore's education policies for pursuing innovation and creativity.

"I am often reminded of what Mr Lee Kuan Yew said about the fact that our raison d'être/our survival is to be ahead of our competitors. Being creative and innovative will enhance our competitive edge."

OG2/P10

The Government's support in nurturing teachers' creativity was evident through the analysed data. Four participants were able to identify platforms and education policies which are indicative of the Government's support in developing teachers' creative and innovative spirit (OG1/P04; OG1/P05; OG2 /P09; OG2/P10). Platforms such as the "ESSS and Innergy awards" and the increasing number of "initiatives and conferences becoming more prominent" (OG1/P04) provided evidence of the Government's support to nurture creative capacities in teachers and not only students. Besides these platforms, OG2/06 also mentioned the existence of professional development courses such as "teaching digital, multi-modal literacy" to support teachers' in their creative teaching. At the same time, OG2/P10 highlighted the generosity of the Government in establishing the Teachers' Academy dedicated to providing professional development for teachers and the numerous courses available

"I think the Singapore government/MOE has been very generous in giving staff the funding, resources and protected time for PD."

OG2/P10

through the different agencies and platforms. As noted by one of the participants, time is also allocated to teachers to participate in professional development (PD), presenting a positive measure to potentially nurture creativity in teachers. Aside from the Government's financial and infrastructural support, education policies departing from the emphasis on academic achievements was also raised by participant OG2/P09. This participant cited the increasingly underlined importance of the students' learning processes rather than their academic results as a positive move by the Government to support student and teachers' development of creativity. OG2/P09 expressed that "now we don't emphasize on academic results. This direction is right."

Gaps in policy implementation

It is evident from the above data that there is Government support in the development of teachers' creative capacity and that such support has been noted by the participants. However, in spite of this positive situation there are gaps in the implementation of policies. It appears that the implementation of the policies directed at developing creative capital in Singapore's education institutions seems to be suffering from differentiated support. The obtained qualitative data suggests that in contrast to responses from OG 1 and OG 2, some of the participants – particularly from OG 3 – were less forthcoming with regards to Government support in nurturing teachers' creativity.

This was particularly evident from OG3/P15's answer.

"It would be interesting to have a broad discussion supported by Singapore government policy about professional development for teachers' creative capacity and development of a community of practice encouraging creative approaches to teaching, shared across the different sectors and levels of education."

OG3/P15

Examples of gaps in the policies implementation were also identified by some participants from the other two organisations. Using the recently launched Singapore Teaching Practice, a manual for pedagogical approaches to support government school-teachers, OG1/P02 felt that the teachers' creativity development was not explicitly laid out for the practitioners.

"Now the Singapore Teaching Practice has just been implemented, not sure if there is a goal directed at developing the creativity of teachers."

OG1/P02

This response resonates with OG2/P09's observation of a similar lack of lucidity when creativity and innovation policies were introduced for the first time several decades back. With the stepping up of creativity development in the last 5 – 10 years, teachers were encouraged to teach students the creativity itself. However, some

practitioners faced the challenge in fulfilling this task. Teachers were not provided with the necessary information and knowledge of the creative concept or “creative strategies” (OG2/P09).

“How to be creative. They don’t tell you how and what is creative but just do it differently.”

OG2/P09

OG3/P16 raised this similar viewpoint. This participant indicated that an individual is assumed to have the ability to teach creatively the moment he/she becomes a qualified teacher.

“The place where I teach we have a tremendous faculty and I recognize that the assumption is that because of that you magically know how to get this information to the students.”

OG3/P16

From the presented data it can therefore be inferred that a follow-through process in education policies is needed not only in the private higher education institutions but also in Government secondary schools.

Uneven implementation of policies at ground level

Arguably, it does not seem accurate to suggest that there is no support from the Government in the present-day context. However, the Government’s support may not be sufficiently evident to the pedagogical personnel at the ground level. The perceived

lack of support can be attributed to a few factors. With the nebulous and varied understanding of the creativity concept, strategies emphatically directed at developing pedagogical creativity as a necessary component are only becoming to be considered as imperative only in the very recent few years. As such, directions and support offered by the gatekeepers of education organizations would be equally vague and slow in starting. This lack of clarity may be attributed to the less evenly applied policies, programmes, and practices on the ground level.

"I have not experienced but I have either read or went [to] a sharing with another public school in Singapore."

OG1/P03

This view was also supported by another participant who wrote:

"There is always uneven implementation at ground level despite a policy being made clear and communicated out."

OG1/P05

The request by OG3/P15 to have greater insight in the development of teachers' creative capacity provides another piece of evidence that gaps exist in the implementation of the Government's creative and innovation education policies.

"Broad discussion supported by Singapore government policy about professional development for teachers' creative capacity and development of a community of practice encouraging creative approaches to teaching, shared across the different sectors and levels of education."

OG3/P15

Awareness of institutional policies, programmes, and practices.

A high number of participants have indicated that they were unaware of policies, programmes, or practices aimed at developing teachers' pedagogical creativity. Of the sixteen respondents, eleven indicated they were not aware of policies, practices, or programmes within their respective organizations aimed at supporting this development. A higher percentage of these responses came from both OG 1 and OG 2 participants. In OG 3, the existence of policies aimed at developing teachers' creativity was more evident to the participants. 50% of participants from OG 3 indicated their awareness of such policies, programmes, and practices.

"Institutional support for the development of teachers' creative capacity. This is a core value for the... institution."

OG3/P15

"We learned different strategies for developing creativity in learners and explored creative approaches to assessment."

OG3/P11

"In my institution, I would confidently say that [OG3] promotes and encourages teachers to develop their creative capacity. It is a very good environment to be an educator where I am able to grow as not only an educator but as a professional..."

OG3/P13

According to OG3/P11, the organization encourages the practice of change and improvement through feedback and collaboration between faculties to "break" the customary "silos". There is also the "annual half day brainstorming sessions" (OG3/P11) to encourage the exchange of ideas. Besides the annual "half day" sessions, OG3/P11 also highlighted "regular sessions" that are available for the staff to exchange ideas and to learn about research studies carried out by the colleagues. Faculty members are "encouraged to undertake research and attend conferences" (OG3/P11).

While it is evident that policies and practices to support and nurture creative capacity of faculty members are in place within OG 3, a lack of funding has prevented more participants from developing themselves further.

"The institution I work at does give money for research and projects but limits them to activities that are defined as 'cutting edge' only."

OG3/P14

The lack of funding - although not commonly highlighted in the collected data - was nevertheless raised by another participant from OG 2.

"... under the previous management, funds and time were provided for all teachers ..."

OG2/P10

Thus, indicating a likely change from the former favourable state of affairs. In OG 1 the development of teachers' creativity is implemented through teachers' actual exercising of creative thinking by providing solutions to issues on hand. Funding and incentives are provided to increase creativity of the teachers.

"We have been focusing on getting our staff to think out of the box when it comes to improvements, problems or issues, and do provide development opportunities, rewards and funding to encourage the staff to do so."

OG1/P01

However, OG1/P01's comment was not expressed by other participants from the same

organization. The lack of mention suggests a lack of awareness and connection with practices in place to develop creativity among the members of the organization.

Effectiveness of professional development courses

The analysed qualitative data suggests that the present professional development programmes received by participants can be further improved. Some respondents, from all three organizations, recognized professional development courses which allowed them to acquire new teaching strategies such as the use of technology to facilitate students' learning. However, they highlighted the lack of specificity in developing creativity in their respective disciplines.

"Not specifically, but there are courses to introduce new teaching methods for us to try in terms of reading and writing, e.g. ICT courses such as using Titan Pad for collaborative writing etc."

OG1/P02

"With the call for Thinking School, Learning Nation, there was greater call for innovation and creativity. However, the attention was professional development of teachers in general".

OG2/P10

"I have rarely found Institution driven activities helpful for me as the Institution cannot specialise for every subject, so they tend to generalise and water down the material."

OG3/P14

While some other participants of this research did not explicitly express these views about the available programmes being narrowly applicable to a specific set of disciplines, similar conjectures may undoubtedly be inferred through the numerous comments on their preferred types of professional development platforms.

"I would be interested in something I can apply in my daily lessons."

OG2/P06

"Co-teaching between teachers in order to develop fresh perspectives."

OG3/P15

"hands-on workshops, lesson studies would be useful."

OG1/P04

"I would like to be free to and supported for workshops in my specialisation."

OG3/P14

"...choose a course that really target my needs."

OG1/P03

In contrast, a small number of participants would prefer the opportunity to gain broader perspectives such as a “multi-disciplinary” approach (OG3/P11) or simply by being exposed to and learning the means to increase their creativity.

"Discussions and lesson observations by teachers (learn within the fraternity). It could be cross subjects as I believe there is always something to learn from every teacher (positive or negative)."

OG1/P02

""Working internships at institutions known for their creative capacity e.g. Google, Alibaba."

OG1/P04

"I think a series of workshops that groups different types of people and specialists together to work on different scenarios would be one of the best ways to develop teachers' creative capacity."

OG3/P11

"...attachments to organisations that are innovation and enterprise focused."

OG1/P01

Six out of ten respondents from OG 1 and OG 2 indicated a preference for hands-on experiential learning platforms (OG1/P03, OG1/P04, OG1/P05, OG2/P06, OG2/P07, OG2/P08) to develop their creative capacity.

"A platform be it professional symposium/workshop/lecture – as long as the experience and the planned activities allows the teacher participant to experience what it was to exercise their creativity capacity."

OG1/P05

Increasing teachers' creativity through professional sharing was a fairly popular choice among the participants (OG1/P02, OG1/P03, OG2/P06, OG2/P07, OG3/P13, OG3/P15) in contrast to symposiums which were suggested by only three participants (OG1/P03, OG1/P05, OG2/P08). Only two participants, OG1/P04 and OG1/P02, opted for the class observation method. The common thread among these platforms is that of partnership and community effort as the preferred professional development modes to develop teachers' creativity.

"I would say mentoring on a long-term basis may be of some help, so that novice teachers can watch and learn from experts as well as use the opportunities to clarify any doubts that they may have."

OG1/P01

Some respondents perceived the availability of programme selection as an important feature when providing platforms for creative development. OG2/P09 for instance, felt that learning and development would be much greater if an individual was given a

choice of programmes in comparison to what was being assigned to the learner.

"If I go out to find the course, I will know what I want. But if it is arranged by the school, if you give me I will accept it. But whether I want to change or if there is any impact is another matter."

OG2/P09

"More choices and options, and to gain more breadth for personal ideas and exploration, rather than in depth where more often than not, there is a "model" to follow."

OG2/P08

"I would like to be free and supported for workshops in my specialisation or be able to have support for project-based work outside of the institution."

OG3/P14

Challenges faced by teachers

Time Constraints

Five participants highlighted the lack of time to be involved in creative practices or development (OG1/P01; OG1/P05; OG2/P08, OG2/P09; OG3/P14). This element of time constraint is a similar issue faced by participants in Orr and Kukner's (2015) study. In the Orr and Kukner's (2015) study, one teacher participant indicated that "expectations" related to the additional duties imposed by her "co-operating teacher" (p.

75) (i.e., her supervisor) resulted in such a reduction of the available time the any application of the creativity could not take place. The participants of this present research study conducted in Singapore attributed the lack of time to engage in the practices developing their pedagogical creative capacity to the large amount of administrative work. The participants commonly perceived such overwhelming amount of the administrative work as usurping their primary role as educators and transforming them into educational sector administrative employees.

"I also feel that amidst the administrative work (NOT photocopying) but data analysis, tracking of MT students, Supervisor for Oral Exams etc, also reduces my preparation time and energy to attempt creative lessons."

OG1/P02

Similarly, dampening of "creative capacity" because of the excessive administrative workload was voiced by participant in OG 3.

"I have found that my job, a job that should require a great deal of play and creativity has been inundated with mostly task based administrative paperwork. I spend an inordinate amount of time with excel spreadsheets and that takes me away from working on the floor with students creatively."

OG3/P14

The lack of "time to plan and try new ideas" or the space "to come together to brainstorm and discuss" was also indicated by OG2/P08 and OG1/P05 respectively. Besides the issue of lack of time and an overload of administrative duties, the complex process of application for funds was also seen as an impediment to teachers' desire to upgrade their creative teaching skills. This was especially noted by participants in OG 3 who requested for simpler funding application criteria.

""Simplify the approval process for funding, free up teaching hours so Teachers have more time to take on such initiatives."

OG3/P13

"The institution I work at does give money for research and projects but limits them to activities that are defined as "cutting edge" only.

OG3/P14

"Under the previous management, funds and time were provided for all teachers to undergo ... PD opportunities."

OG2/P10

Leadership and a conducive environment

Few research participants in this study spoke of environment as an important aspect of creative development. OG1/P03 believes that in order for teachers to have the desire to develop creative capacity, there *"is also a need to be an environment that promotes this. Therefore, there need to be a whole school approach"* (OG1/P03). To

make this possible, OG1/P03 suggests that school leaders first be given a clearer idea of the creative concept in order for them to provide an environment conducive for teachers to engage in creative pedagogy.

"A training for the school leaders to understand the needs of how to create a creative environment in school."

OG1/P03

The lack of push for pedagogical creativity

OG3/P15 and OG3/P16 both suggested using extrinsic motivation to encourage teachers' development of pedagogical creative capacity thus suggesting that, at the moment, the push for applying pedagogical creativity has yet to be wholesomely embraced by teachers. OG3/P15 expressed that giving recognition through awards would give more emphasis on teachers adopting creative pedagogy habits.

"Awards for innovation and creative approaches in teaching would assist to profile interesting new work in this field".

OG3/P15

This contrasts somewhat with OG3/P16's belief that there should be more frequent monitoring of teachers' work performance to bring about a greater push to increase pedagogical creative capacities.

“What I think we really need is a criterion to measure teacher effectiveness at the classroom level even though I would feel very uncomfortable if I am selected for this. I think all of us would be. I know of no other way to do it.”

OG3/P16

Teachers' self-development of pedagogical creative capacity

In the previous section, data analysis focused on and highlighted the perceived effectiveness of the Government and organization policies, programmes, and practices directed at increasing the teachers' pedagogical creativity.

In this section, participants' opinions on their self-development and application of pedagogical creativity in class will be presented. Participants provide an insight into how they have been developing their pedagogical creative capacity thus far. At the same time, the section will also present the participant's self-evaluated efficacy levels of their own pedagogical creativity.

Self-development practices taken by teachers

All participants to a greater or lesser extent have engaged in creative teaching in their classes. Some have applied strategies learnt from professional development workshops, reading from books, online resources, or class observations others have adapted existing known strategies for their own classes.

Five participants indicated that they had looked for reading materials from online articles or through books (OG1/P01; OG1/P02; OG1/P03; OG3/P11; OG3/P14).

"They have recently launched a book called Transforming Schools which highlights the approach and gives many examples of the approach in use."

OG3/P11

"Subscribe to free online educational article".

OG1/P02

"Reading a book."

OG3/P03

"I regularly dip into these exercises and adapt and use."

OG3/P14

In contrast to the many participants who preferred tailored courses readily available for them, OG2/P09 indicated a preference to choose courses that would meet the individual's pedagogical needs. Even if it required some personal expenditure which would not be reimbursed by the employer.

"Yes, I paid the coaching course myself."

OG2/P09

OG1/P02, on the other had a different opinion about developing creativity this way. The participant held the view that unless financially supported for the course or

programme, attention will not be diverted to this aspect of pedagogical development.

"If not sponsored, probably I have other urgent learning needs to tend to at work first."

OG1/P02

Reflection was not commonly highlighted by the participants as one of the strategies taken in their development. Of the sixteen participants, only two participants indicated the use of reflection as a means of self-development and improving their teaching.

"I reflect on my own during my quiet times alone – like 10 – 11pm daily and during that time, I would question myself with regards to how I could have been changed my pedagogical approach differently, more creatively, with some use of ICT etc."

OG1/P05

"I use feedback and reflection as a way to improve my teaching and materials and explore alternatives to challenges by talking to colleagues and researching ideas."

OG3/P11

Confidence in pedagogical creativity enactment

Participants were asked to evaluate the level of self-confidence in their own pedagogical creativity on the scale of 1 to 10 with the lower score indicating a lower level and the higher score higher level of self-confidence in the own pedagogical

creativity. The intent behind such self-evaluation was to find whether the responses would support the researcher's expectation that participants from OG 1 and OG2 would likely rate themselves in the range of low to average level of confidence in creative pedagogy abilities while the participants from OG3 would rate themselves on the higher

Table 2. Confidence range in pedagogical creativity

Table 2

Self-evaluated confidence range of individual participants

Scale of 1-4 low	Scale of 5 – 6 average	Scale of 7 – 8 high	Scale of 9-10 v. high
OG1/P01	OG 1/P03	OG 1/P02	OG 3/P16
OG 1/P04	OG 2/P07	OG 2/P06	
OG 1/P05	OG 2 /P08	OG 2/P09	
	OG 3/P10	OG 3/P13	
	OG 3/P11	OG 3/P14	
	OG 3/P12		

OG3/P15 chose not to answer this question.

end of the confidence scale. Surprisingly, the obtained results departed from this projection slightly. Many of the participants indicated they had at least an average if not high level of creative capacity. Only three participants from one organisation (OG1) rated themselves in the range of low pedagogical creativity.

Table 1 above reflects participants' confidence range in their pedagogical creativity abilities. Nearly 60% of the participants rated themselves between the range

of average to very high self-confidence while about 40% of the participants graded their self-confidence on the lower end in terms of their pedagogical creative capacity.

Participants were asked to describe their application of pedagogical creativity in their classrooms to give an insight into their pedagogical creative capacity. Across the three organizations, a number of participants highlighted common strategies and tools used in their classrooms, allowing an inference that their creative strategies have been gained from professional workshops or courses.

"Online Collaborative Tools: Titanpad / Linoit"

OG2/P06

"ICT courses such as using Titan Pad for collaborative writing etc"

OG1/P02

"I've tried to teach SPA (School-based Practical Assessment) Skill 3, which is planning for an experiment, through some cooperative learning strategies which I've learnt in Kagan's Cooperative Learning workshop in the US."

OG2/P08

While some have directly adopted the existing strategies, others have attempted to make modifications to the existing creative strategies they chose to adopt.

"(Circle of viewpoints) and Gallery Walk".

OG2/P06

"E.g. SCAMPER, appropriation..."

OG2/P10

"I tried the Jigsaw strategy which allows the students to rotate in their groups, leaving an expert in the group to explain the article to the other groups of students using the 5W1H structure. Students learnt about 5 articles instead of only 1 in a short period of 30 mins."

OG1/P02

Some participants have taken a more exploratory approach by investigating different models and experimenting with their classrooms.

"I have started trialling different models for reflection and critical thinking as tools for developing creativity."

OG3/P11

"I am always exploring with ICT tools and experiment with my classes before sharing with the department."

OG2/P06

"I also constantly experiment with new teaching ways in my

classroom – to see which structures work best in different classrooms."

OG1/P02

"Trial methodologies."

OG1/P01

"Try to tailor."

OG3/P12

"Regularly dip into these exercises and adapt and use."

OG3/P14

Summary of the qualitative data findings

The qualitative data clearly demonstrates that all the participants of this study unanimously agreed that creativity is necessary in education - although their familiarity with the concept was relatively low. It is also clear that the participants have attempted to implement some level of pedagogical creativity in their own classrooms to facilitate students' learning although there were fairly significant differences in their perceptions of the extent to which such creativity impacts their students. However, judging from the participants' responses detailing their attempts of applying creative teaching in their classrooms, it is evident that many are consumers of existing pedagogical approaches rather than adapters or innovators.

Although some participants were aware of the existence of many governmental initiatives and programmes established with the goal of nurturing the Singapore-based teachers' creativity, the majority was not aware of such initiatives. Moreover, the participants frequently pointed out the disparities between the existence of the programmes and their implementation at the ground level. They also expressed their dissatisfaction with the existing programmes which were commonly perceived as being of limited use. However, it is encouraging to find that the participants were generally able to suggest the ways which they perceived as fruitful in the quest of increasing their own pedagogical creativity.

In spite of the apparent participants' willingness to develop their own pedagogical creativity, a number of obstacles were frequently mentioned. The most commonly cited impediment was the lack of time caused by being burdened with an excessive amount of the administrative work. Other handicaps included the idiosyncratic characteristics of their working environment and leadership, both of which were described as not creating the atmosphere motivating one to engage in his/her own pedagogical creative development.

All the participants indicated that they had attempted to increase their pedagogical creativity unaided, the extent of such attempts and the preferred methods differed among the respondents. Interestingly, in spite of the low familiarity with the concept of pedagogical creative capacity, widespread complaints about the numerous impediments preventing one to engage in one's creative development, and commonly present expectations to be furnished with an existing method(s) of increasing one's pedagogical creativity rather than creating one's own, vast majority of the participants considered themselves as 'confident' or 'highly confident' of being pedagogically

creative.

Prominent common themes identified include the following:

- (1) Preference for professional sharing and/or hands-on learning sessions as development programme learning style.
- (2) Development programmes should provide content which are relevant and preferably can be applied immediately to classes.
- (3) Concepts of pedagogical creativity is inclined towards the novice level where creative teaching involves application of new but existing pedagogical tools.
- (4) Lack of time due to administrative duties
- (5) Participants did not identify specific programmes or practices aimed at developing teachers' creativity
- (6) Most participants have low awareness of policies and practices which are aimed at developing teachers' pedagogical creative capacity especially within the organisation.

Findings from quantitative data

The following section will present the findings from a quantitative perspective. The approach extracts the essence of Ajzen's Theory of Planned Behaviour to acquire an insight into the participants' estimated intention to increase their creative capacity in pedagogy.

Analysis of Direct Measures data using Kruskal-Wallis H test

A check of the four assumptions (the dependent variable being measured on an interval or ratio scale, existence of at least two categorical non-related groups of the

independent variable, independence of observations, and similarity of the score distribution among the groups) required for the Kruskal-Wallis H test was carried out to ensure that all the required criteria were met. The Kruskal-Wallis H test was subsequently performed to determine whether the Behavioural Intention, Attitude, Perceived Behavioural Control, and Subjective Norms differed between the organisations.

The Kruskal-Wallis H test was conducted for Behavioural Intention towards further development of pedagogical creative capacity between the three education organisations OG1 (n = 5), OG2 (n = 4) and OG3 (n = 5). The distribution of Behavioural Intention scores was not similar in all groups. This was visually assessed by inspection of the box plot. There was a statistically non-significant mean rank difference of Behavioural Intention scores between the organisations, $\chi^2(2) = 2.36, p = .31$. OG1 was reported with a high mean rank value of (9.40), followed by OG3 (7.50) and OG2 with the lowest value of 5.13. As the result was not statistically significant post-hoc test examining the magnitude of the differences was not conducted.

Examination was conducted to determine if there were score differences for Attitude across the three organisations OG1, OG2, and OG3. This was initially carried out through a visual inspection of the box plot. Distribution of Attitude scores was not similar in all groups. The analysis revealed that there was no statistically significant mean rank difference for Attitude between the organisations, $\chi^2(2) = 2.47, p = .29$. Mean Rank score was highest in OG1 (9.80), followed by OG2 (6.63) and OG3 (5.90). Similar to the condition above, a post-hoc test was not conducted.

The initial determination of differences in Perceived Behavioural Control scores across the three organisations was carried out through visual inspection of the box plot.

Through visual inspection, Perceived Behavioural Control distribution scores were found to be fairly similar across all groups. The null hypothesis was retained with the value of $p = .23$. This indicated that the differences of the median scores for Perceived Behavioural Control were not statistically significant between the three organisations OG1 ($n = 5$), OG2 ($n = 4$), and OG3 ($n = 5$). The differences were found not to be statistically significant, $\chi^2 (2) = 2.92, p = .23$. A comparison of mean ranks suggests that OG1 (10.00) has the highest level of Perceived Behaviour Control followed by OG2 with a value of 6.63 and OG3 with 5.70.

In the last Subjective Norms component, the score differences across the three organisations were initially examined through visual inspection of the box plot. Distribution was clearly not similar. OG3 ($n = 5$) had the highest mean rank value of 9.0. This was followed by OG1 ($n = 5$) with the mean rank value of 6.63 and OG 2 ($n = 4$) with the mean rank value of 5.70. The differences were not recorded as statistically significant, $\chi^2 (2) = 2.65, p = .27$.

Analysis of antecedents

Table 3 below provides a summary of the analysed antecedents' strength of Attitude, Behavioural Beliefs, Perceived Behavioural Control, and Subjective Norms.

Based on the reported scores, the BB x OE (Behavioural Beliefs x Outcome Evaluation) antecedents to Attitude suggests a positive Attitude. According Francis et al., (2004) the more positive the scores, the more positive an Attitude. Accordingly, in comparison with the rest of the paired antecedents, Attitude has the most positive weight towards the Intention to develop pedagogical creative capacity. Similarly, BC x PC (Behavioural Control Belief x Power of Control) scores a high positive weight for

Perceived Behavioural Control. It may be argued that there is greater weight for this

Table 3: Analysis of belief weightings using data from Indirect Measure

Table 3

Participants' score range in Behavioural Belief, Perceived Behaviour Control, and Subjective Norms using Indirect Direct Measure Data.

Score	-43 to -63	-22 to -42	-1 to -21	0	+1 to +21	+22 to +42	+43 to +63
Range	Strong negative	Moderate negative	Weak negative	Neutral	Weak positive	Moderate positive	Strong positive
BB x OE			2		7	5	
BC x PC			2	1	2	8	1
NB x MC		2	7		5		

Note: BB = Behavioural Beliefs, OE = Outcome Evaluation, BC = Behavioural Control, PC = Power of Control, NB = Normative Beliefs, MC = Motivation to Comply.

component due to the higher number of participants in the 'moderate positive' band in comparison with the antecedents for Attitude. NB x MC (Normative Beliefs x Motivation to Comply) antecedent to Subjective Norms has the lowest weighting among the three pairs of antecedents.

According to Fishbein and Ajzen (1974), "a person's attitude toward any object is a function of the object and the implicit evaluative responses associated with those beliefs" (p. 29). As such the results would suggest that Attitude, Perceived Behavioural Norms would have more influence on the participants' Intention to develop their pedagogical creative capacity. With the more negative scores for the antecedents of Subjective Norm, this would suggest that there would be less weight given to influence the participants intention to act on the behaviour in context.

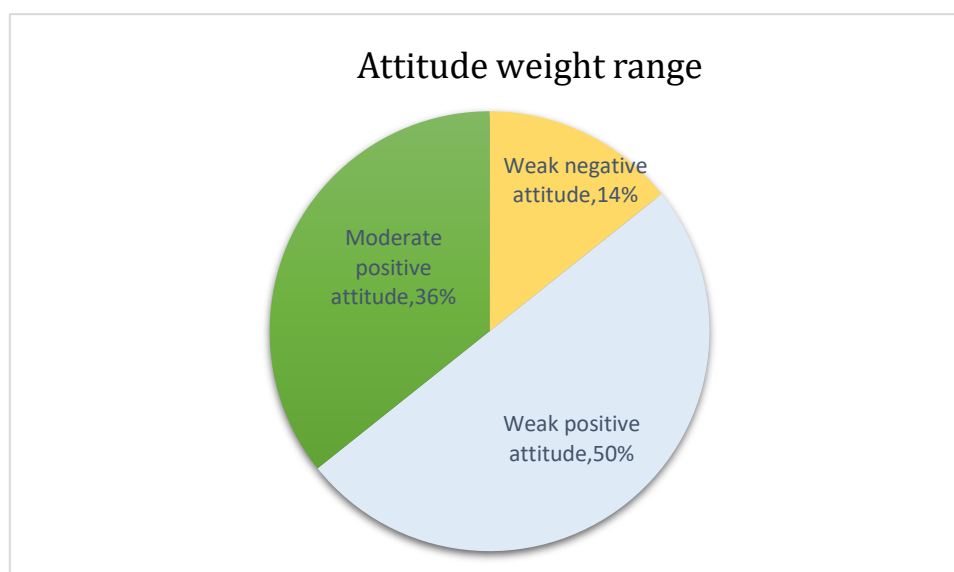
Figure 3. Percentage of Attitude weight range

Figure 3: Percentage of participants of different Attitude strengths towards developing pedagogical creative capacity.

For Perceived Behavioural Control, the Indirect Measure of Behavioural Control (BC) multiplied by Power of Control (PC) indicated one participant showing strong positive level of Perceived Behavioural Control while two participants were found to have weak negative Perceived Behavioural Control. The remaining seven other participants showed weak to moderate positive Perceived Behavioural Control.

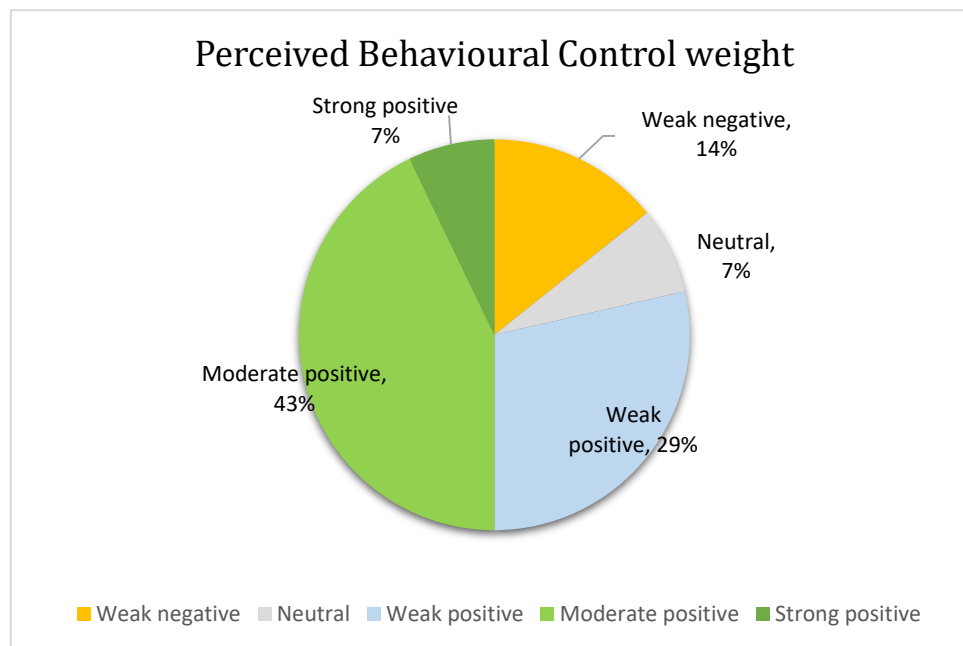
Figure 4. Percentage of Perceived Behavioural Control weight range

Figure 4: Percentage of participants in the different PBC strengths towards developing pedagogical creative capacity

The impact of Normative Beliefs (NB) multiplied by Motivation to Comply (MC) was found to have the least positive strength. Scores from ten participants indicated weak to moderate negative Subjective Norms, with four others in the weak positive Subjective Norm.

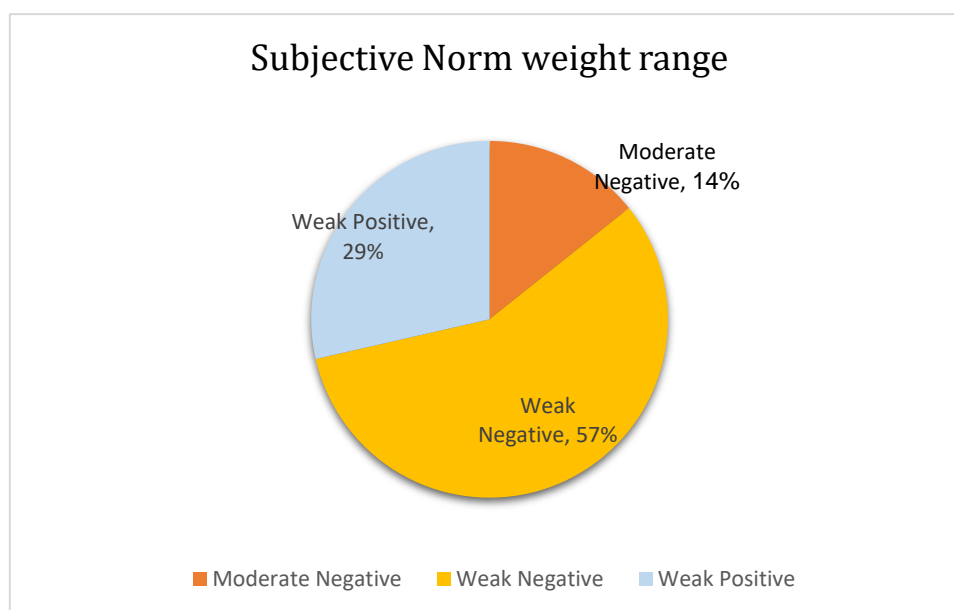
Figure 5. Percentage of Subjective Norm weight range

Figure 5: Percentage of participants in the different SNB strengths towards developing pedagogical creative capacity

Comparing the Attitude results across organisations, OG1 had four out of five participants in the weak positive range; OG2 had two out of four participants in the weak negative range and one in the weak positive range; OG3 had two out of five in the weak positive range (Figure 6).

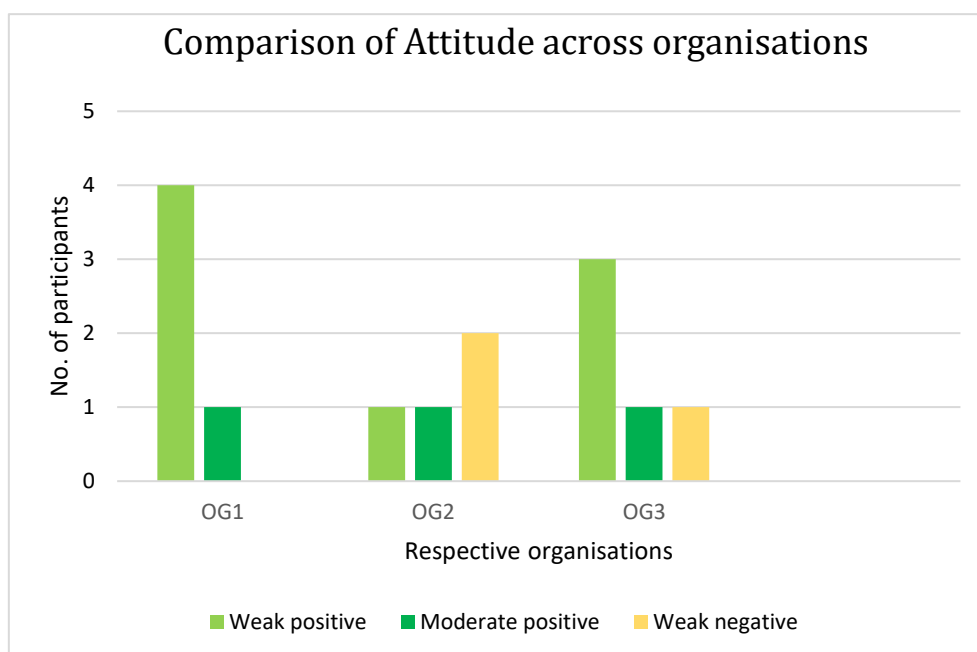
Figure 6. Comparison of organisations' Attitude

Figure 6: Comparison of Organisations' Attitude shows OG2 and OG3 have less positive attitude towards further development of pedagogical creative capacity.

In the component of Perceived Behavioural Control and Power of Control, participants from OG1 were in the moderate to strong positive range. OG2 participants were found to be spread across the weak to strong positive range. The results from OG3 spanned over of a wider range - out of the five participants, two participants were in the weak negative range and one in the weak positive range. The remaining two participants were in the moderate to strong range (Figure 7).

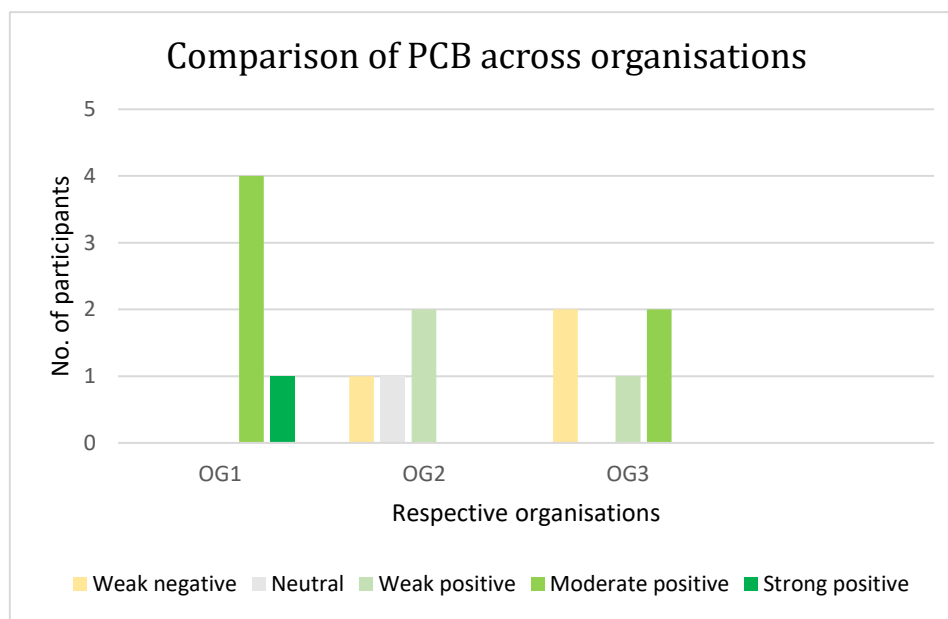
Figure 7. Comparison of organisation's Perceived Behavioural Control weight

Figure 7: OG1 in comparison with the other organisations has the strongest inclination for Perceived Behavioural Control

In the last component, Normative Beliefs and Motivation to Comply revealed uniform results across all three organisations. Twelve participants across the three organisations were found to be in the weak negative to weak positive range. The remaining two participant from OG1 and GO3 indicated a moderate negative range (Figure 8).

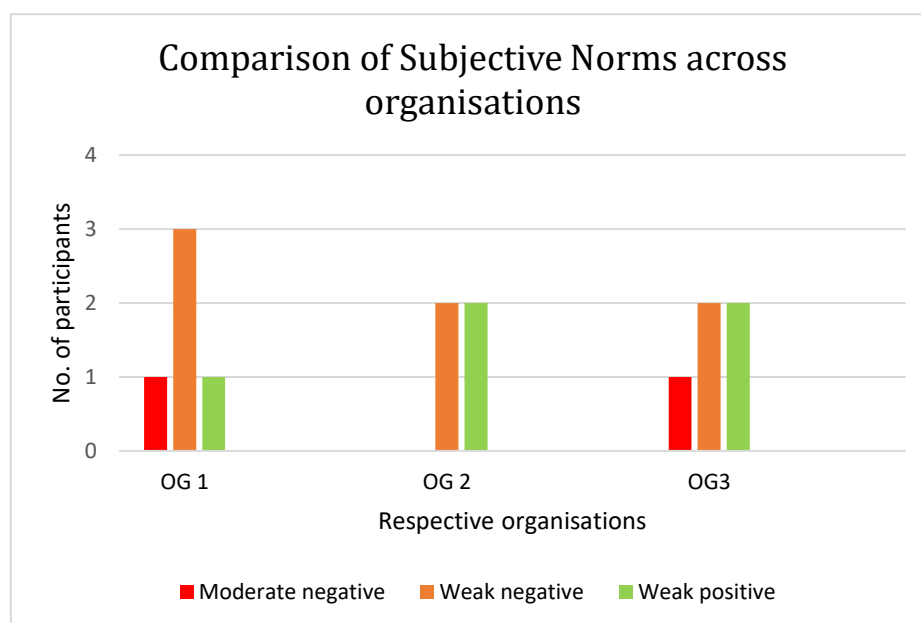
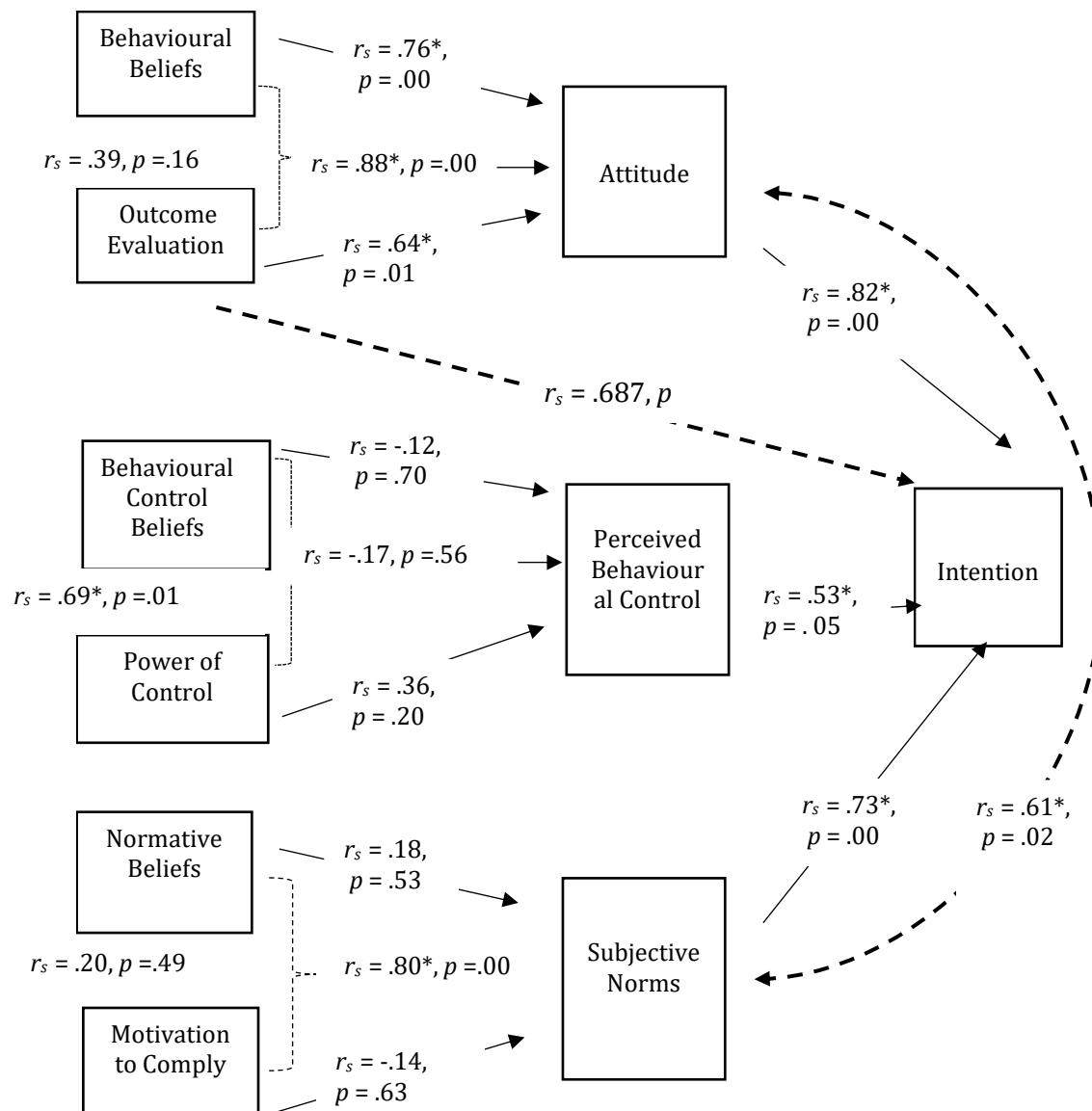
Figure 8. Comparison of organisations' Subjective Norms

Figure 8: OG 1 has the most negative weight range in comparison with the other organisations for Subjective Norms

Correlation between salient and latent beliefs

To identify the various weighting of beliefs and evaluative components, the Spearman's Rank Order Correlation analysis was conducted to obtain an insight into the strength of relation between each belief and its evaluative item in the Indirect Measure layer as well as its possible direct influence on Intention. The Spearman's correlation analysis was chosen over Pearson's correlation as the analysed data was ordinal. Additionally, as other non-parametric tests have already been used for their preceding analyses, using Spearman's correlation was a logical continuation of the approach directed at maximising the accuracy of the obtained results. The data used for correlation analysis were not recoded unlike in Table 3.

The respective Belief items were multiplied with either Outcomes Evaluation, Power of Control, or Motivation to Comply. The sum of the product was then averaged

Figure 9. Spearman's correlation between antecedents, predictors and Intention*Figure 9:* Spearman's correlation coefficient values at salient and latent levels.

to provide a single score for each participant's beliefs. This was to standardise the values of responses between Direct and Indirect Measures of Attitudes, Perceived

behavioural Control, and Subjective Norms. The obtained results are presented in Figure 9.

In this present study, it was postulated that a strong Behavioural Belief need not necessarily need to have a strong Evaluation Outcome. For instance, having a strong belief that pedagogical creativity is important does not necessarily lead to an evaluation of a high level of mental well-being outcome. As such, a correlation analysis between Indirect Measure variables was carried out to uncover the possible factors that may impact the participants' intention to further develop their pedagogical creative capacity.

Correlation between Direct and Indirect Measure

The analysis of the Outcome Evaluation data revealed that 13 out of 14 participants evaluated that they should they choose to increase their own pedagogical creative capacities; the likely outcome will be an increase of tension. 12 out of 14 believed that undertaking the act of increasing pedagogical creativity would make them less popular with their colleagues. 11 out of 14 participants believed that their action would not make them more effective teachers. Their evaluation of becoming more effective teachers was equally low. Out of 14 participants, 12 evaluated that they would not be able to help their students learn more effectively even if they increased their own pedagogical creative capacity. Of interest were the responses to the items of staying professionally relevant. 9 out of 14 indicated they did not believe that they would be able to stay professionally relevant even if they increased their pedagogical creative capacity. This was in contrast to the evaluation result of which only two out of 14 indicated they would not be able to stay relevant in the profession.

It is postulated in this study that beliefs need not necessarily be positively linked to the evaluation component. As seen in the above paragraph, the beliefs of being able to stay relevant professionally was generally not aligned with the evaluated outcomes. As such, a Spearman correlation analysis of antecedents to was carried out to gain an insight into how these may have impacted Attitude, Perceived Behavioural Control, and Subjective Norms.

Beginning with the correlation between Behavioural Belief and Outcome Evaluation, result reported a coefficient of $r_s = .39, p = .16$. The result indicates a positive but low correlation between these two components although without reaching statistical insignificance. This is especially noteworthy in the case of a small sample group. However, when correlated with Attitude, the Behavioural Beliefs component was found to have both high positive correlation and statistical significance ($r_s = .76, p = .00$). Such a finding warranted the inference that items used were of importance to the participants thus impacting Attitude of the salient level.

The Outcome Evaluation component differed slightly from this result. Analysis reported a statistically significant moderate positive correlation ($r_s = .64, p = .01$) between Outcome Evaluation and Attitude. This difference may be caused by the participants' consideration of other possible factors which would impact the Outcomes Evaluations component. Interestingly, Outcome Evaluation was found to have a direct weighting on Intention. Analysis reported a statistically significant moderate positive correlation ($r_s = .69, p = .01$). This may suggest that participants would be better influenced to engaged with pedagogical creative capacity if there is evidence of positive outcomes. Beliefs in this case would change thereafter.

In the case of Behavioural Control Beliefs and Power of Control, 8 out of 14 participants did not believe family obligations to be an impediment to their development of pedagogical creative capacity. This is in spite of 9 out of 14 indicating that they have frequent disruptions to planned schedules caused by family obligations. 11 out of 14 participants believed that time and attention taken for administrative duties would deter them from developing their creative capacity. 11 out of 14 indicated a high frequency of administrative duties unexpectedly disrupting their planned schedules. 9 out of 14 participants believed that their ability to experiment and explore new ideas would make it easier for them to develop their creative capacity. Interestingly, this result was slightly contradicting the finding in that 11 out of 14 participants who indicated they were frequently able to successfully explore or experiment with new ideas.

The obtained results of the correlation for Behavioural Control Belief and Power of Control were statistically significant. The analysis of the correlation between these two variables reported the value of $r_s = .69$, $p = .001$, indicating a moderate positive correlation. The very weak negative correlation between the Behavioural Control Beliefs and Perceived Behavioural Control was found not to reach statistical significance ($r_s = -.12$, $p = .70$). The Power of Control, when correlated with Perceived Behavioural Control, was found to have a weak positive correlation but result was statistically not significant ($r_s = .36$, $p = .20$). The correlation between the Control Beliefs / Power of Control with that of Subjective Norms reported a coefficient of $r_s = -.17$, $p = .56$. However, it should be noted that the result was statistically not significant. One possible cause for this inverse correlation value may be due to the involvement of

deeper evaluation being called to the fore or factors affecting participant at the point of time, thus providing different perspectives from Perceived Behavioural Control.

In the last component, the factor of how social pressure and significant referents may impact the participants' intention to further increase their pedagogical creativity was analysed. 10 out of 14 participants evaluated a low level of importance in complying with the views of their loved ones regarding increasing pedagogical creative capacity. 8 out of 14 participants did not indicate any pressure from their loved ones. This suggests that the loved ones may not have a major influence on participants' intention in this context. 10 out of 14 participants strongly disagreed that school leaders felt they should increase their creative capacity. At the same time, 9 out of 14 indicated a low level of compliance with this referent. 9 out of 14 participants did not feel the pressure from colleagues or peers to undertake this action of increasing creativity. However, 6 out of 14 participants, indicated that they had a low motivation to comply with colleagues and peers.

The correlation coefficient between Normative Beliefs and Motivation to Comply did not yield a statistically significant result. Nevertheless, there was a weak positive correlation indicated by the coefficient value of $r_s = .20, p = .49$. Discounting colleagues and peers, analysis of the Normative beliefs suggests that the referents such as school leaders and supervisors played a much smaller role in influencing participants' than assumed. This may have attributed to the weak positive correlation and statistically not significant result between Normative Beliefs and Subjective Beliefs ($r_s = .18, p = .53$). There was also a low level of motivation to comply with all three referents which was reflected in the negative correlation result $r_s = -.14, p = .63$. It should be noted that result was, nevertheless, not statistically significant. The finding may suggest that a

collegial approach would be more effective in bringing about higher levels of intention to increase pedagogical creativity in the participants.

Correlation between Behavioural Intention and predictors

As seen in Figure 9, the strongest relationship was found to exist between Behavioural Intention and Attitude ($r_s = .82, p = .00$). Behavioural Intention was also found to have a high correlation with the participants' Subjective Norm ($r_s = .70^*, p = .00$). Both these results were statistically significant. Subjective Norms was also reported to be statistically significant with Attitude ($r_s = .61, p = .02$). This suggests an interaction between the two predictors whereby there can be bi-directional influence. The correlation between Perceived Behavioural Control and Behavioural Intention was of a moderate strength with the result reaching statistical significance ($r_s = .53, p = .05$).

Semantic differentials included in the Attitude component included the perspective of excitement, job satisfaction, and benefit of mental well-being. 13 of the 14 participants indicated that it would be exciting to undertake developing pedagogical creative capacity. At the same time, 10 of the participants also indicated that it would increase their mental well-being and 9 of the participants indicated that it would give them job satisfaction.

In the Perceived Behavioural Control component, only 1 participant indicated a moderate level of control over time allocation during curriculum time. 10 out of the 14 participants were inclined towards the negative end of developing pedagogical creative capacity even if they had a personal mentor. 6 participants believed that it would be extremely difficult for them to take time off from teaching or other school duties to develop their pedagogical creative capacity.

Findings from the component of Motivation to Comply indicate that colleagues and peers had a slightly higher level of influence on the participants. In the Perceived Behavioural Control component, 5 of the participants indicated that the culture of organisation did not expect them to increase their creative capacity. It may arguably be inferred that these 5 participants did not experience any pressure from colleagues or school leaders in this aspect. 12 of the participants indicated that their significant others did not require them to develop their pedagogical creative capacity. This is similar to the finding obtained from the Indirect Measures. It again allows for the inference that the significant others or loved ones would not provide an impact on the participants' decision to increase creative capacity. The last item attempted to find out if Reporting Officers played a role in the participants' decision in this context. Slightly more than half of the participants (8 out of 14) indicated that their Reporting Officers (Line Managers) have to some extent suggested the need to develop pedagogical creative capacity.

Summary of quantitative data analysis

Quantitative data analysis suggest that Singapore-based teachers have a fairly strong intention towards further increasing their pedagogical creative capacity. This inclination is slightly attenuated by the moderate correlation between Perceived Behavioural Control at the salient level and the Intention.

Through findings derived from the antecedents of Attitude, Perceived Behavioural Control and Subjective Norms, it is evident that certain referents exert relatively low influence on the participants' engagement in developing creative capacity. It is also evident that top-down approaches such as instructions delivered by school leaders are

not likely to have a strong impact on teachers. Instead, colleagues and peers were indicated as having possibly a higher influence on participants' intention to increase their creative capacity.

Administrative duties stood out prominently as a deterrent to participants' beliefs in being able to increase their pedagogical creative capacity. On the other hand, in spite of the high frequency of disruptions caused by family obligations, most participants did not indicate this as a deterrent factor to their develop of pedagogical creative capacity.

Overall summary derived from mixed method data analysis

Participants from across the three organisations believe that having pedagogical creativity is a necessary and important skill/capacity for a professional teacher. 62.5% of participants have explicitly indicated the importance of teachers developing pedagogical creativity, yet only one out of the sixteen participants could provide some explanation to the concept of 'creative capacity'. This participant suggests that it could refer to the "range and how far the person's creativity can stretch or be pushed to" (OG3/12). Further evidence of the participant's limited understanding of the creative concept in their profession may be inferred from the inclination to consider using technological tools in the teaching of their respective subjects as synonymous with being pedagogically creative (OG1/P02; OG2/P06). It is important to note that the same technological tools were used by participants from different organisations.

60% of participants consider themselves to be in the range of 'average' to 'very high' confidence in their pedagogical creativity (OG1/P02; OG1/P03; OG2/P06; OG2/P07; OG2/P08; OG2/P09; OG3/P10; OG3/P011; OG3/P012; OG3/P13; OG3/P16) whilst generally adopting the already existing pedagogical approaches from workshops,

development programmes, observations, or books in their classrooms. The narrow and misconstrued perception of the pedagogical creative concept was more evident in participants from the government secondary schools compared to the private higher education institution.

CHAPTER FIVE: DISCUSSION, CONCLUSION & LIMITATIONS

Introduction

The primary focus of Chapter Five is to assimilate findings from the two-part mixed method study design to explore the type of programmes, policies, and practices that would increase/hinder Singapore-based teachers' intention to continue developing their pedagogical creative capacity. The intent of the study was to examine how existing programmes, policies and practices would hinder/promote teachers to further develop their pedagogical creative capacity. To achieve these goals, this study had proposed four sub-research questions:

- (1) To what extent do Singapore-based teachers understand the concept of pedagogical creative capacity?
- (2) How are existing programmes, policies, and practices hindering Singapore-based teachers' intention to further increase their pedagogical creative capacities?
- (3) How are existing programmes, policies and practices promoting Singapore-based teachers' intention to further increase their pedagogical creative capacities?
- (4) What is the existing level of intention in Singapore-based teachers to develop pedagogical creative capacities?

Results from this exploratory sequential study indicate that participants in this research study have limited comprehension of the creative concept and its extension to

pedagogical creative capacity. Results also suggest that the existing professional development programmes, policy implementation processes, and organisational practices will require attention from the programme designers as well as decision-makers of the education organisations if it is committed to raising teachers' intention to increase their pedagogical creative capacity. Finally, results suggest that participants have a strong level of Intention towards further development of their pedagogical creative capacities.

Discussion on the main findings

Teachers' understanding of pedagogical creative capacity

The results indicate that the participants of this study are generally not familiar with the concept of creativity in pedagogical settings. When asked directly by the researcher about this issue, the majority of the participants' (11 out of 16) were unaware of existence of such a concept. The remaining participants were vaguely aware of the term although their responses suggest that they were attempting to deduce the meaning, with a varying degree of accuracy.

The participants' misconception of the creative concepts is not unique to Singapore. As identified through creativity literature review, teachers across the different cultural societies and disciplines of study were also found to exhibit this same phenomenon (Aktaş, 2016; Burnard & White, 2008; Chan & Yuen, 2014; Park et al., 2006; Pollard, Hains-Wesson & Young, 2018; Selkrig and Keamy, 2017). However, it needs to be noted that unfamiliarity with the concept does not necessarily equate with inability to employ creative pedagogical practices. Without a doubt, some of the teachers engage in pedagogically creative strategies without being aware of the term

itself. Examples of such instances would be the adoption and/or adaptation of existing teaching methods to impart the knowledge to the students who are not responsive to current modes of pedagogical delivery. It is ultimately the educators' belief in finding the most efficient ways to teach, combined with their ingenuity that can make a teacher creative even if they are not familiar with the term "pedagogical creativity".

Despite 60% of the participants expressing 'average' to 'very high' confidence with regard to their own pedagogical creativity, it was found that participants were generally "borrowing" and "adopting" existing pedagogies into their classrooms. This finding resonates with Savina's (2015) study of teachers in Russia and the US. Teachers were found to be inclined towards adopting "ready-made educational innovations" (Savina, 2015, p. 2608) rather than create on their own.

The echo of these similar findings in earlier studies by other researchers may thus indicate that there are wider issues rather than just a matter of collectivist Confucian cultural influences that may be impeding Singapore-based teachers' intention to develop pedagogical creative capacity.

Firstly, while there exists voluminous creativity literature and its extensions to education, the dissemination of creativity information and knowledge to teacher-participants in this research has not been effectively carried out. Supporting this interpretation is the participants' low level of awareness of programmes, policies and practices that are available to develop teachers' pedagogical creative capacity as indicated through their qualitative data responses. As highlighted by previous research studies, the lack of information/clarity of policy intent can pose an obstacle towards policy enactment as well as resistance (Almeida, 2017; Burnard & White, 2008; Cohen & Hill, 2000).

Next, as highlighted in Chapter One, creativity is promulgated as essentially entailing the characteristics of novelty and utility by scholars across time (Stein, 1953; Csikszentmihalyi, 2007; Edwards, 2012). This has to some extent reduced the concept of originality in the teaching practice of creative phenomenon. Subsequently and unconsciously, the unvarying promulgation of novelty instead of originality has put an invisible lid to higher creative potential. At the same time, relegating the creative development continuum into the background. While Kelly (2016) has claimed that due to varying interpretations of the creativity concept, there may be “profound implications for the nature and extent of enabled potentials” (p. 1), it may be more apt to claim that the recurrent emphasis on the element of ‘novelty’ may have distorted stakeholders’ understanding of the creative concept and its extension into pedagogical creative capacity.

For stakeholders responsible in the development of future generation of Singapore’s workforce, this finding is of significance. It would be reasonable to posit that without information of Singapore-based teachers’ understanding of the pedagogical creativity concept or its parent creativity concept, it is unlikely supporting education agencies will be able to provide appropriate responses to bring about change in the teaching practices of teachers. Admittingly, this finding alone will not be sufficient to bring about change in teachers’ intention to increase their pedagogical creative capacity; nevertheless, it can stimulate more discussions amongst decision and policy makers to consider how this situation may be altered to bring about greater awareness and understanding in teachers.

Programmes, policies and practices hindering intention to further increase pedagogical creative capacities

Qualitative findings from this study suggest that at the point of this study, there has yet to be any coordinated or highly structured pedagogical creative capacity development programmes for teachers in Singapore. Less than half of the participants across all three organisations were able to indicate explicit government policies in developing teachers' pedagogical creativity. The existing initiatives appear to be limited to several ad hoc workshops and sharing platforms. Correlating this finding with phase 2's quantitative findings, effectiveness of these existing development programmes is seemingly limited in promoting teachers' belief in the link between their own pedagogical creative capacity and students' effective learning. 86% of the participants were inclined towards "highly unlikely" in the item that students' will be able to learn more effectively due to the teachers' higher pedagogical creative capacity in the outcome evaluation belief component. This finding can suggest that existing ad hoc, short development programmes or one-off workshops have had limited impact on convincing participants' beliefs/attitude towards the impetus of creative teaching, creative learning and the need to have pedagogical creative capacity. Supporting this viewpoint are the many other research studies which have also asserted that short development programme designs have limited impact on teachers' learning or belief change (Boyle, Lamprianou, & Boyle, 2005; Hawley & Valli, 1999; Loucks-Horsley & Matsumoto, 1999; Pianta, 2011).

Findings also revealed that the lack of autonomy in the choice of development programme design was a demotivator for at least two participants from different organisation. Underpinning this view is Ajzen's tenet of Behavioural Intentions and

Beliefs. When the individual believes that a development programme will not meet his/her professional learning needs, there would be less intentions to participate in the programme. Professional development literature recognizes the importance of teachers' having choice in their professional development programme (Goroizidis & Papaioannou, 2014; McMillan, McConnell, & O'Sullivan, 2016).

This study's qualitative findings showed that the wider national creative education policy has implementation gaps (OG1/P02; OG1/P03; OG1/P05; OG2/P09; OG3/P15). The finding suggests that school leaders do not have clarity in the concept of creativity to provide the necessary environment for creativity development. As reported in Chapter Two Literature Review, school leaders need to have the appropriate knowledge to support teachers in their professional development (Glazer, 2009; Hirsh, 2009; Kwek, Albright & Kramer-Dahl, 2007; Spilliane et al., 2002; Scribner, 1999). The absence of clarity and creativity knowledge in school leaders can present hurdles for teachers' professional learning (Darling-Hammond & McLaughlin, 2011; Lester, Lochmiller & Gabriel, 2017; Thomson et al., 2009). School leaders are responsible for the systemic functions within their organisations. Without knowledge of the appropriate infra-structures needed such as dedicated time for collaborative learning and sharing (Darling-Hammond and McLaughlin, 2011; Lester, Lochmiller & Gabriel, 2017) can become hindrances to teachers' professional development intentions/motivations.

Qualitative findings indicated participants' need for time to develop their own creativity (OG1/P05; OG2/P08; OG3/P13; OG3/P14). This was later echoed in the quantitative phase. In the questionnaire item regarding the frequency of administrative work disrupting participant's planned schedules, 72% of the fourteen participants indicated a high frequency of disruption. Time shortage due to the many duties

appended to the profession presents an obstacle to teachers' ability to engage with professional development has been identified by many other earlier studies (Collard & Looney, 2014; Day, 2019; Kinsella, 2018; Ng, 2019, Scribner, 1999). Without amending this situation can reduce the individual's intention to pursue development of pedagogical creativity. One theoretical rationale that can explain this perception is Ajzen's (1980) theory of perceived Power of Control. With the perceived inability to remove these administrative duties, the teacher would arguably have a lower intention/motivation to engage with advancing pedagogical creative skills.

Programmes, policies and practices promoting intention to further increase pedagogical creative capacities

Qualitative findings found 43% of the participants (OG1/P03, OG1/P04, OG1/P05, OG2/P06, OG2/P07, OG2/P08) opting for "hands-on" development platforms. This finding is aligned with a number of other studies in professional development literature (Garet et al., 2001; Girvan, Conneely & Tangney, 2016; Park et al., 2006; Penuel et al., 2007; Snow-Renner & Lauer, 2005). Such programmes are identified as not only preferred but also effective in changing teachers' teaching beliefs and practices.

Hands-on experiences provide teachers with the opportunity to experience the process or strategy, affording the opportunity to see and make connections with content, knowledge and practice. From this perspective, hands-on learning has the potential to provide meaningful and applicable learning for the individuals leading to an increment in their sense of self-efficacy and confidence. Based on Ajzen's (1980)

theoretical rationale of Positive Behavioural Control belief, it can increase the teacher's level of intention of developing pedagogical creative capacity.

While this finding does provide information for programme designers of teachers' predilection for mode of learning, it should nevertheless be noted that development programmes which used hands-on experiences in past studies have inevitably been supplemented by other modes of learning activities. For example, in Park's et al. (2006) study, hands-on activities were accompanied by class observations and discussions with teachers. Hands-on learning experiences should not be conflated with 'experiential learning'. Having the experience does not necessarily mean that thinking has occurred (Dewey, 1997). While hands-on learning is a form of experiential learning where the individual can increase their pedagogical creative knowledge through the opportunity of experiencing the processes or activity, thereby transforming their pedagogical beliefs, reflective thinking should not be assumed to be an integral part of the hands-on activities. The hands-on experience may simply be an activity of replicating what is being modelled. In the context of this study, professional development programmes which only provide hands-on activities do little to develop teachers' independent pedagogical creativity skill or capacity especially for those who are amotivated. Admittingly, there is no evidence in the qualitative responses of this study to ascertain that participants have taken a narrower and more precise definition of 'hands-on' experience which is demarcated by a lack of reflection and discussion.

Another finding obtained from qualitative data analysis is the 43% support for professional sharing as a preferred development programme design (OG1/P02, OG1/P03, OG2/P06, OG2/P07, OG3/P13, OG3/P15). The partiality towards

professional sharing platforms may to an extent be linked to the result of the item on Motivation to Comply in Phase 2's questionnaire.

Scholarships have postulated professional sharing as an effective mode of learning for teacher development (Garet et al., 2001; Harris & Anthony, 2001). Through dialogue, reciprocal exchange of information, feedback and deep reflection with other practitioners in the informal social learning platform, it is theorized that individuals can identify the gaps in their own knowledge, facilitating the transformation of their teaching practices while having emotional support from empathetic group participants (Barge & Schul, 1980; Hur & Bush, 2009; Ross & Regan, 1993; Webster-Wright, 2009). This form of programme design becomes a valuable and meaningful learning experience for the teachers. Rationally, there can be an assumption of a higher level of confidence and self-efficacy. Relating this perspective to Ajzen's Theory of Planned Behaviour, higher confidence would increase Perceived Behavioural Control thus contribution to higher intention probability.

Existing Intention to develop pedagogical creative capacities.

The tenet of Ajzen's Theory of Planned Behaviour theorises that the more positive Attitude, Perceived Behavioural Control and Subjective Norm are, the more positive will be the Intention to enact the behaviour. Based on the results indicated in Table 3: There is a positive and strong level of Intention in the participants to develop their pedagogical creative capacity. Attitude was found to have the strongest influence on Intention to develop pedagogical creative capacity amongst the three main predictors - Perceived Behaviour Belief; Subjective Beliefs and Attitude. This finding is similar to the finding in Teo, Koh & Lee's (2011) study whilst differing with that of Knape's (2012)

and Basikin's (2017) studies of teachers' Intention. These latter two research studies found Subjective Norms to be the strongest influence on teachers' Intentions to engage with a pedagogical approach. The antecedents to Attitude also have the strongest relation values in comparison with the other beliefs and evaluation parameters. Further examination of the attributes in Behavioural Beliefs and Outcome Evaluations suggest that the participants have yet to be convinced of the impact of pedagogical creative capacity would have on students' learning. There is also the belief that developing pedagogical creativity will lead to less collegial relation with colleagues. These findings can serve as useful information when considering intervention or development programmes.

Subjective Norms is ranked second in its influence on participants' Intention to develop their pedagogical creative capacity. This contrasts with Knape's (2012) study which found Subjective Norm to be the strongest predictor of faculty member's online teaching intention. In spite of this difference, there is much resonance with Knape's postulation of social norms. Citing Cialdini's (2001) theory of 'social proof', Knape posits that when individuals are uncertain of appropriate behaviours in a social context, would look to others with the assumption that these surrounding people have more information and knowledge of the situation. This explanation resonates with the finding to this present study. From the earlier qualitative data analysis, it was quite evident that participants had limited understanding of the creative concept and its extension to their teaching profession. Through the choice of development programmes which inherently provided greater opportunity for collaborative learning were preferred over didactic styles of learning, suggesting the importance of being able to learn from peers. This postulation is also supported by the finding of 57% of

participants' inclining towards 'very high' for the item 'My concern about the way my colleagues perceive me'.

Perceived Behavioural Control was found to have the least impactful influence on the participants' Intention to develop their pedagogical creative capacity although result is still statistically significant. Even though participants indicated the following challenges: (a) lack of time due to administrative duties (b) uneven implementation of policies and practices (c) lack of autonomy in choice of development programmes, the time factor in the different contexts was isolated in the antecedents to Perceived Behavioural Control evaluate the impact on Intention. This may have led to the rather unexpected find of statistically insignificant coefficient result for the antecedents to Perceived Behaviour Control. In addition, the case may have been compounded by the very small sample group available for the study.

Conclusion and suggestions

Based on the integrated findings of this present study, it is not possible to attribute any existing development programmes, creativity policies or practices which have been directly effective in encouraging teacher-participants to further develop their pedagogical creative capacity. This suggests that the positive Attitude, the strongest influencer on participants' Intention to further develop pedagogical creative capacity may be driven by other factors such as professional identity rather than professional development programmes, policies or practices.

As an insider observing the education environment in Singapore, the message of developing students' creativity and innovative skills is seen to be strongly promulgated in the respective schools' mission and vision statements in their different ways. As

such, this may have cultivated in teachers' a sense of professional identity, responsibility and ownership that it is important for teachers to develop students' creativity. Subsequently leading to the enculturated positive Attitude towards the idea of developing their pedagogical creativity.

It is also evident that many of their perceptions on creativity and creative teaching varied with those definitions used by researchers. Arguably, existing development programmes may have played a part in the participants' limited knowledge and understanding of the creative concept. The situation is further exacerbated by the lack of clarity in policy implementation and practices as identified through qualitative data finding.

In addition, with the moderate correlation between Perceived Behavioural Control with Intention, it is evident that attention needs to be given to development programmes, policies and practices to augment participants' belief in the ease to engage with development of their pedagogical creative capacity.

Development programmes can consider designing vertical creativity development programmes aimed at developing participants' varying levels of creative capacity. From this perspective, programme designers will need to consider participant's proficiency and learning needs to include appropriate development content to meet the different levels of competencies and knowledge. In addition, this would mean identifying the participants' competency level or providing participants with the autonomy to choose programmes relevant to their learning needs. This aspect provides the opportunity to increase in the Power of control.

Development programme designs such as professional sharing and hands-on learning sessions being the participants' preferred type of programme can be used as a

change agent. While the highly espoused important features of collegiality, emotional support and collaborative learning are inherent to these two forms of development programmes, programme designers need to be mindful of the progress of the 'expert' peer. Without compromising the positive Behavioural Belief achieved through relevancy of content and environment for all, the 'expert' peer in such social group learning should not be allowed to lapse into an "arrested development" (Van Waes et al., 2016, p. 305). When this arises, it would logically mean reducing the positive Attitude towards the Intention to grow pedagogical creativity further.

When providing hands-on workshop, it is suggested that the learning sessions should not be just processes of imitation and replicating processes. Participating teachers need to be given the opportunities to develop their creative thinking. The degree of facilitation by experts should be of an inverse relation with the participants' creative capacity – that is, the more skilled and higher on the creativity continuum, the less facilitation by the expert for the individual.

The inclusion of ready-made resource packages as part of development programme is seldom discussed in creativity professional development literature. Such resources are essential to the inexperienced and untrained teachers. Prescribed pedagogical strategies provide the support for this group of teachers. In the context of creativity development, it is postulated that by providing resource packages to the experienced group of teachers can develop a sense of reliance rather than encourage teachers to create solutions to the tension or problems experienced. Resource packages to an extent encourages and sustains pedagogical consumerism.

As observed by Chan (2004) in the Hong Kong context, provision of teaching resource packages did not encourage teachers to deviate from the prescribed teaching

processes. Arguably, in the context of Chan's study, the lack of trained teachers justified this provision of teaching packages. Resource packages which includes teaching equipment, weblinks as well as assessment sheets is valued by time-strapped teachers, whether experienced or otherwise. Such packages may perhaps be the motivating factor for teachers to attend professional development programmes.

Resource packages, however, should not be seen as an end to the support of pedagogical creativity. Resource packages for development of teachers' pedagogical creativity can be provided at the fundamental level. That is, using existing pedagogical ideas. It can serve as the starting point to build teachers' pedagogical creative capacity. As suggested by Ibragimkyzy et al. (2016), at the first level of pedagogical creativity, teachers would tap on existing information integrating it with an ability to analyse appropriate use of tools or information. Following this, there should be continuous development programmes helping teachers develop their adaptive creativity possibly through collaborative platforms. This would allow for the transformation of "information known to him/her" (Ibragimkyzy et al., 2016, p. 5295). In these development programmes, teachers can be encouraged to adapt rather than consume existing creative resources.

The development of creativity is a "maturation process" (Tarlow, 1996, p. 10). Effort and practice of creating to reach a mature or high level of creative capacity is essential. The belief that provision of resource packages or manual as a sufficient means to improve teachers' pedagogical creative capacity is equating to a one size fits all principle. Such a belief is counteractive to the phenomenon of creativity. With the changing economic environment, problems of today can be anticipated to take different shapes and sizes tomorrow. It would not be learnt pedagogical strategies that would

help teachers in the field but learning how creative solution can be derived is deemed necessary for teachers.

In terms of organisational practices, respective education institutions can structure in specific time for collaboration and individual creative problem-solving. While scholarships have often indicated the need for collaborative learning environment and relegated learning in silo to be less effective, it is posited that both collaborative and individual creative problem-solving or thinking needs to work in tandem. Collaboration provide individuals with the social opportunity as well as strength in collective reflection and working. Time structure provides the individual with time for dedicated individual reflective time to derive creative solutions to an identified problem. Without the inclusion of blocked individual time for reflective thinking, structured collaborative sessions may not derive an optimal input from the individual team members. As espoused earlier, this may reduce the value of the learning session, leading to a lower Outcome Evaluation which impacts the individual's Intention to pursue growth in creative pedagogy.

With the identification of the strong influence of peers and colleagues from this study, it is suggested that instead of compartmentalising school based collaborative development time by disciplines or faculties, to consider structuring collaborative learning across disciplines and faculties. This practice can widen the social network of individuals while also help break discipline's tribal culture. The departure from using a specific discipline's norm to solve a problem can lend more creative breadth to the various individuals in the team. By learning to integrate new thinking styles with their own core discipline of study individuals can arguably lead individuals to having a greater sense creative efficacy (Behavioural Control Beliefs).

With Subjective Norms having a positive correlation with Attitude, it is suggested that prior to implementation of organisational policies and practices to bring about change in teachers' intentions to act, to take a grassroot approach rather than top-down instruction. As identified through the data analysis, there is greater compliance with expectations of colleagues and peers rather than school leaders or reporting officers.

Organisational policies, practices and professional development must strike a balance between meeting the needs of teachers and needs of the wider education system (Ryder, 2017). Policies supporting teachers' growth will need to be mindful of the development needs of teachers to make learning more effective. Day and Sachs (2004) advise that, "width is needed if one-sidedness is to be avoided" (p. 23).

It may be surmised that to bring about change in teachers' beliefs and their subsequent intention of action, requires the simultaneous and symbiotic energy of policymakers, teachers and professional development programme designers. Policy direction decided by the highest echelon in the education ministry will not be implemented effectively without leadership, purposeful supporting organisational policies and practices. Without appropriate professional development programmes to provide methodological guidance and clarity, the important change in teachers' beliefs and practices can be greatly weakened.

Change in teachers' beliefs and action requires an alignment of beliefs in this tripartite relation between policymakers, professional development designers and teachers' belief values before effective teaching and learning can reach students. Of equal importance is the synchronized efforts of this triplex to minimize obstacles to the effective implementation by teachers at the ground level.

Limitations

This research study used an exploratory sequential study design to guide its data collection processes. The design entailed the use of a qualitative data collection process before engaging with a quantitative data collection process. A primary reason for choosing this design was to reduce the researcher's bias. Being an insider of the profession of one of the organisations it was of utmost importance to the researcher that her own perceptions would not be asserted onto the participants. However, through the designing of the initial set of questions for Phase 1 interview and the subsequent selection of items for the Phase 2 questionnaire the researcher's bias was inevitably inherent. Arguably, to have absolute absence of researcher's bias is not likely to happen for any research study.

Another limitation of this study was the small sample group that was available to the study. For the qualitative portion of the study, there were 16 participants. An attrition of 2 participants led to only 14 participants in the quantitative portion of the study. According to Stevens (1996) the recommended minimum number of 15 participants should be used for the Theory of Planned Behaviour survey. Nevertheless, there does not seem to be a universal agreement as reflected by Francis et al. (2004) recommended number of at least 80 participants.

A selection bias was inevitably introduced due to the insider-researcher situation. In order to meet with the requirements of Ethical Practice of not posing a threat to participants' appraisal outcomes, participants from the same organisation with the researcher were limited to those of higher positions and authority. While the goal was to recruit participants from the non-management teaching staff, ultimately less than three research participants were not of the middle-managerial positions from across

the three organisations. Such a sample group arguably is able to provide more insights into the programmes, policies and practices than the general teaching staff.

Nevertheless, it may not reflect what is perceived on the front-line. It is thus not plausible to make any generalisation for the wider population.

A 7-point Likert scaled questionnaire was designed in the essence of Ajzen's Theory of Planned Behaviour's sample questionnaire. It was felt that the semantic differentials recommended by Ajzen would lead to some bias in the analysis results. Literature confirmed this intuition (Herath, 2010; Sutton et al., 2003). These studies provided empirical evidence of participants' responding differently due to the use of affective or instrumental differential semantics. It is thus posited by this study's researcher that results may be manipulated through the inclusion of either more affective or instrumental differential semantics. At the same time, it was also rationalized that by using iterative phrases, the Cronbach Alpha internal consistency can be increased. Francis et al. (2004) indicated the legitimacy of having a lower internal consistency for an item in order to have more "breath of content" (Francis, 2004, p.62). To this extent, construct validity may be less robust.

The necessity of submitting the Phase 2 quantitative questionnaire to the Ministry of Education prior to Phase 1 data collection, prevented the inclusion of a number of qualitative emergent themes into the final Phase 2 questionnaire used for quantitative data analysis. The need to adhere to materials submitted prior to the commencement of data collection limited the opportunity for fine-tuning of the Phase 2 questionnaire for inclusion of more emergent themes. Items which were not previously raised in the qualitative data were introduced by the researcher to extract further information. The influence of referents or significant others were included to identify their impact on the

participants' intention to increase their pedagogical creative capacity. This was carried out on the basis of the Education Ministry's emphasis on practising work-life balance. In this respect, a researcher's bias would have also been increased. The self-evaluated report on confidence in creative pedagogy by participants would also have contributed to weakness in validity of responses.

Significance of this study

The significance of this research study lies in the uncovering of the type of programmes, policies and practices which would promote Singapore-based teachers' intention to further develop their pedagogical creative capacity. It also identified the gaps in policy implementation, starting with the cascading from the government down to the gatekeepers to the front-line teacher-implementors and the parents. More importantly, the study also identified participants' vague understanding of the creative concept. At the same time, there is limited belief that having a higher level of pedagogical creativity will not have a positive impact on their students' learning and performance.

If policymakers, decision-makers and Professional Development Programme designers are to accept the positive impact that higher pedagogical creative capacity can have on students' learning, considerations will need to be given to the factors raised in the above paragraphs. While participants have limited belief in the positive relation between higher pedagogical creativity and students' effective learning, it does not infer a negative attitude towards the phenomenon. As such, it is further posited by this study's researcher that policy and decision-makers can leverage on the participants'

current positive level of Intention towards developing pedagogical creative capacity to bring about greater learning for students.

In the aspect of knowledge contribution, there have been many studies which have looked into how teachers can be motivated to engage with further professional development. There is however a scarcity of studies which have examined how development programmes, policies and practices can impact teachers into continuing to develop their pedagogical creative capacity.

Additionally, the study has surfaced an area of creativity that is rarely examined - that of the teachers' creative continuum in application to the teaching profession in today's inclusive and diverse learning environment.

Future studies

An earnest attempt was made to minimize *Streetlight Effect* – that is, the practice of “looking for answers where the light is better rather than where the truth is more likely to lie” (Freedman, 2010). This was carried by not only relating findings from analysing data but also inferences made from these data analysis. In spite of the above stated limitations, it is postulated by the researcher of this study that insights into the programmes, policies and practices which would hinder or promote Singapore-based teachers' intentions to further develop their pedagogical creative capacity have been uncovered.

Nonetheless, further study is needed in view of the small sample size available for this present study. The larger sample group should strive to encompass a more representative sample.

REFERENCES

- Abramo, J. M., & Reynolds, A. (2014). Pedagogical creativity as a framework for Music teacher education. *Journal of Music Teacher Education*, 25(1), 37–51.
- Adam, G. C., Harlow, D. B., & Dominguez, V. N. (2015). What motivates STEM teachers to attend professional development? A case study in Chilian high schools. *Proceedings - Frontiers in Education Conference, FIE, 2015 – February*, 1–8.
- Ajzen, I. & Fishbein, M. (1980). Understanding attitudes and predicting social behaviour. Englewood Cliffs. NJ: Prentice Hall.
- Ajzen, I. (1985). *Action control: From cognition to behaviour* (pp. 11-39). Heidelberg, Germany: Springer.
- Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational behavior and human decision processes*, 50(2), 179-211. Retrieved from <https://www.researchgate.net/publication/256619280>
- Ajzen, I. (2002). Constructing a TpB Questionnaire: Conceptual and methodological considerations. Retrieved from <https://pdfs.semanticscholar.org/0574/b20bd58130dd5a961f1a2db10fd1fcbae95d.pdf>
- Ajzen, I. (2015). The Theory of Planned Behavior is alive and well and not ready to retire. *Health Psychology Review*, 9, 131–137.
- Aktaş, M. C. (2016). Turkish high school teachers' conception of creativity in Mathematics. *Journal of Education and Training Studies*, 4 (2), 42-52.
- Aldahmash, A. H., Alshamrani, S. M., ... Alsarrani, N. A. (2019). Research trends in in-service Science teacher professional development from 2012 to 2016. *International Journal of Instruction*, 12(2), 163–178.
- Allen, F. E. (2014). What makes Jack Ma a great innovator? Retrieved from <https://www.forbes.com/sites/frederickallen/2014/05/07/what-makes-jack-ma-a-great-innovator/#8a551d52c71e>
- Aljughaiman, A., & Mowrer-Reynolds, E. (2005). Teachers' conceptions of creativity and creative students. *The Journal of Creative Behavior*, 39, 17–34.
- Almeida, S. C. (2015). Environmental education in a climate of reform: Understanding teacher. *Educators' Perspectives*. Rotterdam: Sense Publishers.
- Al-Suleiman, N. (2009). Cross-cultural studies and creative thinking abilities. *Umm Al-Qura University Journal of Educational & Psychological Sciences*, 1(1), 42-92.

- Amabile, T. M. (1983). The social psychology of creativity: A componential conceptualization. *Journal of Personality and Social Psychology*, 45(2), 357–376.
- Amabile, T. M. (1996). Assessing the work environment for creativity. *Academy of Management Journal*, 39(5), 1154-1184.
- An, D., & Runco, M. A. (2016). General and domain-specific contributions to creative ideation and creative performance. *Europe's Journal of Psychology*, 12(4), 523–532.
- Appova, A., & Arbaugh, F. (2018). Teachers' motivation to learn: Implications for supporting professional growth. *Professional Development in Education*, 44(1), 5–21.
- Archibald, S., Coggshall, J. G., Croft, A. and Goe, L. 2011. *High-quality professional development for all teachers: Effectively allocating resources*. National Comprehensive Center for Teachers Quality.
- Argyris, C. (2000). *Flawed advice and the management trap*. New York: Oxford University Press.
- Armitage, C. J., & Conner, M. (2001). Efficacy of the Theory of Planned Behaviour: A meta-analytic review. *British Journal of Social Psychology*, 40, 471–499.
- Atkins, L. & Wallac, S. (2012). *Qualitative research in education*. SAGE Publication.
- Australian Government (2009). *Creative Australia: Natural cultural policy*. Retrieved from https://www.dropbox.com/ow/msft/edit/home/References%20for%20Chapter%202.docx?hpt_click_ts=1495248555616
- Avidov-ungar, O., & Reingold, R. (2018). Israeli Ministry of Education's district managers' and superintendents' role as educational leaders — implementing the new policy for teachers' professional development. *International Journal of Leadership in Education*, 3124, 1–17.
- Baer, J. & Garrett, T. (2010). Teaching for creativity in an era of content standards and accountability. In R. A. Beghetto & J. C. Kaufman (Eds.), *Nurturing creativity in the classroom*. Cambridge University Press. (Kindle Location: 351 -917). Kindle Edition.
- Baer, J. & McKook, S. S. (2009). Assessing creativity using the consensual assessment technique. Retrieved from file:///C:/Users/Suyun%20Tang/Downloads/BaerMcKoolAssesingCreativity.pdf
- Basikin, B., (2016). *English teacher motivation and intention regarding their professional development program* (Doctoral Thesis). Monash University.

- Bargh, J. & Schul, Y. (1980). On the cognitive benefits of teaching. *Journal of Educational Psychology*, 72, 593-604.
- Bautista, A., Toh, G.Z & Wong, J. (2018). Primary school music teachers' professional development motivations, needs and preferences: Does specialization make a difference? *Musicae Scientiae*, 22 (2), 196-223.
- Beghetto, R. A. (2005). Does assessment kill student creativity? *Educational Forum*, 69(3), 254–263.
- Beghetto, R. A. (2006). Does creativity have a place in classroom discussions? Prospective teachers' responses preferences. *Thinking Skills and Creativity*, 2(1), 42-49.
- Bereczki, E. O. & Kàrpàti, A. (2018). Teachers' beliefs about creativity and its nurture: A systematic review of the recent research literature. *Educational Research Review*, 23, 25-56.
- Bigsby, J. B., & Firestone, W. A. (2017). Why teachers participate in professional development: Lessons from a schoolwide teacher study group. *Teaching and Teacher Education*, 13(1), 10–20.
- Bishop, P. A., & Herron, R. L. (2015). Use and misuse of the Likert item responses and other ordinal measures. *International Journal of Exercise Science*, 8(3), 297–302.
- Boone, H. N. J & Boone, D. A (2012). Analyzing Likert data. *Journal of Extension*, 50(2), 1-5.
- Boyle, B., Lamprianou, I., & Boyle, T. (2005). A longitudinal study of teacher change: What makes professional development effective? Report of the second year of the study. *School Effectiveness and School Improvement*, 16, 1–27.
- Burnard, P., & White, J. (2008). Creativity and performativity: Counterpoints in British and Australian education. *British Educational Research Journal*, 34(5), 667–682.
- Camburn, E. M. (2010). Embedded teacher learning opportunities as a site for reflective practice: An exploratory study. *American Journal of Education*, 116(4), 463–489.
- Calleja, J. (2018). Teacher participation in continuing professional development: Motivating factors and programme effectiveness. *Malta Review of Educational Research*, 12(1), 5–29.
- Cassell, C. & Symon, G. (2004). *Essential guide to qualitative methods in organizational research*. London: Sage Publications.
- Çekmecelioğlu, G. H., & Kaya, G. (2016). Leadership and creativity: The impact of transformational Leadership on Individual Creativity. *Procedia - Social and Behavioral Sciences*, 235(October), 243–249.

- Chan, D. W., & Chan, L. K. (1999). Implicit theories of creativity: Teachers' perception of student characteristics in Hong Kong. *Creativity Research Journal*, 12, 185–195.
- Chan, S., & Yuen, M. (2014). Personal and environmental factors affecting teachers' creativity-fostering practices in Hong Kong. *Thinking Skills and Creativity*, 12, 69–77.
- Chen, P (1998). Opening ceremony of the 43rd international council for small business world conference. Mon 8 1998. SUNTEC City Ball room 1. Retrieved from <http://www.nas.gov.sg/archivesonline/speeches/view-html?filename=1998060605.htm>
- Cheng, V. M. Y. (2010). Tensions and dilemmas of teachers in creativity reform in a Chinese context. *Thinking Skills and Creativity*, 5(3), 120–137.
- Cialdini, R. B. (2001). *Influence: Science and practice* (4th ed.). Boston: Allyn & Bacon.
- Clandinin, J., & Husu, J. (2017). Mapping an international handbook of research in and for teacher education. In J. Clandinin & J. Husu (Eds.), *International handbook of research in teacher education* (pp. 1–21). Thousand Oaks, CA: Sage.
- Clement, M. & Vandenberghe, R. (2000). Teachers' professional development: A solitary or collegial (ad)venture?" *Teaching and Teacher Education*, 16, 81-101.
- Cohen, P. & Cohen, J. (1983). *Applied multiple regression/correlation analysis for the behavioural sciences*. Hillsdale, NJ: Erlbaum.
- Cohen, D. K., & Hill, H. C. (2000). Instructional policy and classroom performance: The Mathematics reform in California. *Teachers College Record*, 102, 294–343.
- Cohen, L. (1988). Developing children's creativity, thinking, and interests: Strategies for the district, school, and classroom. *OSSC Bulletin*, 31(7), 1-69.
- Cohen, L. M. (2012). Adaptation and creativity in cultural context. *Revista de Psicología*, 30(1), 3 -18.
- Cohen, L., Manion, L. & Morrison, K. (2011). *Research methods in education*. (7th ed). London: Routledge.
- Cohen, P. R., & Levesque, H. J. (1990). Intention is choice with commitment. *Artificial Intelligence*, 42(2–3), 213–261.
- Collard, P., & Looney, J. (2014). Nurturing creativity in education. *European Journal of Education*, 49(3), 348–364.

- Corbett, H. D. & Wilson, B. L. (1991). Two state minimum competency testing programs and their effects on curriculum and instruction. In R. E. Stake (Ed.), *Advances in program evaluation: Vol. 1. Effects of mandated assessment on teaching* (pp. 7-40). Greenwich, CT: JAI Press Ltd.
- Corcoran, T. (1995). Helping teachers teach well: Transforming professional development. *CPRE Policy Briefs*, 1-13.
- Conner, M., & Armitage, C. J. (1998). Extending the theory of planned behavior: A review and avenues for further research. *Journal of Applied Social Psychology*, 28, 1429-1464.
- Craft, A. (2003). The Limits to creativity in education: Dilemmas for the educator. *British Journal of Educational Studies*, 51(2), 113-127.
- Crawford, A. K. (2017). Self-determination Theory and middle school Mathematics teachers: Understanding the motivation to attain professional development. (Doctor of Philosophy dissertation). Kent State University College, Ohio, USA.
- Cremin, T., Burnard, P., & Craft, A. (2006). Pedagogy and possibility thinking in the early years. *Thinking Skills and Creativity*, 1(2), 108-119.
- Creswell, J. W. & Plano-Clark, V. L. (2007). *Designing and conducting mixed methods research*. California: SAGE
- Creswell, J. W. (2014). *Educational research: Planning, conducting and evaluating quantitative and qualitative research*. UK, Essex: Pearson Education Limited.
- Croft, A., Coggshall, J. G., Dolan, M. & Powers, E. (2010). Job-embedded professional development: What it is, who is responsible, and how to get it done well. *ERIC Issue Brief*. Washington, DC: National Comprehensive Center for Teacher Quality.
- Crocco, M. S., & Costigan, A. T. (2007). The narrowing curriculum and pedagogy in the age of accountability. *Urban Education*, 42, 512-535.
- Cropley, A. J. (1992). *More ways than one: Fostering creativity*. Norwood, N.J.: Ablex.
- Cropley, D. H., & Cropley, A. J. (2000). Fostering creativity in engineering undergraduates. *High Ability Studies*, 11(2), 207-219.
- Csikszentmihalyi, M. (2007). *Creativity: Flow and the psychology of discovery and invention* (Harper Perennial Modern Classics). HarperCollins. Kindle Edition.
- Darling-Hammond, L., Wei, R. C., Andree, A., Richardson, N. & Orphanos, S. (2009). Professional learning in the learning profession: A status report on teacher development in the United States and abroad. *National Staff Development Council*, (February), 1-32.

- Darling-Hammond, L., & McLaughlin, M. W. (2011). Policies that support professional development in an era of reform. *Phi Delta Kappan*, 92(6), 81–92.
- Davies, D., Jindal-snape, D., Collier, C., Digby, R., Hay, P., & Howe, A. (2014). Creative learning environments in education — A systematic literature review. *Thinking Skills and Creativity*, 8, 80–91.
- Day, C., & Sachs, J. (2004). Professionalism, performativity and empowerment: Discourses in the politics, policies and purposes of continuing professional development. In C. Day, & J. Sachs (Eds.), *International handbook on the continuing professional development of teachers* (pp. 3-32). Maidenhead, UK: Open University Press.
- Day, C. (2019). Policy, teacher education and the quality of teachers and teaching. *Teachers and Teaching: Theory and Practice*, 25(5), 501–506.
- Deci, E.L., & Ryan, R.M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Deci, E. L., & Ryan, R. M. (2000). The “what” and the “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11, 227–268.
- Denzin, N. K. (1989). *Interpretive interactionism*. Newbury Park, CA: Sage.
- Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher*, 38 (3), 181-199.
- Dewey, J. (1997). *How we think*. Mineola, NY: Dover Publications, Inc.
- Edwards, B. (2013). *Drawing on the right side of the brain: A course on enhancing creativity and artistic confidence*. Tarcher: Penguin
- Ehsonova, F. (2016). Pedagogical creativity and its peculiarities. *Eastern European Scientific Journal*, 6, 1-4.
- Ekinci, E., & Acar, F. E. (2019). Primary school teachers' opinions on professional development (Professional development model proposal). *Journal of Education and Training Studies*, 7(4), 111-122.
- Erlandson, D. A., Harris, E. L., Skipper, B. L., & Allen, S. D. (1993). *Doing naturalistic inquiry: A guide to methods*. Newbury Park, CA: Sage.
- Eno, R. (2015). *The Analects of Confucius*. Retrieved from chinatxt.siteshost.iu.edu/Resources

- Ercikan, K. & Roth, W. M. (2009). What good is polarizing research into qualitative and quantitative? *Educational Researcher*, 35 (5), 14-23.
- Eros, J. (2011). The career cycle and the second stage of teaching: Implications for policy and professional development. *Arts Education Policy Review*, 112(2), 65–70.
- Esquivel, G. B. (1995). Teachers' behaviour that foster creativity. *Educational Psychology Review*, 7 (2), 185-203.
- European Academy of Sciences and the Arts (2009). *European year of creativity and innovation*. Retrieved from http://www.euro-acad.eu/downloads/memorandas/42_creativity_and_innovation.pdf
- Fasko, D. (2001). Education and creativity. *Creativity Research Journal*, 13(3-4), 317-327.
- Fishbein, M. (1967). Attitude and the prediction of behaviour. In M. Fishbein (Ed.), *Readings in attitude theory and measurement*, (pp. 477 – 492). New York: Wiley.
- Fishbein, M., & Ajzen, I. (1974). Attitudes toward objects as predictors of single and multiple behaviour Criteria. *Psychological Review*, 81, 59 – 74.
- Flessner, R., & Stuckey, S. (2013). Politics and action research: An examination of one school's mandated action research program. *Action Research*, 12, 36–51.
- Francis, J., Eccles, M. P., Johnston, M., Walker, A. E., Grimshaw, J. M., Foy, R., . . . Bonetti, D. (2004). Constructing questionnaires based on the Theory of Planned Behaviour: A manual for health services researchers. *City Research Online*, 37. Retrieved from <http://openaccess.city.ac.uk/1735/>
- Freedman, D. H. (2010). *Wrong: Why experts keep failing us*. Little, Brown and Company.
- Freund, P. A., & Holling, H. (2008). Creativity in the classroom: A multilevel analysis investigating the impact of creativity and reasoning ability on GPA. *Creativity Research Journal*, 20(3), 309–318.
- Fullan, M. (2016). *The new meaning of educational change* (5th ed.). New York and London: Teachers College Press.
- Futrell, M.H.; Holmes, D.H.; Christie, J.L.; Cushman, E.J. (1995). Linking education reform and teacher professional development: The efforts of nine school districts. *Occasional Paper Series*. Washington, DC: Center for Policy Studies, Graduate School of Education and Human development, George Washington University.
- Gardner, H. (1996). The creators' patterns. In M. A. Boden (Ed.), *Dimensions of creativity*. Cambridge, MA: The MIT Press.

- Garet, M.S., Porter, A. C., Desimone, L., Birman, B. F. & Kwang, S. Y. (2001). What makes professional development effective: Results from a national sample of teachers. *American Educational Research Journal*, 38 (4), 915 -945.
- Garet, M. S., Wayne, A.J., Stancavage, F., Taylor, J., Eaton, M., Walters, K., & Doolittle, F. (2011). *Middle school Mathematic professional development impact study: Findings after the second year of implementation*. (NCEE 2011 – 4025). Washington, DC: National Centre for Education Evaluation and Regional Assistance, Institute of Education Sciences, U. S. Department of Education.
- Girvan, C., Conneely, C., & Tangney, B. (2016). Extending experiential learning in teacher professional development. *Teaching and Teacher Education*, 58, 129–139.
- Glăveanu, V. P., Sierra, Z., & Tanggaard, L. (2015). Widening our understanding of creative pedagogy: A North–South dialogue. *Education 3-13*, 43(4), 360–370.
- Glazer, J. L. (2009). How external interveners leverage large-scale change: The case of America's choice, 1998–2003. *Educational Evaluation and Policy Analysis*, 31(3), 269–297.
- Goh, C. T. (1997). *Speech at opening of 7th International Conference on Thinking*. Retrieved from <http://ncee.org/wp-content/uploads/2017/01/Sgp-non-AV-2-PM-Goh-1997-Shaping-Our-Future-Thinking-Schools-Learning-Nation-speech.pdf>.
- Goodlad, J. (1984). *A place called school*. New York: McGraw-Hill.
- Gorozidis, G., & Papaioannou, A. G. (2014). Teachers' motivation to participate in training and to implement innovations. *Teaching and Teacher Education*, 39(December), 1–11.
- Gralewski, J. (2019). Teachers' beliefs about creative students' characteristics: A qualitative study. *Thinking Skills and Creativity*, 31(May 2018), 138–155.
- Grace, D. 1999. Paradigm lost (and regained). *Independent School*, 59(1), 54-57.
- Green, J. C., & Caracelli, V. J. (1997). Advances in mixed-method evaluation: The challenges and benefits of integrating diverse paradigms. In *New directions for evaluation*. American Evaluation Association. San Francisco: Jossey-Bass.
- Gregerson, M. B., Synder, H. T., & Kaufman, J. C. (2013). *Teaching creatively and teaching creativity*. NewYork, NY: Springer.
- Gregoire, T. G., & Driver, B. L. (1987). Analysis of ordinal data to detect population differences. *Psychological Bulletin*, 101(1), 159–165.

- Guskey, T. R. (1995). Professional development in education: In search of the optimal mix. In T. R. Guskey & M. Huberman (Eds.), *Professional Development in Education: New Paradigms and Practices*.
- Hardy, I. (2012). Education policy, politics and professional development. In *The politics of teacher professional development: Policy, research and practice*. UK: Routledge.
- Hall, C. & Thomson, P. (2018). Recent educational policy creative tensions: Creativity and basic skills in recent educational policy. *English in Education*, 39(3), 5-18.
- Hardeman, W., Johnston, M., Johnston, D. W., Bonneti, D., Wareham, N., & Kinmonth, A. L. (2002). Application of the Theory of Planned Behaviour in behaviour change interventions: A systematic review. *Psychology & Health*, 17(2), 123–158.
- Harris, D. L. & Anthony, H. M. (2001). Collegiality and its role in teacher development: Perspectives from veteran and novice teachers. *Teacher Development*, 5(3), 371 – 390.
- Hattie, J. (1985). Methodology review: Assessing unidimensionality of tests and items. *Applied Psychological Measurement*, 9(2), 139 -164.
- Hawley, W. D., & Valli, L. (1999). The essentials of effective professional development. In L. Darling-Hammond & G. Sykes (Eds.), *Teaching as the learning profession: Handbook of policy and practice* (pp. 127–150). San Francisco, CA: Jossey-Bass.
- Hayes, K. N., Wheaton, M., & Tucker, D. (2019). Understanding teacher instructional change: The case of integrating NGSS and stewardship in professional development. *Environmental Education Research*, 25(1), 115–134.
- Henn, M., Weinstein, M. & Foard, N. (2006). A short introduction to social research. London: Sage.
- Hennessey, B.A., Amabile, T.M., & Mueller, J.S. (2011). Consensual assessment. In M.A. Runco & S.R. Pritzker (Eds.), *Encyclopedia of creativity*, 1, pp. 253–260. San Diego: Academic Press.
- Henriksen, D., Creely, E. & Henderson, M. (2019) Failing in creativity: The problem of policy and practice in Australia and the United States. *Kappa Delta Pi Record*, 55(1), 4-10.
- Herath, C. S. (2010). Eliciting salient beliefs are critical to predict behavioural change in theory of planned behaviour. *E-psychologie*, 4(3), 24–36.
- Herrington, D. G., Yezierski, E. J., Luxford, K. M., & Luxford, C. J. (2011). Target inquiry: Changing Chemistry high school teachers' beliefs about inquiry instruction and their classroom practice. *Chemical Education Research and Practice*, 12(1), 74–84.

- Hetland, L., & Winner, E. (2004). Cognitive transfer from Arts Education to non-arts outcomes: Research evidence and policy implications. In E. Eisner & M. Day (Eds.), *Handbook of research and policy in art education* (pp. 135–162). New York: Routledge.
- Hirsch, S. (2009). Creating effective professional learning systems to bolster teaching quality and student achievement. In L. Darling-Hammond, R. C Wei, A. Andree, N, Richardson and S. Orphanos (Eds.), *Professional learning in the learning professional: A status report on teacher development in the United States and abroad*. United States: National Staff Development Council.
- Hope, S. (2010). Creativity, content, and policy. *Arts Education Policy Review*, 111(2), 39–47.
- Hosseini, A. S. (2008). Investigating the impact of the creativity teaching program on teachers' knowledge, attitude, and skills. *Quarterly Journal of Educational Innovations*, 22, 67-72.
- Hosseini, A. S. & Watt, A. P. (2010). The effect of a teacher professional development in facilitating students' creativity. *Educational Research and Reviews*, 5 (8), 432-438.
- Howkins, J. (2009). *The creative ecology: Where thinking is a proper job*. St. Lucia, Qld: University of Queensland Press.
- Hoyle, E. 1995. *Professional knowledge and professional practice*. London: Cassell.
- Huang, X. H. & Lee, J. C. (2015). Disclosing Hong Kong teacher beliefs regarding creative teaching: Five different perspectives. *Thinking Skills and Creativity*, 15, 37–47.
- Hubbard, R. S., & Power, B. M. (2003). *The art of classroom inquiry: A handbook for teacher researchers* (2nd ed.). Portsmouth, NH: Heinemann.
- Hur, J. W., & Brush, T. A. (2009). Teacher participation in online communities: Why do teachers want to participate in self-generated online communities of K-12 teachers? *Journal of Research on Technology in Education*, 41(3), 279–303.
- Ibragimkyzy, S., Slambekova, T. S. Saylaubay, Y. E. & Albytova, N. (2016). Problems of pedagogical creativity development. *International Journal of Environmental and Science Education*, 11(12), 5290 -5298.
- Jackson, N. (2006). Making sense of creativity in higher education. In N. Jackson, M. Oliver, M. Shaw, & J. Wisdom (Eds.), *Developing creativity in higher education*, pp. 197-215. New York, NY: Routledge.
- Jeffrey, B. (2006). Creative teaching and learning: Towards a common discourse and practice. *Cambridge Journal of Education*, 36(3), pp. 399–414.
- Jeffrey, B. & Craft, A. (2004). Teaching creatively and teaching for creativity: Distinctions and relationships. *Educational studies*, 30 (1), pp, 77-87.

- Jeffrey, B. & Woods, P. (2003). *The creative school: A framework for success, quality and effectiveness*. New York, NY: RoutledgeFalmer.
- Johnson, R.B., Onwuegbuzie, A.J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14–26.
- Jones, M. G., Jones, B. D., & Hargrove, T. Y. (2003). *The unintended consequences of high-stakes testing*. Lanham, MD: Rowan & Littlefield.
- Kadlec, A. (2006). Reconstructing Dewey: The philosophy of critical pragmatism. *Polity*, 38(4), 519-542.
- Kampylis, P., Berki, E., & Saariluoma, P. (2009). In-service and prospective teachers' conceptions of creativity. *Thinking Skills and Creativity*, 4(1), 15–29.
- Kaufman, J. C. & Beghetto, R. A. (2009). Beyond big and little: The four C model of creativity. Retrieved from https://www.researchgate.net/publication/228345133_Beyond_Big_and_Little_The_Four_C_Model_of_Creativity/
- Kaufman, J. C. & Sternberg, R. J. (2006). *The international handbook of creativity*. USA, NY: Cambridge University Press (Kindle Edition).
- Kaushik, V., & Walsh, C. A. (2019). Pragmatism as a research paradigm and its implications for Social Work research. *Social Sciences*, 8(9).
- Kelchtermans, G. (2004). CPD for professional renewal: Moving beyond knowledge for practice. In Day, C. and Sachs, J. *International handbook on the continuing professional development of teachers*. Berkshire: Open University Press.
- Kelly, R. (2016). *Creative development: Transforming education through design thinking, innovation and invention*. Canada. Brush Education Inc.
- Kennedy, M. (2005). *Inside teaching: How classroom life undermines reform*. Cambridge, MA: Harvard University Press.
- Kirton, M. (1976). Adaption and innovation: A description and measure. *Journal of Applied Psychology*, 61(10), 622–629.
- Kinsella, V. (2018). Transforming creative classroom contradictions through activity theory analysis. In K. Snepvangers, P. Thomson & A. Harris (Eds.), *Creativity policy, partnerships and practice in education*, pp.45-64. Cham, Switzerland: Springer Nature Switzerland AG.
- Kline, P. (1979). *Psychometrics and psychology*. London: Academic Press.
- Knap, T. R. (1990). Treating ordinal scales as interval scales. An attempt to resolve the

- controversy. *Nursing Research*, 39(2), 121 – 131.
- Knape, A. P. (2012). *Applying Ajzen's Theory of Planned Behaviour to a study of online course adoption in public relations education* (Doctoral Dissertation, Marquette University, Wisconsin). Retrieved from https://epublications.marquette.edu/dissertations_mu/186/
- Kuhn, T. S. (1970). *The structure of scientific revolutions* (2nd ed.). University of Chicago Press.
- Kwang, N. A., & Smith, I. (2004). The paradox of promoting creativity in the Asian classroom: An empirical investigation. *Genetic, Social, and General Psychology Monographs*, 130(4), 307–332.
- Kwek, D., Albright, J., & Kramer-Dahl, A. (2007). Building teachers' creative capabilities in Singapore's English classrooms: A way of contesting pedagogical instrumentality. *Literacy*, 41(2), 71–78.
- Labaree, D. F. (2004). *The trouble with ed schools*. New Haven, CT: Yale University Press.
- Laius, A. & Rannikmäe, M. (2004). The influence of STL teaching and Science teachers' teamwork on change of students' creativity. *Journal of Baltic Science Education*, 2(6), 69 – 75.
- Lassig, C. J. (2009). Promoting creativity in education - from policy to practice. *Proceeding of the Seventh ACM Conference on Creativity and Cognition - C&C '09*, 229.
- Lochmiller, C. R. & Hedges, S. L. (2017). Education policy implementation research: A call for new approaches. In J. N. Lester, C. R. Lochmiller & R. E. Gabriel (Eds.), *Discursive perspectives on education policy and implementation*, pp. 17-40. Palgrave Macmillan.
- Lincoln, Y. S. & Guba, E. G (2013). *The constructivist credo*. USA, NY: Left Coast Press, Inc.
- Liu, P. (2015). Motivating teachers' commitment to change through transformational school leadership in Chinese urban upper secondary schools. *Journal of Educational Administration*, 53(6), 735–754.
- Longo, C. (2010). Fostering creativity or teaching to the test? Implications of state testing on the delivery of science instruction. *The Clearing House*, 83, 54-57.

- Loucks-Horsley, S., & Matsumoto, C. (1999). Research on professional development for teachers of mathematics and science: The state of the scene. *School Science and Mathematics*, 99, 258–271.
- Lucas, B., Claxton, G. & Spencer, E. (2013). Progression in student creativity in school: First steps towards new forms of formative assessments. *OECD Education Working Papers*, No. 86, OECD Publishing.
- Luneta, K. (2012). Designing continuous professional development programmes for teachers: A literature review. *Africa Education Review*, 9(2), 360–379.
- Lynch, M. & Harris, C. (2001). *Fostering creativity in children, K-8: Theory and practice*. Needham Heights, MA: Allyn and Bacon.
- Marjoribanks, K. (1976). School attitudes, cognitive ability, and academic achievement. *Journal of Educational Psychology*, 68(6), 653–660.
- Masuda, A. M., Ebersole, M. M. & Barret, D. (2013). A qualitative inquiry. Teachers' attitudes and willingness to engage in professional development experiences at different career stages. *The Delta Kappa Gamma Bulletin*, 79(2), 6-14.
- MacLaren, I. (2012). The contradictions of policy and practice: Creativity in higher education. *London Review of Education*, 10(2), 159–172.
- McArdle, K., & Coutts, N. (2010). Taking teachers' continuous professional development (CPD) beyond reflection: Adding shared sense-making and collaborative engagement for professional renewal. *Studies in Continuing Education*, 32(3), 201–216.
- McMillan, D. J., McConnell, B., & O'Sullivan, H. (2016). Continuing professional development – why bother? Perceptions and motivations of teachers in Ireland. *Professional Development in Education*, 42(1), 150–167.
- Ministry of Education, Singapore. (2018). *Education statistics digest*. Retrieved from https://www.moe.gov.sg/docs/default-source/document/publications/education-statistics-digest/esd_2018.pdf
- Mizell, H. (2010). Why professional development matters. *Journal of Contemporary Criminal Justice*, 30(4), 360–361.
- Morgan, D L. 2014. *Integrating qualitative and quantitative methods: A Pragmatic approach*. Thousand Oaks: Sage.
- Mrayyan, S. (2016). Investigating Mathematics teachers' role to improve students' creative thinking. *American Journal of Educational Research*, 4(1), 82–90.
- Mullet, D. R., Willerson, A., Lamb, K. N., & Kettler, T. (2016). Examining teacher perceptions of creativity: A systematic review of the literature. *Thinking Skills and Creativity*, 21, 9–30.

- Mumford, M. D., Scott, G. M., Gaddis, B., & Strange, J. M. (2002). Leading creative people: Orchestrating expertise and relationships. *The Leadership Quarterly*, 13, 705-750.
- NACCCE. (1999). *All our futures: Creativity, culture and education*. London: Department for Education and Employment.
- NFER. (1998). *CAPE UK: Stage one evaluation report*. National Foundation for Educational Research, Slough.
- Nečka, E., Grohman, M. and Słabosz, A. (2006). Creativity studies in Poland. In J. C. Kaufman & R. Sternberg (Eds.), *The international handbook of creativity* (Kindle Edition).
- Nicholl, B., & McLellan, R. (2008). We're all in this game whether we like it or not to get a number of As to Cs: Design and technology teachers' struggles to implement creativity and performativity policies. *British Educational Research Journal*, 34(5), 585-600.
- Ng, A. K. (2001). *Why Asians are less creative than Westerners*. Singapore: Prentice Hall.
- Ng, A. K., & Smith, I. (2004). Why is there a paradox in promoting creativity in the Asian classroom? In S. Lau, A. Hui, & G. Ng (Eds.). *Creativity: When East meets West*. Singapore: World Scientific.
- Ng, C. (2019). Teachers' professional selves and motivation for continuous professional learning amid education reforms. *Asia-Pacific Journal of Teacher Education*, 47(2), 118–136.
- Ng, W., Nicholas, H. & Williams, A. (2010). School experience influences on pre-service teachers' evolving beliefs about effective teaching. *Teaching and teacher education*, 26(2), 278–289.
- Nicholas, D. B., Lach, L., King, G., Scott, M., Boydell, K., Sawatzky, B., ... Young, N. L. (2010). Contrasting Internet and face-to-face focus groups for children with chronic health conditions: Outcomes and participant experiences. *International Journal of Qualitative Methods*, 9(1), 105–122.
- Niu, W. (2012). Confucian ideology and creativity. *Journal of Creative Behavior*, 46(4), 274–284.
- Norman, G. (2010). Likert scales, levels of measurement and the “laws” of statistics. *Advances in Health Sciences Education*, 15(5), 625–632.
- O'Brien, M. (2012). Fostering a Creativity Mindset for Teaching (and Learning). *LEARNing Landscapes*, 6(1), 315–333.

- Oddane, T. A. W. (2015). The collective creativity of academics and practitioners in innovation projects. *International Journal of Managing Projects in Business*, 8 (1), 33-57.
- OECD (2016). *Education Policy Outlook: Korea, 24*. Retrieved from www.oecd.org/education/policyoutlook.htm
- Olivant, K. F. (2015). I am not a format: Teachers' experiences with fostering creativity in the era of accountability. *Journal of Research in Childhood Education*, 29(2002), 115-129.
- Onwuegbuzie, A. J., & Teddlie, C. (2003). A framework for analyzing data in mixed methods research. In A. Tashakkori & C. Teddlie (Eds.), *Handbook on mixed methods in the behavioral and social sciences* (pp. 351-84). Thousand Oaks, CA: Sage.
- Orr, A. M., & Kukner, J. M. (2015). Fostering a creativity mindset in content area pre-service teachers through their use of literacy strategies. *Thinking Skills and Creativity*, 16, 69-79.
- Palaniappan, A. K. (2007). Sex differences on the multi-talent perception inventory among Malaysian students. *Perceptual and Motor Skills*, 105(3 II SPEC. ISS.), 1052-1054.
- Palaniappan, A. K. (2008). Influence of intelligence on the relationship between creativity and academic achievement: A Comparative Study. *International Journal of Learning*, 15(7), 267-277.
- Palermo, C. & Thomson, M. M. (2019). Large-scale assessment as professional development: Teachers' motivations, ability beliefs and values. *Teacher Development*, 23 (2), 192-212.
- Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research*, 62(3), 307-332.
- Park, S., Lee, S. Y., Oliver, J. S., & Cramond, B. (2006). Changes in Korean science teachers' perceptions of creativity and science teaching after participating in an overseas professional development program. *Journal of Science Teacher Education*, 17(1), 37-64.
- Patton, M. Q. (2002). *Qualitative research and evaluation methods*. Thousand Oaks: Sage
- Paul, E. S. & Kaufman, S. B. (2014). *The philosophy of creativity: New Essays*. USA, NY: Oxford University Press.

- Phillips, D. (2005). Policy borrowing in education: Frameworks for analysis. In J. Zadjia (Ed.), *International handbook on globalisation, education and policy research, global pedagogies and policies* (pp. 23–34). Amsterdam: Springer.
- Peabody, D. (1962). Two components in bipolar scales: Direction and extremeness. *Psychological Review*, 69(2), 65-73.
- Penuel, W., Fishman, B., Yamaguchi, R & Gallagher, L. (2007). What makes professional development effective? Strategies that foster curriculum implementation. *American Educational Research Journal*, 44 (4), 921-958.
- Peres-Neto, P. R., & Olden, J. D. (2001). Assessing the robustness of randomization tests: Examples from behavioural studies. *Animal Behaviour*, 61(1), 79–86.
- Pianta, R. C. (2011). Teaching children well: New evidence-based approaches to teacher professional development and training. *Center for American Progress*, 11, 1–36.
- Plucker, J. A. (1998). Beware of simple conclusions: The case for content generality of creativity. *Creativity Research Journal*, 11 (2), 179-182.
- Pollard, V., Hains-Wesson, R., & Young, K. (2018). Creative teaching in STEM. *Teaching in Higher Education*, 23(2), 178-193.
- Popper, K. R. (2014). *Conjectures and refutations: The growth of scientific knowledge*. London, England: Routledge.
- Postholm, M. B. (2012). Teachers' professional development: A theoretical review. *Educational Research*, 54(4), 405–429.
- Preisser, D.D. & Strasser, K. (2006). Creativity in Latin America: View from Psychology, Humanities and the Arts. In J. C. Kaufman & R. J. Sternberg (Eds.), *The international handbook of creativity*. New York: Cambridge University Press.
- Radclyffe-Thomas, N. (2011). Concepts of creativity operating within a UK art and design college (FE /HE) with reference to Confucian heritage cultures: Perceptions of key stakeholders. *Education*, 1–198.
- Rasmunssen, J. L. (1989). Data transformation, type 1 error rate and power. *British Journal of Mathematical and Statistical Psychology*, 42(2), 203-213.
- Redmann, D. H., & Kotrlik, J. W. (2004). Analysis of technology integration in the teaching learning process in selected career and technical education programs. *Journal of Vocational Education Research*, 29(1), 3-25.
- Ryan, R. M. & Deci, E. L. (2000). Self-Determination Theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78.

- Ryder, J. (2015). Being professional: Accountability and authority in teachers' responses to science curriculum reform. *Studies in Science Education*, 51(1), 87–120.
- Ryder, J. (2017). Navigating tensions: Education policy and the Science teacher. *Revista Brasileira de Pesquisa Em Educação Em Ciências*, 17(April), 1–12.
- Ryder, J. & Banner, I. (2013) School teachers' experiences of Science curriculum reform. *International Journal of Science Education*, 35(3), 490-514.
- Robinson, K. (2009). *The element: How finding your passion changes everything*. USA, NY: Penguin).
- Ross, J. A., & Regan, E. M. (1993). Sharing professional experience: Its impact on professional development. *Teaching and Teacher Education*, 9(1), 91–106.
- Rubenstein, L. D. V., Ridgley, L. M., Callan, G. L., Karami, S., & Ehlinger, J. (2018). How teachers perceive factors that influence creativity development: Applying a social cognitive theory perspective. *Teaching and Teacher Education*, 70, 100–110.
- Runco, M. A. (2003). Education for creative potential. *Scandinavian Journal of Educational Research*, 47, 317–324.
- Sang, H. B., Ji, H. S., Suny Oung, P. & Hye, K. K. (2013). Influential factors for teacher creativity: Mutual impacts of leadership, work engagement, and knowledge creation practices. *Performance Improvement Quarterly*, 26(3), 33 – 58.
- Savelyeva, T. (2014). Implementation of creative education policy in Russian higher education curricula. *Creative Education*, 05(02), 86–92.
- Savina, N. N. (2015). The teachers' willingness to create highly intelligent educational innovations. *Procedia - Social and Behavioral Sciences*, 191, 2605–2608.
- Sawyer, R. K. (2004). Creative teaching: Collaborative discussion as disciplined improvisation, *Educational Researcher*, 33(2), 12–20.
- Schwab, K. (2018). *The Global Competitiveness Report*. Retrieved from <http://www3.weforum.org/docs/GCR2018/05FullReport/TheGlobalCompetitivenessReport2018.pdf>
- Scribner, J. P. (1999). Professional development: Untangling the influence of work context on teacher learning. *Educational Administration Quarterly*, 35(2), 238 – 266.
- Scott, C. L. (1999). Teachers' biases toward creative children. *Creativity Research Journal*, 12, 32.

- See, B. H., & Kotkotsaki, D. (2016). *Impact of Arts education on the cognitive and non-cognitive outcomes of school-aged children. A review of evidence*. London: Durham University and Educational Endowment Foundation.
- Selkrig, M., & Keamy, R. (2017). Creative pedagogy: A case for teachers' creative learning being at the centre. *Teaching Education*, 28(3), 317–332.
- Seo, H. A., Lee, E. A., & Kim, K. H. (2005). Korean science teachers' understanding of creativity in gifted education. *The Journal Secondary Gifted Education*. 16(2/3), 98-105.
- Sharp, C. (2005). Developing young children's creativity: What can we learn from research? *Topic*, 32, 5–12.
- Schulz, A. (1971). The stranger: An essay in social psychology. In B. R. Cosin, I. R. Dale, G. M. Esland, & D. F. Swift (Eds.), *School and society*. London: Routledge and Kegan Paul in association with The Open University Press.
- Sijtsma, K. (2015). Delimiting coefficient α from internal consistency and unidimensionality. *Educational Measurement: Issues and Practice*, 34(4), 10–13.
- Silverman, D. (2014). *Interpreting qualitative data*. Thousand Oaks, California: Sage Publications Inc.
- Simonds, D. (2018, August 30). What other countries can learn from Singapore's schools. *The Economist*. Retrieved from <https://www.economist.com/leaders/2018/08/30/what-other-countries-can-learn-from-singapores-schools>
- Simonton, D. K. (1999). *Origins of genius*. New York: Oxford University Press.
- Sinnakaruppan, R. (2017): *Todayonline: Why Singapore's education system needs an overhaul*. 22nd Dec. 2017. Retrieved from <http://www.todayonline.com/daily-focus/education/why-singapores-education-system-needs-overhaul>
- Skiba, T., Tan, M., Sternberg, R. J & Grigorenko, E. L. (2010). Roads not taken, new roads to take: Looking for creativity in the classroom. In R. A. Beghetto & J. C. Kaufman (Eds.), *Nurturing creativity in the classroom*, Cambridge University Press. (Kindle Location: 6997 – 7544). Kindle Edition.
- Snell, M. E., Forston, L. D., Stanton-Chapman, T. L., & Walker, V. L. (2013). A review of 20 years of research on professional development interventions for preschool teachers and staff. *Early Child Development and Care*, 183(7), 857–873.
- Snow-Renner, R. & Lauer, P. A. (2005). *Professional development analysis*. Denver, USA, McREL.
- Sniehotta, F. F., Presseau, J. & Araújo-Soares, V. (2014). Time to retire the Theory of Planned Behaviour, *Health Psychology Review*, 8(1), 1-7.

- Soh, K.C. (2017). Fostering student creativity through teacher behaviour. *Thinking Skills and Creativity*, 23, 58 – 66.
- Southerland, S. A., Granger, E. M., Hughes, R., Enderle, P., Ke, F., Roseler, K., ... Tekkumru-Kisa, M. (2016). Essential aspects of Science teacher professional development. *AERA Open*, 2(4).
- Spillane, J.P., B.J. Reiser, and T. Reimer. (2002). Policy implementation and cognition: Reframing and refocusing implementation research. *Review of Educational Research*, 72, 3, 387–431.
- Sprott, R. A. (2019). Factors that foster and deter advanced teachers' professional development. *Teaching and Teacher Education*, 77, 321–331.
- Starkweather, J. (2012). Step out of the past: Stop using coefficient alpha; there are better ways to calculate reliability. Retrieved from https://it.unt.edu/sites/default/files/omega_jds_jun2012.pdf.
- Stein, M. I. (1953). Creativity and culture. *Journal of Psychology*, 36, 31–322.
- Sternberg, R. J. (2000). Identifying and developing creative giftedness. *Roeper Review*, 23(2), 60–64.
- Sternberg, R. J. (2006). Introduction. In J. C. Kaufman & R. J. Sternberg (Eds.), *The international handbook of creativity*. New York: Cambridge University Press.
- Stevens, J. (1996). *Applied multivariate statistics for the social sciences* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum Associates
- Subotnik, R. F., Edmiston, A. M., Cook, L., & Ross, M. D. (2010). Mentoring for talent development, creativity, social skills and insider knowledge: The APA Program. *Journal of Advanced Academics*, 21(4), 714–739.
- Sullivan, G. M. & Artino, A. R. J. (2013). Analyzing and interpreting data from Likert-type scales. *Journal of Graduate Medical Education*, 5(4), 541–542.
- Sutton, S., French, D. P., Hennings, S. J., Mitchell, J. O., Wareham, N. J., Griffin, S., ... Kinmonth, A. N. N. L. (2003). Eliciting salient beliefs in research on the theory of planned behaviour: The effect of question wording. *Curr Psychol*, 22(3), 234–251.
- Tan, L. (2016). Confucius: Philosopher of twenty-first century skills. *Educational Philosophy and Theory*, 48(12), 1233–1243.
- Tan, A. G., & Majid, D. (2011). Teachers' perceptions of creativity and happiness: A perspective from Singapore. *Procedia - Social and Behavioral Sciences*, 15, 173–180.
- Tarlow, T.M. (1996). *Creativity inside out*. Innovative Learning Publication, Addison-

Wesley.

- Tashakkori, A., & Teddlie, C. (1998). Mixed methodology: Combining qualitative and quantitative approaches. *Applied Social Research Methods Series, 46*. Thousand Oaks, CA: Sage.
- Teddlie, C., & Tashakkori, A. (2003). Major issues and controversies in the use of mixed methods in the social and behavioral sciences. In *Handbook on mixed methods in the behavioral and social sciences* (pp. 3–50). Thousand Oaks, CA: Sage.
- Teddlie, C. & Tashakkori, A. (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*. Thousand Oaks: SAGE Publications Inc.
- Teo, T., Koh, N. K., & Lee, C. B. (2011). Teachers' intention to teach financial literacy in Singapore: A path analysis of an extended Theory of Planned Behaviour (TPB). *Asia-Pacific Education Researcher, 20*(2), 410–419.
- Torrance, E. P. (1972). Can we teach children to think creatively? *Journal of Creative Behavior, 6*, 114–143.
- Torrance, E. P. (1977). *Creativity in the classroom*. Washington. DC: National Education Association.
- Tse, H. H. M., To, M. L., & Chiu, W. C. K. (2017). When and why does transformational leadership influence employee creativity? The roles of personal control and creative personality. *Hum Resour. Manage., 57*, 145–157.
- Van Eekelen, I. M., Vermunt, J. D., & Boshuizen, H. P. A. (2006). Exploring teachers' will to learn. *Teaching and Teacher Education, 22*(4), 408–423.
- Van Waes, S., Moolenaar, N. M., Daly, A. J., Heldens, H. H. P. F., Donche, V., Van Petegem, P., & Van den Bossche, P. (2016). The networked instructor: The quality of networks in different stages of professional development. *Teaching and Teacher Education, 59*, 295–308.
- Vallerand, R. J., Pelletier, L. G., Blais, M. R., Brière, N. M., Sénécal, C., & Vallières, E. F. (1992). Academic Motivation Scale: A measure of intrinsic, extrinsic and amotivation in education. *Educational and Psychological Measurement, 52*, 1003–1017.
- Walter, J. M., Wilkinson, M. and Yarrow, A. (1996). Facilitating professional development through the study of supervision and instructional change. *British Journal of In-service Education, 22*(1), 41–54.
- Webster-Wright, A. (2009). Reframing professional development through understanding authentic professional learning. *Review of Educational Research, 79*(2), 702–739.

- Wegener, C. (2014). Would you like a cup of coffee? Using the researcher's insider and outsider positions as a sensitising concept. *Ethnography and Education*, 9(2), 153–166.
- Westby, E. L., & Dawson, V. L. (1995). Creativity: Asset or burden in the classroom? *Creativity Research Journal*, 8, 1–10.
- Wiles, M. A. (2017). A Phenomenographic approach to understanding Taiwanese music teachers' experiences of creativity in the classroom. Durham these, Durham University.
- Wilson, S. M. & Berne, J. (1999). Teacher learning and the acquisition of professional knowledge: an examination of research on contemporary professional development. *Review of Research in Education*, 24, 173–209.
- Winner, E., & Stephan, V. L. (2013). *Educational research and innovation Art for Art's sake? The Impact of Arts Education*. Paris: OECD.
- Woods, P. & Jeffrey, R. (1996). *Teachable moments*. Buckingham: Open University Press.
- Wu, H. & Leung, S. O. (2017). Can Likert scales be treated as interval scales? A simulation study. *Journal of Social Service Research*, 43 (4). 527-532.
- Yamamoto, K. (1964). Role of creative thinking and intelligence in high school achievement. *Psychological Reports*, 14, 783-789.
- Yefimov, V. (2004). On Pragmatist institutional economics. *IDEAS working paper series from RePEc*. Munich: Munich Personal RePEc Archive.
- Yoon, K. S., Duncan, T., Lee, S. W.-Y., Scarloss, B., & Shapley, K. (2007). *Reviewing the evidence on how teacher professional development affects student achievement (Issues and Answers Report, REL 2007-No. 033)*. Washington, DC: US Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest.
- Zide, L., & Mokhele, M. L. (2018). Enlisting on teacher professional development: Reflections of teachers' experiences. *Journal of Social Science and Humanities*, 15 (4) 36 – 47.
- Zimmerman, D. W., & Zumbo, B. D. (1993). Relative power of the Wilcoxon Test, the Friedman Test, and repeated-measures ANOVA on ranks. *Journal of Experimental Education*, 62(1), 75–86.
- Zivitere, M., Riashcenko, V. & Markina, I. (2015). Teacher pedagogical creativity and developer promoter. *Procedia - Social and Behavioral Sciences*, 174, 4068 - 4073

Appendix A

Approval from Ethics Committee



Dear Tang Suyun

I am pleased to inform you that the EdD. Virtual Programme Research Ethics Committee (VPREC) has approved your application for ethical approval for your study. Details and conditions of the approval can be found below.

Sub-Committee: EdD. Virtual Programme Research Ethics Committee (VPREC)

Review type: Expedited

PI:

School: Lifelong Learning

Title: Exploration of Singapore-based teachers/faculty members' willingness to further develop their pedagogical creative capacity: An exploratory sequential design

First Reviewer: Dr. Lucilla Crosta

Second Reviewer: Dr. Josè Reis Jorge

Other members of the Committee: Dr. Martin Gough, Dr. Rita Kop, Dr. Ruolan Wang, Dr. Greg Hickman, Dr. Marco Ferreira, Dr. Kathleen Kelm, Dr. Josè Resi Jorge

Date of Approval: 13/03/2017

The application was APPROVED subject to the following conditions:



Conditions

- | | | |
|---|-----------|---|
| 1 | Mandatory | M: All serious adverse events must be reported to the VPREC within 24 hours of their occurrence, via the EdD Thesis Primary Supervisor. |
|---|-----------|---|

This approval applies for the duration of the research. If it is proposed to extend the duration of the study as specified in the application form, the Sub-Committee should be notified. If it is proposed to make an amendment to the research, you should notify the Sub-Committee by following the Notice of Amendment procedure outlined at <http://www.liv.ac.uk/media/liv.ac.uk/researchethics/notice%20of%20amendment.doc>.

Where your research includes elements that are not conducted in the UK, approval to proceed is further conditional upon a thorough risk assessment of the site and local permission to carry out the research, including, where such a body exists, local research ethics committee approval. No documentation of local permission is required (a) if the researcher will simply be asking organizations to distribute research invitations on the researcher's behalf, or (b) if the researcher is using only public means to identify/contact participants. When medical, educational, or business records are analysed or used to identify potential research participants, the site needs to explicitly approve access to data for research purposes (even if the researcher normally has access to that data to perform his or her job).

Please note that the approval to proceed depends also on research proposal approval.

Kind regards,
Lucilla Crosta
Chair, EdD. VPREC

Appendix B

Verification letter from supervisor to Ministry of Education, Singapore



(Attn: Rajaeswari Kandasamy) Planning Division
Ministry of Education
1 North Buona Vista Drive
Singapore 138675

22nd May 2017

To whom it may concern:

Re: Doctoral Thesis research proposal of Suyun Tang, entitled "Exploring Singapore-based teachers/faculty members' willingness to further develop their pedagogical creative capacity: An exploratory sequential design."

I write to you in my capacity as primary doctoral thesis supervisor for Suyun Tang, who is studying for the online EdD in Higher Education through my University's programme. Suyun diligently formulated a practicable research proposal from the point in July 2016 when I started to supervise her research and this achieved formal approval in January 2017. In March the Research Ethics Committee for the programme formally approved it from the research ethics standpoint.

The project is carefully constructed according to methodological and ethical criteria and from the point of view of purpose towards creating benefit for the teaching profession and thereby wider society in Singapore and, by implication, with potential utility for educational and social practice worldwide. I hereby recommend endorsement of Suyun's project and, as doctoral supervisor, I shall with pleasure continue to oversee its development and conclusion.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'Dr Martin Gough'.

Dr Martin Gough
Centre for Lifelong Learning, University of Liverpool
126 Mount Pleasant
Liverpool L69 3GW
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Tel. (+44)151-79-41486
Email: m.gough@liverpool.ac.uk

Programme team, EdD in Higher Education:
<http://www.liv.ac.uk/study/online/programmes/education/doctor-of-education/>

(letter intended after signing to be turned into a pdf for sending by email)

Appendix C

Approval from Ministry of Education Singapore for data collection



Ministry of Education
SINGAPORE

1 North Buona Vista Drive
Singapore 138575
Robinson Road P.O. Box 748
Telephone : (65) 6 5722225
Facsimile : (65) 6 7759628
Website : www.moe.gov.sg
Email : contact@moe.gov.sg

EDUN N32-07-005 Request No.: RQ76-17(06)

14 June 2017

Ms Tang Suyun
Blk 107A Edgefield Plains
#17-108
Singapore 621107

Dear Ms Tang,

EXPLORING SINGAPORE-BASED TEACHERS/FACULTY MEMBERS' WILLINGNESS TO FURTHER DEVELOP THEIR PEDAGOGICAL CREATIVE CAPACITY: AN EXPLORATORY SEQUENTIAL DESIGN

I refer to your application for approval to collect data from schools.

2. I am pleased to inform you that the Ministry has no objections to your request to conduct the research in 4 secondary schools, subjected to the following conditions:


- the approved research proposal is adhered to during the actual study in the school;
- the data collected is kept strictly confidential and used for the stated purpose only; and
- the findings are not published without written approval from the Ministry and a copy of the findings is shared with the Ministry upon completion of the study.

3. When conducting the data collection in the school, please ensure that the following are carried out:



- consent is obtained from the Principal for the study to be conducted in the school;
- written parental consent is obtained before conducting the study with the students;
- teachers are informed that participation in the study is voluntary and they do not need to provide any sensitive information (e.g. name and NRIC No.);
- participation by the school is duly recorded in Annex A; and
- the data collection in the school is completed within 1 year from the date of this letter.

4. Please show this letter and all the documents included in this mail package (i.e. the application form, research proposal and research instrument(s) marked as seen by MOE) to seek approval from the Principal and during the actual study.

Yours sincerely


Goh Heng Ting (Ms)
Senior Manager, Research Administration
Corporate Research Office
Research and Management Information Division
for Permanent Secretary (Education)

Note to Principal: Please refer to MOE notification PA/02/17 for the Guidelines on Data Collection from Schools.



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Appendix D

Authorisation letter to gatekeepers



|

Authorisation Letter

Date:

Dear

Request for permission to conduct EdD, thesis research in your institution.

I am a registered student in the Doctor of Education (HE) programme with the University of Liverpool. The research that I wish to conduct for my Doctoral thesis involves the exploration of Singapore-based teachers/faculty members' willingness to further develop their pedagogical creative capacity using an exploratory sequential study design.

I request for your authorisation to access personnel time and organisational data for research purposes relevant to my research. This includes authorisation to conduct interviews with four key personnel of the organisation about the organisation's policies, programmes and practices. This also includes permission to access documents from the archives of the organisation which are not necessarily in the public domain but which I may normally have access to when performing the responsibilities of my job. I also request permission to provide my personal reflections on the collected data.

The teachers at all levels of education provide a great influence and impact on students' development. This includes creativity, which has been in focus of many education systems across the world. This research aims to uncover how the teachers' intention to develop pedagogical creative capacity may or may not be transformed into decision and action due to organisational policies, programmes, or practices. The findings are primarily aimed at providing policy-makers and professional development course organizers with relevant information to help in decision making. A secondary level aim is to raise the question among the participants if relying on imported knowledge and strategies is true development of pedagogical creative capacity. The study also aims to investigate if the stereotyping of Asians as only capable of adaptive creativity is an inevitable condition in the case of Singapore-based teachers.

I am hereby seeking your consent to conduct the above research within your organisation. To assist you in reaching a decision, I have attached to this letter:

- a) A copy of an approval from MOE to collect data from schools
- b) A participant information sheet
- c) A participant's consent form
- d) A copy the research instruments which I intend to use in my research



Should you require any further information, please do not hesitate to contact my supervisors or me. Our contact details are as follows:

Primary Supervisor: ~~Dr. Martin Gough~~

Email: M.Gough@liverpool.ac.uk

Secondary Supervisor: ~~Dr. Viola Manokore~~

Email: viola.manokore@online.liverpool.ac.uk

Researcher: Suyun Tang

Email: tang_suyun@moe.edu.sg

Your permission to conduct this study will be greatly appreciated.

Yours sincerely,

.....

Suyun Tang

Appendix E

Participant information sheet



PARTICIPANT INFORMATION SHEET

This Participant Information Sheet is for your retention

Study Title: Exploration of Singapore-based teachers / faculty members' willingness to further develop their pedagogical creative capacity: An exploratory sequential design.

Invitation: You are invited to be a participant in my research study. Before you decide whether to take part, please take some time to read through this information as it is important that you know what is the purpose of this study and what it involves should you choose to participate in it. Do not hesitate to ask me if you would like more information or clarification. I would like to emphasize that you are not obliged to accept this invitation and should only agree to be a participant if you want to.

Purpose of study: The teachers at all levels of education provide a great influence and impact on students' development. This includes creativity, which is the focus of many education systems across the world. This research aims to uncover how organisational policies, programmes, or practices augment or hinder teachers' intention to develop pedagogical creative capacity into making the decision to take action. The findings are primarily aimed at providing policy-makers and professional development course organizers with relevant information to help in decision making. At a secondary level, the study aims to raise the question among the participants if relying on imported creative knowledge and strategies is true development of pedagogical creative capacity. Also the study aims to investigate if the stereotyping of Asians as only capable of adaptive creativity is an inevitable condition in the case of Singapore-based teachers.

Why have I been invited: You have been chosen based on the researcher's assessment as being possibly representative of the investigated education systems. There will be at least 12 participants from three or more education institutions involved. Teachers from the Singapore secondary schools with at least 5 years teaching experience are chosen to provide relevant feedback on professional development courses. As no interpreter will be provided, only teachers who are proficient in the English language are included. This is to enhance the protection of the research participants' privacy by minimising their contact with persons other than the researcher. Should there be an excess number of respondents to the research invitation, responses which arrive earlier will be chosen over the later ones. In the event two responses arrive at the same time, the respondent with the greater number of years in the teaching service will be chosen.

Do I have to take part? Your participation in this study is strictly on a voluntary basis. You may choose to withdraw from the research, be it phase 1 or phase 2 of the research, without giving a reason and at any point in time without any repercussions. Your withdrawal will not disadvantage you in any way. Withdrawal should be done before data collection is finalized in phase 2 of the study.

What will happen if I decide to take part? You will need to give your voluntary and informed consent by signing on the Participant's Consent Form and sending it back to the researcher via email. Thereafter, you will be given an alpha-number (e.g. P /1) to protect your identity. All communication between you and the researcher will be taking place online through a secure connection to protect your privacy. The online face-to-face interview will be conducted through Skype. Alternatively, an email interview may be used.



Only this researcher will be involved in all communications with you. No research assistants / third parties will be involved. Similarly, all parts of the research activities involving contact with the participants will be carried out by this researcher alone. This is to further protect your privacy and anonymity.

Your participation involves two phases. In the first one, there will be an online-based interview with this researcher in the face-to-face format via skype. This interview is estimated to take about 60 minutes. If the online face-to-face interview is not preferred by you, an email interview will be conducted.

During the online face-to-face interview, you will be invited to talk about your views in relation to the research topic listed above. To ensure greater accuracy of transcribing the interview contents, audio / video recording software will be used during the interview with your permission. Should there be a need for further clarification after this session, the researcher will contact you online once again. Upon completing your interview(s), your transcripts will be sent to you. You will be given two weeks to review your transcripts and verify the accuracy. This will also provide you with the opportunity to reconsider your statements to safeguard your confidentiality.

If you have indicated a preference to take the email interview approach, you will type out your views in relation to the research topic listed above. The questions and/or topic guides will not differ from those given in an online face-to-face interview. Unlike the online-face-to-face interview, there will be no synchronized meeting time if you choose the email interview option. Instead you will be given seventy-two hours to type your views onto a word document at your own convenient time. Upon completion, you will send your word document as a file attachment via email to the researcher. Should there be any clarifications needed after you have sent your word document, the researcher will contact you via email once again. If there is no clarification needed, the researcher will revert your document to you for your review. You will have two weeks to review your word document. This is aimed at providing you with the opportunity to reconsider your statements to safeguard your confidentiality.

Phase two will require you to complete a close-ended questionnaire estimated to last no longer than 30 minutes. This self-administered questionnaire will be emailed to you as a file attachment. Upon completion, you will need to return the questionnaire via email to the researcher. Phase two is estimated to be performed approximately six to nine months after phase one.

Are there any possible disadvantages or risks from taking part? Risks from your participation are not anticipated to exceed those of your ordinary daily life. To minimize any potential psychological, professional, economic, relation and emotional risks, measures have been taken to protect your privacy and anonymity.

Your responses are not evaluated to assess your professional capability but to identify the needs of teachers in the workforce and to potentially increase their pedagogical creative capacity. Your responses will be strictly utilised for this research study only. They will not be used against or for you during the work appraisal or similar activities. However, should you experience any form of discomfort or disadvantage as the result of taking part in this research please notify this researcher immediately.

What are the possible benefits from taking part? There will be no monetary compensation or any form of tangible reward for your participation in this study. However, your participation will contribute to providing policy-makers and professional development course organizers the relevant information for decision making and programme planning for teachers in the workforce.



Therefore, the benefit(s) may be indirect and may include impacting your own professional development and improvement of your working environment.

Will my taking part in this study be kept confidential? As all communication and data collection will be conducted online, the researcher's personal computers will be password protected. Once you have consented to participating in this study your identity will be anonymized using an alpha-number. For example, an individual participant will be identified as P / 1 and institution by OG / 1. In any journal publications, printed materials, or conference presentations which would use the data from this study, your identity will be anonymized through use of the alpha-number code.

If any other data sources are used in this study which may directly or indirectly compromise your privacy, care will be taken to anonymize these identifiers through use of alpha-numbers such as S / 1 or SG / 1 for organisations.

Your identifier and contact information will be stored securely in an encrypted and password protected external hard-drive and locked drawer in the personal home study of the researcher. Upon finalizing the data collection for the study, this information will be destroyed.

The collected data will be stored on two encrypted and password-protected external hard-drives to avoid accidental leaks, dissemination, or loss of data due to computer hacking or hard-drive damage. All data obtained by the researcher will be immediately transferred to external hard-drives and secure deletion of text or any audio / video recordings on the researchers' computer or devices using an appropriate software will be practised. The hard-drives will be stored in a locked drawer of the researcher's private home study for a period of five years.

Access to your data will only be given to this researcher, her primary supervisor, and you during this research study. After completion of the research study only the researcher will have access to the data. To provide further safeguarding of confidentiality, you are also advised to practise the secure deletion of all communications with this researcher from your computer. Should you choose to transfer those data to a hard-drive or print them out you should keep it in a manner you deem safe.

What should I do if I want to withdraw? You may exercise your right to withdraw at any point during the research. The participant should inform the researcher about his / her wish to withdraw from participation. Upon receiving a written notice of withdrawal, all data collected from you will be removed and destroyed from storage. However, once data collection has been finalized in phase 2 of the research, withdrawal of data will not be possible.

What happens at the end of this study? Participants in this study will be given a summary of the findings via email. As this study is undertaken in the fulfilment of an Education Doctoral Thesis (EdD), the researcher intends to publish the research findings on Academia.edu and / or other education forums and journals. The researcher also intends to present the findings at conferences. Confidentiality and anonymity will be maintained using the assigned alpha-number code in all written and verbal context.

Who has reviewed this study proposal? This study has been submitted to the EdD Virtual Programmes Research Ethics Committee of the University of Liverpool. At the same time, the Ministry of Education (Singapore) has also reviewed the study proposal and instruments used for this study. Reviewers from both sites have given their approval. The respective institution gatekeepers have also reviewed this proposal.



What if I am unhappy with the process? Should you find yourself unhappy with any aspects of your participation in this study please do not hesitate to contact this researcher who will do her best to remedy the situation. If you are still not satisfied with the solutions, you may write to contacts given below to address your concerns. If doing so, please identify the details of the study, the researcher, and provide detailed description of the issues concerning you so a further action can be taken.

Who can I contact if I have further questions? If you would like to ask any further information about the study and / or your participation in this study, please contact the researcher at the email address listed below.

Contacts for further clarification:

Researcher: Suyun Tang

Email: suyun.tang@online.liverpool.ac.uk

Primary Supervisor: Dr. Martin Gough

Email: M.Gough@liverpool.ac.uk

Secondary Supervisor: Dr. Viola Manokore

Email: viola.manokore@online.liverpool.ac.uk

Chair of the University's EdD Virtual Programmes Research Ethics Committee:

Email: lucilla.crosta@online.liverpool.ac.uk

The Programme's Research Participant Advocate:

Email: liverpoolethics@ohcampus.com

Tel: 001-612-312-1210 (USA number)

Thank you for considering participating in this study

Appendix F

Participant Consent Form



Committee on Research Ethics

PARTICIPANT CONSENT FORM

Title of Research Project: Exploring Singapore-based teachers/faculty members' willingness to further develop their pedagogical creative capacity: An exploratory sequential design.

Researcher: Suyun Tang

**Please
initial the
box**

- | | | |
|----|--|----------------------|
| 1. | I confirm that I have read and have understood the Participant Information Sheet dated [] for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily | <input type="text"/> |
| 2. | I understand that my participation is voluntary and that I am free to withdraw at any time, be it in phase 1 or 2 of the research without giving any reason, without my rights being affected. In addition, should I not wish to answer any question or questions, I am free to decline. | <input type="text"/> |
| 3. | I understand that, under the Data Protection Act, I can at any time ask for access to the information I provide and I can also request the destruction of that information if I wish. I understand that this data destruction request can only be fulfilled if withdrawal notice is received by the researcher before the findings are finalized in phase 2 of the research. | <input type="text"/> |
| 4. | I understand that confidentiality, privacy and anonymity will be maintained and it will not be possible to identify me in any publication or verbal context. | <input type="text"/> |
| 5. | I understand and agree that my participation will be audio / video recorded and I am aware of and consent to your use of these recordings for the purpose of this research study only. These recordings will be destroyed once findings have been finalized. | <input type="text"/> |
| 6. | I understand that my responses will be kept strictly confidential. I give my permission for this researcher and her primary supervisor to have access to my anonymized responses during this research study. | <input type="text"/> |
| 7. | I understand that my name will not be linked with the research materials, and I will not be identified or be identifiable in the report or reports that result from this research. | <input type="text"/> |
| 8. | I understand and agree that once I submit my consent form, all collected data from thereon will be anonymized. | <input type="text"/> |
| 9. | I understand that my personal contact and information will be destroyed after the findings of this study have been finalized. | <input type="text"/> |



I agree to take part in the above study.

_____ Participant Name	_____ Date	_____ Signature
_____ Name of Person taking consent	_____ Date	_____ Signature
_____ Researcher	_____ Date	_____ Signature

Contacts for further clarification:

Researcher: Suyun Tang

Email: suyun.tang@online.liverpool.ac.uk

The Programme's Research Participant Advocate:

Email: liverpoolethics@ohcampus.com

Tel: 001-612-312-1210 (USA number)

Appendix G

Phase 1 Qualitative interview protocol form

INTERVIEW PROTOCOL FORM

**RESEARCH TOPIC: EXPLORING SINGAPORE-BASED TEACHERS' / FACULTY
MEMBERS' WILLINGNESS TO FURTHER DEVELOP THEIR PEDAGOGICAL CREATIVE
CAPACITY: AN EXPLORATORY SEQUENTIAL DESIGN.**

Researcher's name:

Interview respondent's no.

Time:

Date:

Introduction: Thank you for volunteering for this research. The main focus of this study is to discover what elements will influence Singapore-based teachers' decision to develop their creative capacity. Specifically of interest to me, would be the policies, programmes and practices that would either encourage or discourage you from taking a decision to increase your creative capacity further. As one of the key-personnel or teacher in the local education institutions, your personal view points and narratives in this 60min online face-to-face interview (alternatively email interview) is invaluable to me. As you have kindly volunteered for this interview, you may choose to decline to

answer any of the questions I will be asking. There are no standard or politically correct answers.

Before we begin, may I confirm once again you have read through the participant's information sheet. Is there anything you would like to clarify before we begin?

1. Background

- a. Let's begin this interview with a profile of your teaching experience and job-scope within your institution. How long have you been with this institution and have you taught in any other institution or country?

2. Importance of creative capacity.

- a. In the last decade or so, there has been a lot of research studies on developing students' creativity whilst there is a markedly less focus on developing teachers' / lecturers' creative. Why do you think this is the case?
- b. Have you come across the expression "creative capacity"? If so, what did you hear about?
- c. How important do you think is the issue of teachers' creativity and creative capacity to your institution and /or Singapore?
- d. Do you think that your opinion on that matter is impacted by the pressure exerted globally on the teaching fraternity to be more creative and innovative in their teaching?

3. Developing creative capacity

- a. Do you think developing teacher's creative capacity is necessary? Why or why not?
- b. Have you heard about any methods of courses directed at such a goal?
- c. What kind of activities (professional symposium, workshops lectures, etc) would you consider to be useful in developing the teachers' creative capacity?
- d. Which of the activities you have just mentioned would you personally want to attend if you were to work on expanding your own level of creative capacity as a teacher? Why this be so?
- e. Would you prefer to attend such courses in your institution or outside? Why?

- f. What other activities would you consider beneficial to the goal of developing the teachers' creative capacity that are currently out of reach?

4. Programmes, practices and policies

- a. What kind of policies, professional development programmes, practices etc, would you like to see implemented as part of a wider initiative allowing the teachers /lecturers to work on developing their creative capacity further?
- b. Have you ever experienced institutional policies that are directed at the development of teachers' creative capacity? Can you tell me more about how they compare with the situation in Singapore?

5. Self-development

- a. have you yourself ever thought of or devise any methods which would impact your own creative capacity as a teacher? Can you tell me more about it?
- b. How would you rate yourself on a scale of 1-10 with 1 being the lowest level of creative capacity? Do please share some examples.

Appendix H

Phase 2 Survey form

Date:

Participant's Identity Code Number (for Researcher to fill in)

Further Development of Pedagogical Creativity: Opinion Survey

The race to develop students' creativity has accelerated in many countries across the world. With teachers' serving as gatekeepers to the development of a creative workforce, this survey aims to discover your beliefs and intention towards increasing your pedagogical creative capacity further. Your responses to this survey are most valued.

Please read each question carefully and choose the most fitting answers. There are no correct or incorrect responses.

All responses are confidential. Please be assured that the information you provide in this study will not impact your professional standing.

Please highlight the number that best describes your personal viewpoint.

Section A:

1. My students' ability to learn more effectively due to my higher pedagogical creative capacity is

Highly unlikely: 1 2 3 4 5 6 7 : Highly likely

2. My students achieving higher exam grades due to my higher pedagogical creative capacity is

Highly unlikely: 1 2 3 4 5 6 7 : Highly likely

3. For me to be a role model to my students' creative development is

Highly unlikely: 1 2 3 4 5 6 7 : Highly likely

4. For me to increase my students' creative capacity is

Highly unlikely: 1 2 3 4 5 6 7 : Highly likely

5. For me to have less time with my family due to my pedagogical creative capacity development is

Highly unlikely: 1 2 3 4 5 6 7 : Highly likely

6. For me to have tension with my colleagues due to my strive for higher pedagogical creative capacity is

Highly unlikely: 1 2 3 4 5 6 7 : Highly likely

- 7 For me to appear as challenging authority is

Highly unlikely: 1 2 3 4 5 6 7 : Highly likely

8. The opportunity of getting promoted because of my higher pedagogical creative capacity is

Highly unlikely: 1 2 3 4 5 6 7 : Highly likely

9. My ability to stay relevant in the profession is

Highly unlikely: 1 2 3 4 5 6 7 : Highly likely

10. My ability to be more popular with the students is

Highly unlikely: 1 2 3 4 5 6 7 : Highly likely

Section B:

11. For me to allocate some of my private time to further develop my pedagogical creative capacity is

Extremely difficult: 1 2 3 4 5 6 7 : Extremely Easy

12. For me to allocate time during curriculum time to develop my pedagogical creative capacity is

Extremely difficult: 1 2 3 4 5 6 7 : Extremely Easy

13. For me to experiment with new pedagogical ideas in class on a regular basis is

Extremely difficult: 1 2 3 4 5 6 7 : Extremely Easy

14. For me to find appropriate levels of professional development courses to develop my pedagogical creative capacity is

Extremely difficult: 1 2 3 4 5 6 7 : Extremely Easy

15. For me to take time off from teaching or other school duties to develop my pedagogical creative capacity is

Extremely difficult: 1 2 3 4 5 6 7 : Extremely Easy

16. For me to increase my pedagogical creative capacity on my own is

Extremely difficult: 1 2 3 4 5 6 7 : Extremely easy

17. My loved ones think that I should increase my pedagogical creative capacity

Definitely untrue: 1 2 3 4 5 6 7 : Definitely true

18. My immediate supervisor thinks that I should increase my pedagogical creative capacity

Definitely untrue: 1 2 3 4 5 6 7 : Definitely true

19. I am confident I can increase my pedagogical creative capacity if I had a personal mentor

Definitely untrue: 1 2 3 4 5 6 7 : Definitely true

20. I will try to increase my pedagogical creative capacity

Definitely untrue: 1 2 3 4 5 6 7 : Definitely true

21. The culture of the organisation expects me to increase my pedagogical creative capacity

Definitely untrue: 1 2 3 4 5 6 7 : Definitely True

22. For me to constantly work on increasing my pedagogical creative capacity is

Extremely difficult: 1 2 3 4 5 6 7 : Extremely easy

23. For me having to increase my pedagogical capacity is

Extremely unexciting: 1 2 3 4 5 6 7 : Extremely exciting

24. For me to have my loved ones think that I should increase my pedagogical creative capacity is

Less Important: 1 2 3 4 5 6 7 : Very important

25. I plan to begin increasing my pedagogical creative capacity within the next two weeks

Strongly disagree: 1 2 3 4 5 6 7 : Strongly agree

26. I am confident in developing my own pedagogical creative capacity

Strongly disagree: 1 2 3 4 5 6 7 : Strongly agree

27. From now on, I intend to practise creating novel and/or original and effective teaching strategies on a regular basis. I believe this will help me increase my pedagogical creative capacity

Strongly disagree: 1 2 3 4 5 6 7 : Strongly agree

28. People whose opinions I value would increase my inclination towards developing my pedagogical creative capacity

Strongly disagree: 1 2 3 4 5 6 7 : Strongly agree

Section C:

29. My concern about having my creative failures linked to my annual appraisal and/or performance bonus is

Very low: 1 2 3 4 5 6 7 : Very high

30. My concern about the way my School Leaders perceive me is

Very low: 1 2 3 4 5 6 7 : Very high

31. My concern about the way my colleagues perceive me is

Very low: 1 2 3 4 5 6 7 : Very high

32. My concern about the way my loved ones view me is

Very low: 1 2 3 4 5 6 7 : Very high

Section D:

33. Taking action to increase my pedagogical creative capacity will make me less popular with my colleagues

Untrue: 1 2 3 4 5 6 7 : True

34. Taking action to increase my pedagogical creative capacity will alleviate my status as an effective teacher in the eyes of my school leaders

Untrue: 1 2 3 4 5 6 7 : True

35. Taking action to increase my pedagogical creative capacity will reduce my personal free time

Untrue: 1 2 3 4 5 6 7 : True

36. Taking action to increase my pedagogical creative capacity will keep me professionally relevant

Untrue: 1 2 3 4 5 6 7 : True

37. Taking action to increase my pedagogical creative capacity will help me reach self-fulfilment

Untrue: 1 2 3 4 5 6 7 : True

38. Taking action to increase my pedagogical creative capacity will give me the job satisfaction I am looking for

Untrue: 1 2 3 4 5 6 7 : True

39. Taking action to increase my pedagogical creative capacity will increase my mental well-being

Untrue: 1 2 3 4 5 6 7 : True

Section E:

40. How often do you encounter unexpected events that disrupt your planned schedules?

Very rarely: 1 2 3 4 5 6 7 : Very frequently

41. How often do family obligations unexpectedly disrupt your planned schedules?

Very rarely: 1 2 3 4 5 6 7 : Very frequently

42. How often do work-related activities unexpectedly disrupt your planned schedules?

Very rarely: 1 2 3 4 5 6 7 : Very frequently

43. How often does administrative work unexpectedly disrupt your planned schedules?

Very rarely: 1 2 3 4 5 6 7 : Very frequently

44. How often do you succeed in exploring/experimenting with new ideas within your planned schedules?

Very rarely: 1 2 3 4 5 6 7 : Very frequently

Section F:

45. If I encountered unexpected events that require my time/attention, it will make it more difficult for me to develop my pedagogical creative capacity

Strongly disagree: 1 2 3 4 5 6 7 : Strongly Agree

46. If I had family obligations that require my time/attention, it will make it more difficult for me to develop my pedagogical creative capacity

Strongly disagree: 1 2 3 4 5 6 7 : Strongly agree

47. If I encountered unexpected work-related activities that require my time/attention, it will make it more difficult for me to develop my pedagogical creative capacity

Strongly disagree: 1 2 3 4 5 6 7 : Strongly agree

48. If my administrative duties at the workplace require my time/attention, it will make it more difficult for me to develop my pedagogical creative capacity

Strongly disagree: 1 2 3 4 5 6 7 : Strongly agree

49. If I succeed in exploring / experimenting with new ideas as planned in my schedules, it will make it less difficult for me to develop my pedagogical creative capacity

Strongly disagree: 1 2 3 4 5 6 7 : Strongly agree

Section G:

49. My school leaders think I should develop my pedagogical creative capacity

Strongly disagree: 1 2 3 4 5 6 7 : Strongly Agree

50. My reporting officer thinks I should develop my pedagogical creative capacity

Strongly disagree: 1 2 3 4 5 6 7 : Strongly Agree

51. My colleagues and peers think I should develop my pedagogical creative capacity

Strongly disagree: 1 2 3 4 5 6 7 : Strongly Agree

52. My significant others think I should develop my pedagogical creative capacity

Strongly disagree: 1 2 3 4 5 6 7 : Strongly Agree

53. My discipline's community thinks I should develop my pedagogical creative capacity

PROGRAMMES, POLICIES AND PRACTICES WHICH HINDER/PROMOTE TEACHERS' INTENTIONS

Strongly disagree 1 2 3 4 5 6 7 : Strongly Agree

Thank You Very Much for Completing this Survey

And

Helping with this Research Study.

Appendix I

Items used for the Direct Measure of Attitude

1. For me having to increase my pedagogical creative capacity is

Extremely unexciting: 1 2 3 4 5 6 7 : Extremely exciting

2. Taking action to increase my pedagogical creative capacity will increase my mental well-being

Untrue: 1 2 3 4 5 6 7 : True

3. Taking action to increase my pedagogical creative capacity will give me the job satisfaction I am looking for

Untrue: 1 2 3 4 5 6 7 : True

Items used for the Direct Measure of Perceived Behavioural Control

1. For me to allocate time during curriculum time to develop my pedagogical creative capacity is

Extremely difficult: 1 2 3 4 5 6 7 : Extremely easy

2. I am confident in developing my own pedagogical creative capacity if I had a personal mentor

Definitely untrue: 1 2 3 4 5 6 7 : Definitely true

3. For me to take time off from teaching or other school duties to develop my pedagogical creative capacity is

Extremely difficult: 1 2 3 4 5 6 7 : Extremely easy

Items used for Direct Measure of Subjective Norms

1. The culture of the organisation expects me to increase my pedagogical creative capacity

Definitely untrue: 1 2 3 4 5 6 7 : Definitely true

2. My significant others think I should develop my pedagogical creative capacity

Strongly disagree: 1 2 3 4 5 6 7 : Strongly agree

3. My reporting officer thinks I should develop my pedagogical creative capacity

Strongly disagree: 1 2 3 4 5 6 7 : Strongly Agree

Items used for Direct Measure of Behavioural Intention

1. I plan to begin increasing my pedagogical creative capacity within the next two

Weeks

Strongly disagree: 1 2 3 4 5 6 7 : Strongly agree

2. From now on, I intend to practise creating novel and/or original and effective teaching strategies on a regular basis. I believe this will help increase my pedagogical creative capacity.

Strongly disagree: 1 2 3 4 5 6 7 : Strongly Agree

3. I will try to increase my pedagogical creative capacity

Definitely untrue 1 2 3 4 5 6 7 Definitely true

Appendix J

Items used for analysis of Attitude using Indirect Measures

Behavioural Belief Taking action to increase my pedagogical creative capacity will make me less popular with my colleagues.

Untrue 1 2 3 4 5 6 7 True

Outcome Evaluation For me to have tension with my colleagues due to my strive for higher pedagogical creative capacity is

Highly unlikely 1 2 3 4 5 6 7 Highly likely

Behavioural Belief Taking action to increase my pedagogical creative capacity will alleviate my status as an effective teacher in the eyes of my school leaders

Untrue 1 2 3 4 5 6 7 True

Outcome Evaluation My students' ability to learn more effectively due to my higher pedagogical creative capacity is

Highly unlikely 1 2 3 4 5 6 7 Highly likely

Behavioural Belief Taking action to increase my pedagogical creative capacity will keep me professional relevant

Untrue 1 2 3 4 5 6 7 True

Outcome My ability to stay relevant in the profession is

Evaluation

Untrue 1 2 3 4 5 6 7 True

Items used for Perceived Behavioural Control analysis using Indirect

Measure

Behavioural Control If I had family obligations that require my time/attention, it will make it more difficult for me to develop my pedagogical creative capacity.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Power of Control How often do family obligations unexpectedly disrupt your planned schedules?

Very rarely 1 2 3 4 5 6 7 Very frequently

Behavioural Control If my administrative duties at the workplace require my time/attention, it will make it more difficult for me to develop my pedagogical creative capacity.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Power of Control How often does administrative work unexpectedly disrupt your planned schedules?

Very rarely 1 2 3 4 5 6 7 Very frequently

Behaviour If I succeed in exploring/experimenting with new ideas as planned in
al Control my schedules, it will make it less difficult for me to develop my

pedagogical creative capacity

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Power of How often do you succeed in exploring/experimenting with new ideas
Control within your planned schedules?

Very rarely 1 2 3 4 5 6 7 Very frequently

Items used for analysis of Subjective Norm using Indirect Measure

Normative My loved ones think that I should increase my pedagogical creative

Beliefs capacity

Definitely untrue 1 2 3 4 5 6 7 Definitely true

Motivation For me to have my loved ones think that I should increase my

to Comply pedagogical creative capacity is

Less important 1 2 3 4 5 6 7 Very important

Normative My school leaders think I should develop my pedagogical creative

Beliefs capacity

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

PROGRAMMES, POLICIES AND PRACTICES WHICH HINDER/PROMOTE TEACHERS' INTENTIONS

Motivation My concern about the way my school leaders perceive me is
to Comply

Very low 1 2 3 4 5 6 7 Very High

Normative My colleagues and peers think I should develop my pedagogical
Beliefs creative capacity

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Motivation My concern about the way my colleagues perceive me is
to Comply

Very low 1 2 3 4 5 6 7 Very High