Mapping the factors influencing creative teaching in mainland China: An exploratory study

Abstract:

This study aims NcNatt to explore teachers' perceptions of and receptivity to creative teaching from the perspective of educational change. This study also discusses the influence of teachers' perceptions of their own creativity based on self-reviews and their perceived expectations of colleagues and students, doing so from an organisational management perspective. A questionnaire was administered to 621 primary school teachers in China. The results showed that substantial support for teachers within the school setting was lacking, although there was considerable consensus that creativity could be achieved inside school. Significant differences were found between teachers from urban, suburban and rural schools in terms of their behavioural intention to implement creative teaching. Through multi-group structural equation modelling, teacher-perceived practicality and teachers' creative behaviour were found to be significantly related to teachers' behavioural intention to engage in creative teaching for all of the participants. The expectation from colleagues and students significantly influence teacher creative self-efficacy in a different way. In predicting behavioural intentions for creative teaching, the expectations of students were significant for urban teachers, while school support was a vital factor for suburban and rural teachers. This study has implications for the promotion of creative teaching in schools.

Key words: creative teaching; teacher receptivity; school support; primary teachers; multi-group structural equation modeling

1. Introduction

Creativity development has been increasingly accepted as one of the core missions in schools around the world. It has often been assumed or observed that young children are naturally curious, creative and 'incipient scientists and artists' (Hong, Part & Rowell, 2017). However, when children commence their formal schooling, a reduction in their 'creative space' has been noted. On the one hand, this suggests that traditional pedagogy may significantly constrain the development of student creativity (Lin, 2011); one the other hand, this also highlights the challenges that teachers encounter in implementing creative teaching (Bereczki & Kárpáti, 2018). Researchers have found that teachers' behavioural intention and self-efficacy are pivotal in predicting whether teachers prefer to adopt an educational change in the classroom (Zee et al., 2016; Lee, 2000). If a teacher has a high behavioural intention of conducting creative teaching or has confidence in effectively carrying out such teaching, there is a strong possibility of that teacher transforming these positive beliefs into practical performance.

To date, only a few studies have explored the factors influencing teachers' self-efficacy in terms of creative teaching (Farmer et al., 2003; Wang et al., 2014). Few studies have explored the effects of teachers' perceived environmental influence on their self-efficacy with regard to creative teaching (Bereczki & Kárpáti, 2018; Mullet et al., 2016). Regarding behavioural intention, little attention has been drawn to creative teaching. Drawing from theoretical frameworks on receptivity (Waugh & Punch, 1987) and social roles (Burk, 1991), this study aimed to map the factors influencing teachers' self-efficacy and behavioural intention in terms of creative teaching by including teachers' personal attributes, environmental influence and the practicality of creative teaching, on the one hand, and

teachers' behavioural intention and self-efficacy in terms of creative teaching, on the other hand.

1.1 Creative teaching

Before specifically discussing creative teaching, there is a need to place this concept into a larger perspective, into a nexus with other concepts such as creative learning and teaching for creativity. Lin (2011, p. 152) postulated a conceptual framework of 'creative pedagogy' consisting of three components: 'creative teaching', 'teaching for creativity' and 'creative learning'. Here, 'creative teaching' emphasises the 'imaginative, dynamic, and innovative approaches' that contribute to 'teaching for creativity' (Chan, 2007). These approaches aim to stimulate children's motivation, curiosity and innovation. 'Creative learning' highlights the interaction of creative endeavours and behaviours between teachers and students and the unique features of 'playfulness', 'supportive/resourceful context' and co-operation (Lin, 2011, p. 152). With the advancement of creative pedagogy, it is noticeable that by providing a creative-friendly environment and modelling, creative teaching is pivotal for both teaching for creativity and creative learning.

Grainger, Barnes and Scoffham (2006) used the 'cocktail metaphor' to represent the dynamic concept of creative teaching. This was comprised of three themes. Their first theme related to current societal trends and contexts, with the adoption of 'metaphor, analogy and mental models' to illustrate the connections between concepts and issues. Their second theme consisted of shifting from one teaching style to another with varying rhythms and various teaching resources, teachers' positive, supportive relationships with students and teachers' passion for and competence in teaching methods that value students. Their third and final theme related to the 'learning experiences' that affectively and emotionally motivated students, on the one hand, and challenged their reflections, on the other hand (pp. 246-251). This three-tier conceptualisation of creative teaching was also adopted in this study.

Although researchers have noted a high level of consensus on creativity promotion in schools (Cachia et al., 2010), the actual implementation of related programs has run into difficulties (Katz-Buonincontro, 2012). To promote creative teaching, researchers have explored different approaches. At the level of teachers, Robson and Janniste (2010) explored the usage of integrating technology and the arts to promote creative teaching. Braund and Campbell (2010) borrowed from practitioner action research to improve teachers' confidence in carrying out creative teaching. At the school level, Downing and colleagues (2007) highlighted that school learning cultures can significantly increase teachers' performance in creative teaching. Davies and colleagues (2014) found that communication with external professionals could help the construction of school culture and promote creative teaching. However, due to dynamic school environments, the methods that work in one school may not be effective in another. The challenge of promoting creative teaching calls for an in-depth investigation of which factors influence teachers' willingness and efficacy in creative teaching and how they do so.

1.2 Teachers' self-efficacy in creative teaching

Relying on Bandura's (1997) social cognitive theory, teachers' self-efficacy is defined as a teacher's judgement of his or her ability to successfully carry out a given course or promote student learning (Hoy & Spero, 2005; Klassen et al., 2011). Some scholars have found that teachers' self-efficacy can exert a critical effect on teaching performance and professional commitment (Bandura, 1997; Caprara et al., 2003; Hoy & Davis, 2006;

Tschannen-Moran & Hoy, 2001). Compared with teachers with low self-efficacy, self-efficacious teachers are more likely to 'view the principal, colleagues, and students as behaving in accordance with their obligations, and to perceive the whole school as a system capable of pursuing its mission' (Caprara et al., 2006, p. 475). Thus, teachers' self-efficacy is a key motivational belief that influences teachers' professional behaviour and student learning (Klassen et al., 2011; Martin et al., 2012).

Based on Bandura's theory, Tierney and Farmer (2002) developed the concept of creative self-efficacy that refers to the extent to which teachers believe in their ability to produce creative outcomes, and the authors demonstrated that creative self-efficacy positively corresponded with teachers' creative performance. Also, the positive relationship between creative self-efficacy and teaching performance has been confirmed by other empirical studies (e.g., Tierney & Farmer, 2011; Jaussi, Randel & Dionne, 2007). Regarding the antecedents of creative self-efficacy, only a few studies have addressed this issue in the context of schools. Beghetto (2009) found that mastery- and performance-approach beliefs are positively related to creative self-efficacy. Karwowski and Lebuda (2016) found that personality traits, such as openness to experience, conscientiousness and neuroticism, are positively correlated with creative self-efficacy. However, few studies have explored the effects of teachers' perceived environmental influence on their creative self-efficacy (Bereczki & Kárpáti, 2018).

1.3 Teachers' receptivity to creative teaching

Dating back to the 1980s, Waugh and Punch (1987) advanced an empirical model of teachers' receptivity that is based partly on the psychological theory of attitudes, intentions and planned behaviour (Clarke et al., 1996). The psychological theories are based on Fishbein and Ajzen's (1975, 1981) theories of reasoned action and planned behaviour. Their theories highlighted that individuals' behavioural intention is a key indicator of predicting their receptivity to implementation of an educational change. Then, the scholars proposed that an individual's behavioural intention is affected by several factors, such as the practicality of the change, school support for resources or professional development. If teachers believe that the new educational change is practical, the expected changes are valued in their context. Then, the teachers can access sufficient support from school, be inclined to accept the change, implement it in the classroom and actively pursue coping strategies when countering challenges or problems (Ajzen, 1991, 2002). This model has subsequently been modified and applied to research on curriculum innovation, such as the unit curriculum system in Australia (e.g., Waugh & Godfrey, 1993) and environmental and citizenship education in Hong Kong (Lee, 2000; Wong et al., 2015). By considering creative teaching as an educational change, we thus postulated that teachers' behavioural intention is significantly influenced by teachers' beliefs about the practicality of creative teaching and by their perceived school support for creative teaching.

H1: The practicality of creative teaching is positively related to teacher behavioural intention of conducting creative teaching

H2: Teacher perceived school support is positively related to teacher behavioural intention of conducting creative teaching

1.4 The relationship between teachers' social role, self-efficacy and behavioural intention

Drawing upon structural symbolic interaction theory, Burke and Stets (2009) highlighted that the social roles of individuals combine different expectations that are closely

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linked to social position. First, the development of a social role is a sense-making process of retrospective personal interpretation of the past and continuing roles (Grube & Piliavin, 2000). Through the interpretation of personal experiences, individuals formulate their understanding of what a specific role should look like. Second, Grube and Piliavin (2000) noted that individuals may be inclined to formulate views of social roles based on their expectations of significant others. Due to social roles being closely tied to social relations and structures, the formulation of social roles can also be shaped and reinforced by the perceived feedback of others (Stryker & Burke, 2000; Burke & Stets, 2009). Empirical studies have also demonstrated that the formulation of individual roles is influenced by supervisors (Scott & Bruce, 1994) and co-workers (Madjar, Oldham & Pratt, 2002; Tierney & Farmer, 2002). In a school context, due to both colleagues and students representing significant others to teachers, the formulation of teachers' roles should be influenced and validated by their perceived expectations from colleagues and students.

Swann (1985) stated that self-reviews can stimulate the attribution process, which can serve as a driver for the development of self-efficacy. McNatt and Judge (2004) highlighted that the expectations of others can reshape and validate individual self-efficacy. With regard to creative teaching, Craft and colleagues (2007) argued that teachers' self-concept, in terms of creative teaching, can influence their attitudes. Farmer and colleagues (2003) also confirmed that an employee's self-concept as a 'creative person' can significantly influence his or her creative self-efficacy. Therefore, in the school context we expect that teachers' self-concept corresponds with their self-efficacy in terms of creative teaching. The self-concept reflects a self-review of creative behaviour, perceived expectations of colleagues and perceived expectations of students.

H3: Teacher self-review of creative behaviour is positively related to teacher creative self-efficacy
H4: Teacher perceived expectations of colleagues are positively related to teacher creative self-efficacy
H5: Teacher perceived expectations of students are positively related to teacher creative self-efficacy

Notably, in the theory of teachers' receptivity, ample attention has been drawn to how teachers perceive external factors with regard to environment and educational change. Comparatively, the individual dimension, which includes self-concept, has been ignored in the literature. Burke (1991) stated that personal role is not only linked to individuals' attitude but also affects behaviour through the sharing of meanings implied by that role. Individual role, shaped by retrospective sense-making and positive experiences, can naturally increase the motivation to take on additional similar tasks. With regard to creative teaching, it was also found that teachers who are more open to new challenges are apt to experiment with innovative ideas in the classroom (Karwowski & Lebuda, 2016). Therefore, we postulate that teachers' self-concepts, namely, their self-review of creative behaviour and their perceived expectations of colleagues and students, are positively related to behavioural intention.

H6: Teacher self-review of creative behaviour is positively related to teacher behavioural intention on creative teaching
H7: Teacher perceived expectations of colleagues are positively related to teacher behavioural intention on creative teaching
H8: Teacher perceived expectations of students are positively related to teacher behavioural intention on creative teaching

1.4 Influence of school settings

There can be striking differences between schools in rural, suburban and urban school settings in terms of school resources, the supply and quality of teachers and student academic level and discipline (Knoblauch & Woolfolk Hoy, 2008). These differences can significantly influence teachers' beliefs and attitudes (Burns & Machin, 2013). In terms of teachers' self-efficacy, Tschannen-Moran et al. (1998) advanced that teachers must analyse teaching tasks and environmental factors before they make judgements about their capability to perform a task. For an example, 'a very confident rural sixth grade teacher might shudder at the thought of teaching sixth graders in the city' (p. 228). Ample evidence has confirmed that school environment is a pivotal factor in teachers' self-efficacy (Labone, 2004; Pajares, 1996; Siwatu, 2011). However, studies have addressed the question of 'which' instead of 'how', meaning that research has found that teachers' self-efficacy varies across different school settings, and studies have not identified precisely how various factors influence teachers' efficacy across those settings (Knoblauch & Woolfolk Hoy, 2008). Similarly, in spite of considerable evidence demonstrating that school resources and support is a crucial factor significantly influencing teachers' behavioural intention of implementing educational changes (Lee, 2000; Ma, Yin, Tang & Liu, 2009; Moroz & Waugh, 2000), little is known about how different school settings influence the nexus between teachers' behavioural intention or about the degree of that influence. To fill in the research gap, this research also investigated how different factors influence teachers' behavioural intentions in different school settings.

It should be noted that an educational institution, such as a school, does not have enhancing teachers' personal creativity as a primary mission. Also, while many teachers believe in the importance of nurturing student creativity, they do not often make creative teaching and learning a high priority. Furthermore, schools have not been pro-active in integrating creative elements into their curricula and instructional practices (Hong et al., 2017, p. 318, 322). Therefore, creative teaching is often integrated with other pedagogical activities and cannot be identified or distinguished independently. In this study, we consider creative teaching as a form of educational innovation and explore the potential relationships between, on the one hand, teachers' self-review of their personal creative behaviour and teachers' perceived expectations and, on the other hand, teachers' behavioural intention and teacher self-efficacy in terms of creative teaching.

1.5 Research context

In the East, and specifically in China, creative learning and creative education have been promoted by scholars such as Chongde Lin (2000a, 2000b), who advocated for 'exploratory learning' and 'automatic learning' (Gu, 2017, p. 497). Creative teaching was also studied by Gu (2005) and Gu, Zhou and Fan (2010), who highlighted the importance of cultivating students' creative thinking styles, generating creative ideas and displaying creative behaviour. Aligned with the theoretical trend of advocating creative teaching, a 'creative-driven curriculum' has been part of China's educational policy (Chien & Hui, 2010, p. 51; Zhu & Zhang, 2008). However, in Chinese societies, the drive for creative education has lacked a supportive environment at the school level. The implementation of creative teaching in schools has been impeded by the influence of cultural beliefs that reinforce obedience towards senior people, the pressure of an examination-oriented system and

parental emphasis on academic achievement, along with teachers' preference for routine memorisation over creative and student-centred pedagogy (Hu & Szente, 2009; Zhou et al., 2013). In addition, teachers do not have access to sufficient resources or the time to develop new pedagogies. Nor do teachers find it easy to question their established methods or to experiment with new ideas and tools (Dobbins, 2009; Gu, 2017).Regarding empirical research on creative teaching, in contrast to the many studies conducted in the West (e.g., Hong et al., 2017; Dobbins, 2009, Craft & Chappell, 2016; remin, 2009), few empirical studies have been conducted on which factors support or hinder teachers' willingness and self-efficacy in implementing creative teaching in mainland China.

In China, educational development in different school settings is imbalanced. Urban, suburban and rural districts represent three decreasing levels with regard to educational quality and teachers' professionalism. Comparatively speaking, urban schools have the most sufficient teacher supply, the highest teaching quality and the richest and most diverse set of educational resources (Liu, Shi & Zhang, 2011). Also, student academic achievement is far ahead of their counterparts in suburban and rural districts (Wang & Li, 2008). In suburban schools, due to their undeveloped economies and limited educational resources, many teachers are inclined to move to urban schools (Xue & Liu, 2011), which directly leads to inequality in the distribution of good teachers and to instability of employment. Furthermore, with the trend of migrant rural workers, the large number of rural students enrolling in suburban schools leads to shortages of educational resources (Zhang, 2013), which further deteriorates teaching quality in suburban schools. In rural schools, the story is completely different. Due to the lower development of the economy and culture and due to student loss and migration, teachers often do not like to work in rural schools. Therefore, teacher shortage is a significant problem for rural schools (Xue & Liu, 2011). In addition, most rural schools lie in remote areas, making it difficult for teachers to access continuing professional development (Liu, Shi & Zhang, 2011). Therefore, the educational environment of rural schools is characterised by shortages of teachers, resource-poor environments and a scarcity of professional development programmes for teachers.

2. Method

2.1 Participants

Since 2009, the educational department of Shanxi province has advocated creative teaching and provided teachers with large-scale training programmes (Educational Department of Shanxi Province, 2010). From that point on, creative teaching has been considered as a core competence for teachers in Shanxi. However, due to the lack of assessment or review mechanisms, the extent to which teachers can transfer the knowledge gained in professional programmes to their classroom teaching largely depends on their individual beliefs, competence and school context.

Based on convenience sampling, a questionnaire was sent to 41 primary schools in eight cities in Shanxi province whose educational level ranked 15 out of 31 provinces in mainland China. In Shanxi province, the differences of educational input between districts are considerable (Wang, Yuan, Tian & Zhang, 2013). Six hundred and twenty-one primary teachers from urban, suburban and rural districts participated in this study.[1] The mean age of

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[1] This study belonged to a large-scale research project conducted in Shanxi Province and the city of Chongqing, China. More than 2,000 teachers from kindergartens, primary and secondary schools were involved. Due to space constraints, this study only analysed the data from the Shanxi primary school teachers.

the sample was 33.92 years (SD = 8.24). There were 131 male teachers (21.1%) and 490 female teachers (78.9%). Of the participants, 22.5% had 1-3 years of teaching experience, 66.1% had worked 4-20 years, and 11.4% had worked 20 years or more. Among the participants, 139 (22.4%) taught in urban primary schools, 167 (26.9%) worked in suburban primary schools and 315 (50.7%) taught in rural primary schools.

2.2 Instruments

Corresponding to the research questions, three instruments were adapted and adopted in this study. The instruments were first developed in English, then cross-translated into Chinese. The two authors of this study served as translators. Based on forward and backward translation, the instruments were revised and confirmed by the researchers.

2.2.1 Teachers' behavioural intention, perceived practicality of creative teaching and school support

In this study, three scales were adapted from the Teacher Receptivity Scale developed by Waugh and Punch (1987) and adapted by Waugh and Godfrey (1993). To fit the research context of this study, the statements of three scales were adapted from curriculum reform to creative teaching. Regarding these three scales, the teachers were asked to rate these items on a 7-point scale, ranging from 1 = *strongly disagree* to 7 = *strongly agree*.

The subscale of behavioural intention was intended to investigate the extent to which teachers welcome the implementation of creative teaching in their classroom ($\alpha = 0.89$). There are five items in this scale and a sample items is '*In my behaviour and communications with other teachers, I will actively and openly support the introduction of creative teaching at this school'*.

The scale of perceived practicality aimed to investigate the degree to which creative teaching can be integrated with the current curriculum. The scale contains five items ($\alpha = 0.89$) and a sample items is '*The principle of creative teaching suits my classroom teaching style'*.

The scale of school support was intended to explore teachers' perceptions of the extent to which creative teaching is valued by the school ($\alpha = 0.89$). There are seven items in this scale and a sample items is '*There are regular meetings at which I can raise my worries and doubts about the implementation of creative teaching'*.

2.2.2 Teachers' social role in terms of creative teaching

Three scales, namely, teachers' self-review of creative behaviour, perceived expectations of colleagues and perceived expectations of students, were adapted from an instrument related to Taiwanese employees' creativity in the context of creative teaching (Farmer et al., 2003). The statements have been revised to fit the research context of this study.

Regarding the scale of self-review of creative behaviour, eight items were designed to investigate teachers' perception of their personal attributes in terms of creativity ($\alpha = 0.86$). The sample items is '*I need stimulations of frequent changes'*. The respondents rated the subscale, 'self-views of creative behaviour' along a 5-point scale, ranging from 1 = *strongly disagree* to 5 = *strongly agree*.

The scales of perceived expectations of colleagues and students were used to investigate to the extent to which teachers believed that creative teaching was required from the perspectives of colleagues and students respectively. There were six item in each scale (colleagues: α = 0.86; student: α = 0.84). A sample item in these two scales is '*My students think creativity is important to my teaching*'. The respondents were asked to indicate their choices for the subscales 'perceived' and 'perceived student expectations' using a 9-point scale ranging from 1 = *strongly disagree* to 9 = *strongly agree*.

2.2.3 Self-efficacy in creative teaching

For self-efficacy in creative teaching, the questionnaire items were modified from a short-form (12 items) instrument on teachers' efficacy (Tschannen-Moran & Hoy, 2001). The short form has been validated in five countries, including Canada, Korea and Singapore (Klassen et al., 2009). Only two sub-scales, namely efficacy for creative instructional strategies (α = 0.75) and efficacy for creative student engagement (α = 0.78), were used in this study. The respondents rated all of the items along a 5-point scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*.

3. Result

3.1 Analysis procedure

Confirmatory factor analyses (CFA) were first used to confirm the reliability of the measurement models before conducting further analysis. Factor loadings smaller than 0.4 were removed (Field, 2000). Cronbach's alpha test of internal consistency was conducted to assure the reliability of the scales. Descriptive statistics were then calculated for all of the variables. The model of the relationship between the different variables was tested using structural equation modelling (SEM, Amos 21.0.0), which is a good technique for testing relationships when integrating quantitative data and qualitative assumptions (Hair et al., 2006). The criteria chi-square/degree of freedom ratio (X2/df) < 3.00, Comparative Fit Index (CFI) > 0.90, Normative Fit Index (NFI) > 0.90, Tacker-Lewis Index (TLI) > 0.90 and root mean square error of approximation (RMSEA) <0.07 (Hu & Bentler, 1999) were adopted to identify acceptable fit. Cohen's suggestions (1992) were followed to interpret the standardised regression coefficients (β): magnitudes between 0.10 and 0.30 were designated small effects, those between 0.30 and 0.60 were moderate effects and those greater than 0.60 were large effects.

3.2 Data analysis

3.2.1 Descriptive data analysis

Based on the descriptive analysis of each item, some initial results are discussed below. With regard to the sub-scale of 'school support', the school principals highlighted and encouraged teachers to engage in creative teaching (see C6, 7 of Table 1). However, support mechanisms were not well established and the teachers could not secure regular support (see C3, 4, 1 of Table 4), as shown in Table 1. Across the different school settings, significant differences were found between primary schools in urban, suburban (county) and rural areas in the dimensions of perceived practicality and general behavioural intentions (Table 2). Teachers in the city were much more likely to implement creative teaching and to confirm the

practicality of creative teaching for primary schools. Correspondingly, they thought more about the challenge of applying creative teaching ($M = 5.23$, $SD = 1.21$) than teachers from suburban ($M = 4.74$, $SD = 1.26$) and rural schools ($M = 4.88$, $SD = 1.18$).

3.2.2 Structural equation model analysis

One of the focuses of this study was the relationship between the factors under analysis and teachers' behavioural intention and self-efficacy. The mean, Standard Deviations of each scale and correlations for each variable are listed in Table 3. Based on a review of the literature, a theoretical model was constructed. The SEM results from this model are shown in Figure 1 and suggest that this model adequately fits the data ($\chi^2/df = 2.553$, CFI = .996, NFI = .993, TLI = .986, RMSEA = .057). The three variables of school environment, school support ($\beta = 0.16$, $p < 0.01$) and teachers' perceived expectations of students ($\beta = 0.12$, $p < 0.05$) appeared to have a small but significant influence on teachers' behavioural intention to creative teaching. Teachers' perceived expectations of colleagues ($\beta = 0.16$, $p < 0.01$) had a small but statistically significant effect on teachers' self-efficacy in using creative teaching strategies, whereas the direct effect of students' expectations on teachers' self-efficacy in using creative instructional strategies was insignificant ($p = 0.06$). The teachers' beliefs in the practicality of creative teaching were found to have a moderately significant correlation with their behavioural intentions ($\beta = 0.37$, $p < 0.01$). The self-review of teachers' creative behaviour was identified as having a moderately significant influence on both teachers' self-efficacy in using creative strategies ($\beta = 0.47$, $p < 0.01$) and student engagement ($\beta = 0.48$, $p < 0.01$). In addition, self-review of teachers' creative behaviour had a small but significant effect on teachers' behavioural intention of creative teaching ($\beta = 0.27$, $p < 0.01$).

3.2.3 Multi-group structural equation model analysis

Having established a baseline model, the different types of measurement invariance should be tested by systematically constraining the components of the model across groups. Three necessary conditions – structural weights, covariances and residuals invariances – are required to be met (Davidov, 2008). The criteria $|\Delta$CFI$| \leq .010$ and $|\Delta$RMSEA$| \leq .015$ indicates that the null hypothesis of invariance should not be rejected and implies that there is no substantial change in fit for model comparisons (Cheung & Rensvold, 2002; Marsh et al., 2017; Kim et al., 2017).

The resulting model fit statistics and comparisons are presented in Table 4 (Invariance Models M1-M4), and the differences in CFI, TLI, and RMSEA below were the rule-of-thumb cut-offs. Hence, the full invariance of the multi-group SEM was confirmed. The result implies that the meanings of the variables did not shift across groups, thus providing evidence of full comparability between urban, suburb and rural districts (Kane, 2013).

After factor mean invariance testing, the path coefficients for all three groups were examined, and the results are shown in Table 5.

Regarding behavioural intention, the practicality *($\beta = 0.43$ for urban, $\beta = 0.29$ for suburb, $\beta = 0.41$ for rural, $p < 0.05$)* and self-review were vital *($\beta = 0.20$, 0.44, 0.20 respectively, $p < 0.05$)* for all three districts. Student expectations mattered for primary teachers in the city *($\beta = 0.59$, $p < 0.05$)*, but the primary teachers in suburban and rural schools were more aware of school support *($\beta = 0.26$, 0.18 respectively, $p < 0.05$).*

As for self-efficacy, city teachers were concerned more with student expectations *($\beta = 0.59$ on efficacy of creative instructional strategy, $\beta = 0.45$ on efficacy of student*

engagement, $p < 0.05$) than with the expectations of colleagues and school support. Regarding self-review of creative behaviour, its significant effect on self-efficacy was supported by both suburban ($\beta = 0.44$ on efficacy of creative instructional strategy, $\beta = 0.46$ on efficacy of student engagement, $p < 0.05$) and rural teachers ($\beta = 0.61$ on efficacy of creative instructional strategy, $\beta = 0.60$ on efficacy of student engagement, $p < 0.05$). The expectations of suburban teachers' colleagues significantly contributed to teachers' efficacy of creative instructional strategy ($\beta = 0.27$, $p < 0.05$), while the efficacy of student engagement was significantly influenced by the expectations of students ($\beta = 0.25$, $p < 0.05$).

4. Discussion

Drawing upon theories of teachers' receptivity and social roles, we examined the factors influencing both teachers' behavioural intention and self-efficacy in terms of creative teaching. Based on multi-group structural equation modeling, this study yielded three major findings. First, with regard to teachers' behavioural intention, the significant predictors are school support, the practicality of creative teaching, self-reviews of creative behaviour and student expectations. Second, with regard to teachers' self-efficacy, a self-review of creative behaviour is a strong predictor of self-efficacy in the dimensions of creative instructional strategies and student engagement. Meanwhile, the expectations of colleagues are significant for self-efficacy on the dimension of creative instructional strategies while the expectations of students are significant for the dimension of student engagement. Third, teachers from urban schools are more influenced by student expectations while their counterparts in suburban and rural schools are more influenced by the school environment.

4.1 Factors influencing teachers' behavioural intention

Our study found that to predict teachers' behavioural intention, teachers' understanding of the school environment, creative teaching and personal role are all significant factors. Like previous studies (Lee, 2000; Wong et al., 2015), this study confirmed the positive relationship between school support and teachers' behavioural intention. In addition, the findings also indicated a mismatch between school requirements and supportive systems. Although nurturing creativity has been a clear requirement within schools, a corresponding school culture for promoting creative teaching has not been well developed. In promoting creative teaching and learning, Thomson (2011) argued that schools needed to build capacity by individual teachers changing their practices to accommodate more creative elements (content and approaches), and by teams of teachers establishing a consensual language of creative practices through collaboration and sharing. This entails structural change, such as developing new resources and creating a new management infrastructure by reallocating and reorganising time, manpower and resources. In addition, the promotion of creative teaching and learning involves the challenge of changing the status quo and existing beliefs and recognising creative practices through cultural change.

Second, this study confirmed the positive relationship between teachers' perceived practicality of creative teaching and behavioural intention. Like many other educational and curriculum innovations, creative teaching needs to be practical and feasible for implementation by teachers. These findings reveal how important the 'practicality of creative teaching' was to all of the participants in this study. They fit well with Hong, Part and Rowell's (2017) observation that teachers may implement creative teaching but only after the curricula and teaching materials have been prepared for use. In terms of strategies for creative teaching or creative pedagogical practices, different scholars (e.g., Cremin et al., 2006;

Cremin, 2017) have conducted case studies or provided suggestions. There have also been examples of teaching activities implemented by creative teachers, such as child initiated activities, drama, interactive whiteboards, fieldwork, creative theme-based curriculum and play-based learning (Tian, 2001; Zheng, 2003).

Third, this study found that both teachers' self-reviews of creative behaviour and their perceived expectations of students are significant factors in teachers' behavioural intention. The theory of planned behaviour (Ajzen, 2002) highlighted that individual beliefs about the normative expectations of other people are one of the main drivers of human behaviour. In a school context, previous studies have focused more on the expectations of the school or community (Lee, 2000; Wong et al., 2015). In contrast, this study found that student expectations of creative teaching could also serve as a predictor of teachers' behavioural intention. Parsons and colleagues (2018) indicated that in an authentic classroom, teachers have to adapt their teaching strategies based on an understanding of student learning needs and interests. This can explain why student expectations are a factor in teachers' behavioural intention. In addition, this study found that teachers' creative attributes also contributed to behavioural intention. Empirical evidence across various educational contexts has consistently suggested a positive relationship between personality and performance (Barrick et al., 2005; Rockoff et al., 2011; Chamorro-Premuzic et al., 2007). From the perspective of teachers' behavioural intention, we found that if teachers are inclined to be creative in their daily life, it becomes easier for them to accept creative teaching in the classroom.

4.2 *Impact factor of self-efficacy in creative teaching*

Based on the framework of Tschannen-Moran and Hoy (2001), this study identified two dimensions of teachers' self-efficacy in creative teaching, namely, efficacy for creative instructional strategies and efficacy for creative student engagement. We found that teachers' self-review of creative behaviour is significantly related to these two dimensions. An incremental self-review can come from and result in more positive experiences and serves as one of the resources for self-efficacy (Bandura, 1997). In a similar vein, McNatt and Judge (2004) advanced that the expectations of others can also influence or even shape individual self-efficacy. In this study, we produced parallel findings. The expectations of colleagues are a crucial factor in the efficacy of creative instructional strategies, while the expectations of students are pivotal to the efficacy of creative student engagement. Quin (2017) highlighted that teachers' efficacy in engaging students largely depends on classroom experiences and interactions with students (Quin, 2017). Hence, teachers' perceptions of students' expectations can stimulate creative teaching experiences, thus contributing to teachers' efficacy in creative student engagement. Regarding the impact of teacher perceived expectations from colleagues, Vescio (2008) found that teacher collaboration and professional discussions can effectively improve teaching strategies. Thus, professional development workshops and collaborations may increase the individual awareness of colleagues' expectations, on the one hand, and improve the efficacy in adopting creative teaching strategies, on the other hand. Based on the findings of this study, individual teachers and teams should carry out peer observations and action research under the supervision of external university experts, and group meetings may be conducted to share ideas and plans on creative practices (Thomson, 2011). This, however, requires school management to set aside extra funds, establish a timetable and team planning times, encourage teachers to learn from other schools and test creative practices through time and duty releases and budgetary support. As Cremin et al. (2006, p. 16) explained, school ethos needs to be 'safe, valued and trusted' by teachers and students. Such a positive relationship can help nurture an ethos cultivated by

individual teachers who are willing to take risks, be creative and, in turn, positively affect the creativity of students.

4.3 Different nexuses across school settings

Examining the structural model in different school settings, this study found that teachers from urban schools are more sensitive to student expectations regardless of behavioural intention or self-efficacy. McCracken (1991) found that due to various backgrounds, urban and rural students had different educational aspirations that influence teachers' decision making. This study indicated that compared with suburban and rural teachers, urban teachers were more sensitive to student expectations and were inclined to adapt their behaviour or introduce innovative experiments to cater to student needs. These positive experiences then contribute to the improvement of teachers' self-efficacy in creative teaching. For rural and suburban schools, whether or not teachers welcome creative teaching largely depends on school support. Due to resource shortages and the scarcity of professional development, suburban and rural teachers still face challenges in effective teaching, let alone in creative teaching (Dobbins, 2009; Gu, 2017). In promoting student creativity, Chappell et al. (2008) put forward the concept of 'possibility thinking' as a practical way of creative teaching that could be implemented in schools. The themes associated with the 'enabling context' of 'possibility thinking' were 'posing questions', 'play', 'immersion', 'innovation', 'being imaginative' and 'self-determination and risk-taking', all of which provide an alternative approach to creative teaching (Chappell et al., 2008, pp. 3-4). Notably, these themes still require time, resources and space for 'standing back', along with observations and documentation of teachable and learning moments, reflection on the part of learners and a consideration of the opportunities for collaborating with others, which call for the building the capacity to cultivate creative teaching, especially in suburban and rural schools (Chappell et al., 2008, pp. 4-5; Cremin, 2017, pp. 104-105).

5. Limitations and future research directions

This study had some limitations. First, the sample came from Central China and was not representative of the Chinese mainland. China is a vast country with substantial regional disparities in educational quality. A large sample from the central and eastern regions of China may provide a more comprehensive picture of creative teaching. Second, the number of schools in this study could be increased to facilitate a multi-level analysis of the data and discern whether there are within and across-school variances. In addition, some variables were related to teachers' perceptions of creativity and practices of creative teaching. A qualitative study of teachers' creative teaching could be designed to understand how teachers design and implement creative teaching individually and in teams at both the school and classroom level, and how teachers and students enact creative teaching and learning.

6. Conclusion

This study aimed to map the factors influencing teachers' behavioural intention and self-efficacy in creative teaching. Given that little research has been conducted in the East, especially in mainland China, this work has not only filled a notable gap in the literature on creative teaching, but also contributed to the knowledge of teacher's behavioural intention and self-efficacy by comprehensively mapping their influencing factors. This study also explored the different nexuses in various school settings, providing valuable insight into

policymaking by identifying different significant influencing factors of teacher behavioural intention and self-efficacy in urban, suburban and rural schools. Lastly, it is hoped that the findings of this study can provide a solid foundation for policymakers and the designers of professional development programmes as they consider customised policies and workshops to address diverse environments and teacher needs.

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