HONG KONG AND MACAO PRE-SERVICE TEACHERS' SENSE OF EFFICACY: A CROSS-CULTURAL INVESTIGATION USING THE CHINESE VERSION OF THE 12-ITEM TSE (C-TSE)\(^1\)

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Teacher efficacy has been shown to be an important variable predicting teachers' capacity to contribute to reform efforts. Given the role that future teachers are expected to play in educational reform, this research aimed to measure the teacher efficacy of samples of pre-service teachers in Hong Kong and Macao using the Chinese version of the 12-item Teachers' Sense of Efficacy Scale (C-TSE). A cross-cultural perspective was important because it provided the opportunity to test the robustness of the instrument and to look at broader socio-cultural issues of teacher efficacy in two locations through the use of C-TSE. Sixty-six Hong Kong pre-service teachers and 66 Macao pre-service teachers participated in the study. In general, Hong Kong pre-service teachers were found to be more efficacious than the Macao cohort. However, the factor structures of the scale were not the same for the sub-samples. It is suggested that, on the one hand, programme characteristics and/or local cultures need to be considered...
when interpreting these results. On the other hand, the full 24-item scale, with more items that envisage and reflect particular classroom tasks and situations, could be useful to explore the dimensionality of pre-service teachers' sense of efficacy. This work contributes to an understanding of issues and problems relating to the measure of Chinese pre-service teachers' efficacy beliefs.

The study of teacher efficacy has gained significant attention from educators for more than 20 years because it has been shown that teacher efficacy has a great influence on a broad range of behavior for students and teachers. When teachers have high teacher efficacy, their students are found to have high academic achievement, autonomy, motivation and more importantly, own sense of efficacy (Dembo & Gibson, 1985; Henson, 2001; Schriver & Czerniak, 1999; Tschannen-Moran & Woolfolk Hoy, 2001).

High teacher efficacy has brought benefits to the teachers themselves and to their teaching. Teacher efficacy affects teachers' level of aspiration, openness to new ideas, persistence in the face of difficulty, and they are more likely to stay in teaching career and support educational reforms. In terms of teaching, high teacher efficacy affects the effort teachers invest in teaching, greater effort in classroom planning and organization, and greater enthusiasm for teaching. Moreover, high efficacy teachers are more sensitive to the needs of students, less critical of students' mistakes, more willing to work longer with students with problems, and greater contribution to students' learning experiences (Fortman & Pontius, 2000; Lin & Gorrell, 1998; Looney & Wentzel, 2004). In fact, the advantages of having high teacher efficacy are so broad that the above behaviors demonstrated by students and teachers are just some of the examples found in a number of studies.
PURPOSE OF THIS STUDY

The purpose of this study was to investigate teacher efficacy of Hong Kong and Macao pre-service teachers during their final year of teacher education. After several months later, these Hong Kong and Macao pre-service teachers would have to face similar challenges as in-service teachers. They should be well prepared and therefore, this study purposively aim to see if the application of the Chinese version of the 12-item short form Teachers’ Sense of Efficacy Scale (C-TSE) would help to understand the weaknesses of these pre-service teachers, so as to reflect the skills that they might be lacking if they were really teaching. This C-TSE was originally designed for in-service teachers in Hong Kong (Kennedy & Hui, 2004 & In press). As a result, this study first investigated the reliability and validity of the C-TSE when applied to these two groups of pre-service teachers who would be in-service teachers in a few months. Besides testing the robustness of the instrument, the study was also designed to compare the teacher efficacy levels of Hong Kong and Macao pre-service teachers. It was hoped that such comparisons would enable us explore in a systematic way the similarities and differences between the groups.

LITERATURE REVIEW

Bandura (1977 & 1986) started to study self-efficacy in the late 70’s and later on, the study of teacher efficacy. Self-efficacy, according to his social learning theory, is defined as “beliefs in one’s capacity to organize and execute the courses of action required to manage prospective situations” (Bandura, 1997, p.2). Following the work of Bandura, the study of teacher efficacy gained increasingly attention, and many of these researchers believed that teacher efficacy included personal efficacy and professional teaching efficacy (Deemer & Minke, 1999; Soodak & Podell, 1996 ). The first construct, personal teacher efficacy, is defined as the personal responsibility the teacher accepted for the student’s learning or behavior. The second construct,
professional teaching efficacy, is the belief that any teacher has the ability to overcome external factors. Gibson and Dembo (1984) also agreed that teacher efficacy should be divided into two dimensions, known as personal teaching efficacy, individual teachers’ confidence in their own teaching ability, and teaching efficacy, the global belief that educators can impact student learning.

Different educators have contributed to the development of a teacher efficacy instrument. Contributors included, for example, the RAND organization (Berman, McLaughlin, Bass, Pauly & Zellman, 1977), Gibson and Dembo (1984), Tschannen-Moran and her associates (Tschannen-Moran, Woolfolk & Hoy, 1998; Tschannen-Moran & Woolfolk Hoy, 2001), etc. Also, different researchers have been trying to define teacher efficacy. According to the study by Tschannen-Moran and Woolfolk Hoy (2001), teacher efficacy is defined by Berman and his associates as “the extent to which the teacher believes he or she has the capacity to affect student performance” (1977, p.4), and is further defined by Guskey and Passaro as “teachers’ belief or conviction that they can influence how well students learn, even those who may be difficult or unmotivated” (1994, p.4).

Research on teacher efficacy should not be limited to the study of in-service teachers. It is equally important to find out the efficacy of pre-service teachers during different stages of their teacher training. Pre-service training may influence the overall teacher efficacy beliefs of student-teachers. Many factors within the pre-service training may contribute to the overall efficacy beliefs of pre-service teachers, such as the training programme itself, field experience, student-teachers’ study level, culture, pre-teachers themselves, etc. (Freytag, 2001; Fortman & Pontius, 2000; Ginns & Watters, 1996; Li & Zhang, 2000; Lin, Gorrell & Taylor, 2002; Soodak & Podell, 1997; Walker, 1992; Woolfolk Hoy, 2000; Woolfolk Hoy & Hoy, 1990).
METHODODOLOGY

Instrument

Different instruments are available for measuring teacher efficacy, however, a Chinese version of the 12-item short form Teachers’ Sense of Efficacy Scale (C-TSE) was selected for this study. This original instrument was developed by Tschannen-Moran and her associates at the Ohio State University (Tschannen-Moran et al., 1998; Tschannen-Moran & Woolfolk Hoy, 2001). The Chinese version of this instrument was developed by Kerry John Kennedy through translating and back translating items of the original instrument, from English to Chinese and from Chinese to English, until the Chinese wordings best matched the original English meanings. The C-TSE was then applied to a group of 228 in-service Hong Kong teachers (Kennedy & Hui, 2004 & in press). These in-service teachers are the Primary School Masters/Mistresses (Curriculum Development), PSM(CD)s, who enrolled in the “Curriculum Leadership” training programme organized by the Department of Curriculum & Instruction of The Hong Kong Institute of Education. Using exploratory factor analysis, the 12 items were extracted into two factors, namely “efficacy in classroom management” and “efficacy in learning and teaching”. The two-factor model explained a high percentage of the total variance of the items. This factor structure differed from the results of Tschannen-Moran & Woolfolk Hoy’s (2001) study in which the 12 items were extracted into 3 factors, namely efficacy in student engagement, efficacy in instructional strategies and efficacy in classroom management. The factor structure of C-TSE is still under investigation, especially in seeking to establish the stability of the structure in Chinese populations.

The C-TSE required pre-service teachers to indicate in a 9-point Likert scale on how much they could do with each of the 12 items. The possible responses ranged from “nothing” to “very little” to “some influence” to “quite a bit” to “a great deal”, with numerical values of 1 to 9 assigned for purposes of later analysis.
Location and Teacher Education in Hong Kong and Macao

Both Hong Kong and Macao are located on the south coast of China; they were colonies of European powers but are now given a new political status as Special Administrative Region (SAR) within the People’s Republic of China (PRC) (Bray & Koo, 2004). Hong Kong had been a colony under British power around the middle and late 1800s and becomes a SAR on July 1, 1997. The land area of Hong Kong is about 1,097 sq. km and it has a population of about 6,800,000 people. On the other hand, Macao had been a colony under Portuguese power since the 16th century and becomes a SAR on December 1, 1999. Macao is a small city (27 sq. km) and has only approximately 440,000 people. In Hong Kong and Macao, the majority of the inhabitants speak Cantonese.

Teacher education in Hong Kong and Macao are quite similar. For example, the full-time B.Ed. programmes in the two places are both divided into the Primary and Secondary programmes, with either Chinese or English language or other teaching subjects as major of study. In Hong Kong, students are required to study for four years. However, in Macao, only students of the Secondary programme are required to study for four years while Primary students undertake a three-year programme.

Research Method

The survey research method was used for this study (Fink, 1995). It was selected for three reasons. First, it allowed access to a comparatively large sample of cases within a short period of time. Second, the collection of information was generally anonymous and a high return rate was possible. Third, the use of standardized questionnaires made comparison of information possible.
Participants

A total of 132 pre-service teachers from Hong Kong and Macao participated in this study. They were all in their final year of study. In Macao, 66 questionnaires were collected. They were students of the Faculty of Education, University of Macao. Eighteen were male and 47 were female pre-service teachers, one did not indicate his/her gender. Forty-three were studying in the Primary programme and 23 were studying in the Secondary programme. The average age for the Macao pre-service teachers was 22.75 years. In Hong Kong, 66 questionnaires were collected. They were students of the Hong Kong Institute of Education. There were 10 male and 56 female pre-service teachers. Twenty-six were from the Primary programme and 40 were from the Secondary programme. The average age for the Hong Kong pre-service teachers was 21.18 years.

Analysis

Data were entered into the software Statistical Package for Social Sciences (SPSS) and Analysis of Moment Structures (AMOS) for analysis and different techniques were employed (Arbuckle, 2003; Arbuckle & Wothke, 1999; Norušis, 2000). First, non-parametric tests were used to test the within group effects in the items of C-TSE between the Hong Kong and Macao cohorts. Second, statistical item analyses were performed using data from the two cohorts. Third, to identify the underlying pattern of thoughts embedded in the minds of pre-service teachers and to assess the robustness of the instrument, exploratory and confirmatory factor analyses were run for the C-TSE (Beauducel, 1997; Bollen, 1989; Gorsuch, 1983).
RESULTS

Comparison of Items of C-TSE between Hong Kong and Macao Pre-service Teachers

The 12 items were first tested against the assumption of normality using the Kolmogorov-Smirnov test and Shapiro-Wilk test. Significant results (p < 0.05) indicated it was not safe to assume the items were adequately normal to perform parametric tests. Therefore, the non-parametric Mann-Whitney U test was used to examine if the distributions of the two cohorts were significantly different.

Results indicated that Hong Kong pre-service teachers were more efficacious than Macao pre-service teachers. In general, Hong Kong pre-service teachers believed that they could do better in classroom management. They had a higher level of efficacy in “controlling disruptive behaviour in the classroom”, “getting children to follow classroom rules”, “calming students who were disruptive or noisy”, and “establishing classroom management system with different groups of students”. Also, they were more efficacious in “helping students to value learning” and “providing alternative explanations or examples when students were confused”.

Item Analysis of C-TSE of the Hong Kong and Macao Cohorts

The 12 items were first analyzed with statistical item analysis. Table 1 shows the item means, item variances, corrected item-total correlations and alpha values (if item deleted) of the 12 items of C-TSE, using data from the Hong Kong and Macao cohorts of 132 pre-service teachers. To determine the reliability and discriminability of the items, three criteria were used: (i) items whose means were close to the extremes of the 9-point Likert scale; (ii) items whose corrected item-total correlations were less than 0.35; and (iii) items whose removal increase the alpha values.
Table 1.  
Item means, item variance, corrected item-total correlations and alpha values (if item deleted) of the 12 items of C-TSE.

<table>
<thead>
<tr>
<th>The 12 Items of C-TSE</th>
<th>Item mean</th>
<th>Item variance</th>
<th>Corrected item-total correlation</th>
<th>Alpha value (if item deleted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How much can you do to control disruptive behaviour in the classroom?</td>
<td>5.70</td>
<td>2.97</td>
<td>0.5097</td>
<td>0.8616</td>
</tr>
<tr>
<td>2. How much can you do to motivate students who show low interest in school work?</td>
<td>5.97</td>
<td>2.30</td>
<td>0.6265</td>
<td>0.8540</td>
</tr>
<tr>
<td>3. How much can you do to get students to believe they can do well in school work?</td>
<td>6.33</td>
<td>2.11</td>
<td>0.6059</td>
<td>0.8554</td>
</tr>
<tr>
<td>4. How much can you do to help your students value learning?</td>
<td>5.94</td>
<td>2.29</td>
<td>0.7170</td>
<td>0.8483</td>
</tr>
<tr>
<td>5. To what extent can you craft good questions for students?</td>
<td>6.34</td>
<td>1.97</td>
<td>0.5501</td>
<td>0.8588</td>
</tr>
<tr>
<td>6. How much can you do to get children to follow classroom rules?</td>
<td>5.92</td>
<td>2.93</td>
<td>0.5359</td>
<td>0.8597</td>
</tr>
<tr>
<td>7. How much can you do to calm a student who is disruptive or noisy?</td>
<td>5.66</td>
<td>2.32</td>
<td>0.5756</td>
<td>0.857</td>
</tr>
<tr>
<td>8. How well can you establish a classroom management system with each group of students?</td>
<td>5.49</td>
<td>2.47</td>
<td>0.6287</td>
<td>0.8536</td>
</tr>
<tr>
<td>9. How much can you use a variety of assessment strategies?</td>
<td>5.64</td>
<td>2.26</td>
<td>0.5944</td>
<td>0.8559</td>
</tr>
<tr>
<td>10. To what extend can you provide an alternative explanation or example when students are confused?</td>
<td>7.02</td>
<td>1.55</td>
<td>0.4614</td>
<td>0.8638</td>
</tr>
<tr>
<td>11. How much can you assist families in helping their children do well in school?</td>
<td>4.45</td>
<td>4.27</td>
<td>0.3585</td>
<td>0.8758</td>
</tr>
<tr>
<td>12. How well can you implement alternative strategies in your classroom?</td>
<td>6.02</td>
<td>2.31</td>
<td>0.5949</td>
<td>0.8665</td>
</tr>
</tbody>
</table>

[Alpha=0.8687; standardized item alpha=0.8745]
Results of statistical item analysis indicated that item 11: “How much can you assist families in helping their children do well in school?” should be marked as potentially problematic. This was because this item: (i) had a mean value of 4.45 which differed remarkably from those of other items; (ii) revealed a relatively low corrected item-total correlation \( r = 0.3585 \); and (iii) would increase the alpha value when it was removed (from 0.8687/0.8745 to 0.8758).

Content analysis of item 11 further suggested, pre-service teachers who had only one teaching practice (TP) every year for about three months would probably encounter difficulties in assisting children’s families to help them to do well in school. Therefore, this item should be removed from later analysis.

**Factor Analysis of C-TSE of the Two Cohorts**

To identify the underlying dimensions of C-TSE of the two cohorts of 132 pre-service teachers, exploratory factor analysis (EFA) was used with principal components analysis as the method for factor extraction, followed by oblique rotation. Factor structures of the two factor analyses (the first one with 12 items and the second one with 11 items) were compared. For the 12-item analysis, three factors were extracted: the first factor consisted of 6 items, the second factor consisted of 4 items and the third factor consisted of 2 items. While for the 11-item analysis, two factors were extracted: the first factor consisted of 7 items and the second factor consisted of 4 items. The 4-item sub-scales in both factor solutions were items that originally referred to “efficacy in classroom management”, and all items had a high value of rotated factor loading (from -0.710 to -0.819 and from 0.648 to 0.992 respectively). However, for the former analysis, it did not reveal any meaningful explanation for the 8-item and 2-item sub-scales, even taking into account the original “efficacy in student engagement” and “efficacy in instructional strategies” which Tschannen-Moran and Woolfolk Hoy (2001) originally tried to measure, so the latter 11-item analysis was more appropriate. The factor structure was consistent to a certain extent with the two-factor
model which Kennedy and Hui (2004 & In press) suggested: “efficacy in classroom management” and “efficacy in learning and teaching”. Table 2 shows the rotated factor loadings for the 11 items.

Table 2.
Rotated factor loadings of the 11 items of the C-TSE

<table>
<thead>
<tr>
<th>The 11 Items of the C-TSE</th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. How much can you do to help your students value learning?</td>
<td>0.789</td>
<td></td>
</tr>
<tr>
<td>2. How much can you do to motivate students who show low interest in school work?</td>
<td>0.788</td>
<td></td>
</tr>
<tr>
<td>3. How much can you do to get students to believe they can do well in school work?</td>
<td>0.732</td>
<td></td>
</tr>
<tr>
<td>5. To what extent can you craft good questions for students?</td>
<td>0.694</td>
<td></td>
</tr>
<tr>
<td>9. How much can you use a variety of assessment strategies?</td>
<td>0.652</td>
<td></td>
</tr>
<tr>
<td>12. How well can you implement alternative strategies in your classroom?</td>
<td>0.648</td>
<td></td>
</tr>
<tr>
<td>10. To what extent can you provide an alternative explanation or example when students are confused?</td>
<td>0.588</td>
<td></td>
</tr>
<tr>
<td>6. How much can you do to get children to follow classroom rules?</td>
<td>0.922</td>
<td></td>
</tr>
<tr>
<td>7. How much can you do to calm a student who is disruptive or noisy?</td>
<td>0.759</td>
<td></td>
</tr>
<tr>
<td>8. How well can you establish a classroom management system with each group of students?</td>
<td>0.742</td>
<td></td>
</tr>
<tr>
<td>1. How much can you do to control disruptive behaviour in the classroom?</td>
<td>0.648</td>
<td></td>
</tr>
</tbody>
</table>

Eigenvalue (% of variance explained) 4.95 (45.1%) 1.23 (11.2%)
This attempt to the use of 11 items for factor solution was supported not only by the previous item analysis, but also other relevant statistical tests. Say, a high value of KMO measure of sampling adequacy (0.861) indicated the current analysis was “meritorious” to “marvelous” (Kaiser, 1974). Also, a large value of Bartlett’s test for sphericity (567.92) rejected the hypothesis that the population correlation matrix was an identity (associated level of significance $p = 0.000$) and gave confidence to the use of a factor model. The two factors explained 56.3% of the total variance.

The hypothesized pattern of factor loadings was further tested under confirmatory factor analysis (CFA) with maximum-likelihood as the method for factor extraction, followed by oblique rotation. The same factor structure as in the EFA was extracted. However, the model was found to be significant under Goodness-of-fit test (Chi-square = 72.47, df = 34, $p = 0.000$). Additional measures of fit in Amos also confirmed that the model was not a good fit. These include a high Chi-square to df ratio ($\text{CMIN/df} = 2.165$, $\text{CMIN} = 112.56$, df = 52), unacceptably comparative fit indices (CFI = 0.887; PCFI = 0.699), a large value of Root Mean Square Error of Approximation (RMSEA = 0.094) with a small probability for the testing of the null hypothesis that RMSEA is no greater than 0.05 (PCLOSE = 0.002). All these indicated the hypothesized factor model did not account well for the observed covariances in the data. In other words, it failed to accurately reproduce the sample correlational data.

The 2 factors were further explored to assess if the two revealed factors did work for each of the two cohorts. This analysis was important because: (i) the pattern of correlations within the observed items of one factor could have been suppressed by the existence of another factor; and (ii) the robustness of the instrument demanded critical evidences from not only from a new cohort (of pre-service teachers) but also in different place and culture.

**The Hong Kong cohort:** Measures of fit in Amos found that the model was not a good fit for the Hong Kong cohort. The Chi-square to df ratio was high ($\text{CMIN/df} = 2.263$, $\text{CMIN} = 117.68$, df = 52); the
comparative fit indices were not acceptable (CFI = 0.714; PCFI = 0.562), and the Root Mean Square Error of Approximation was greater than 0.05 (RMSEA = 0.139, PCLOSE = 0.000).

The Macao cohort: Measures of fit in Amos found that the model was also not a good fit for the Macao cohort. The Chi-square to df ratio was also high (CMIN/df = 1.803, CMIN = 93.78, df = 52); the comparative fit indices were also not acceptable (CFI = 0.870; PCFI = 0.823), and the Root Mean Square Error of Approximation was also greater than 0.05 (RMSEA = 0.111, PCLOSE = 0.006).

DISCUSSION

Classroom Management as a Practical Strategy for Pre-service Teachers

Results of the non-parametric Mann-Whitney U test of the 12 items in the two cohorts indicated that Hong Kong pre-service teachers were in general more efficacious than Macao pre-service teachers in practices related to classroom management. To interpret these results is not easy, since this is an issue of programme characteristics and effectiveness. In theory, teacher education programmes in Hong Kong and Macao are not very different, they all aim to equip students with necessary knowledge, skills and attitude to face future challenges in their teaching career, to critically reflect on and advance educational practices, and ultimately to prepare them for educational reform. However, with different socio-historical, cultural, economic, or even political concerns, they might have different focus. Take Hong Kong Institute of Education as an example, the institute had put quite a lot of resources in supporting, coordinating and strengthening the policies and practices in school partnership, mentorship and field experience in the past few years. All these encouraged students to actively experiment, reflect and monitor their own teaching experience, and helped them to strengthen their beliefs, and therefore, the opportunity to develop a higher sense of efficacy was certain.
Although there are quite a number of studies suggesting that teacher education programmes should focus on developing teacher efficacy (Ashton, 1984; Fritz, Miller-Heyl, Kreutzer, & MacPhee., 1995; Housego, 1992), it is not clear what kind of efficacy beliefs educators should aim to develop. Classroom management is a "practical strategy". Problems in classroom management are apparent because they come up everyday when the pre-service teachers enter the classroom. Therefore, to help them to find ways to solve students' disruptive behaviour, to get the students to follow classroom rules and to establish classroom management system are by all means fundamental and essential. As commented by Anita Woolfolk Hoy in an interview, "the most important ways to enhance self-efficacy and self-regulation are to find out what students need to know and then teach them that" (Shaughnessy, 2004, p. 158).

For the Macro pre-service teachers, it is also important to search for other cultural and socio-historical factors which might have affected the way they responded to the instrument. On the one hand, there are research suggesting that Macao people are a group of humble and conservative citizens who might see themselves as lower than other cultural groups, and also, the level of self-expectation and demand is different from place to place and from culture to culture. For example, in a study by Lam, Seto, Hong, & Tomita (2000), Macao elementary students, when compared with Hong Kong and Japanese elementary students, were the lowest when commenting on these two statements: "I am proud of being a Japanese (Hong Kong / Macao) Chinese" and "I want to be an international person". In addition, in a study by Yuen and Zhai (2004), the authors suggested that the low self-esteem development of Macao middle school students should be of serious concerned. This cultural uniqueness has been internalized in the people of Macao, and thus could cause the pre-service teachers to select lower scores for the items of C-TSE. On the other hand, there are studies that highlighted the shorter history of teacher education offered by Macao higher education institutes. For example, the recognition of academic and professional qualifications was developed later when compared to Hong Kong (Bray & Koo, 2004; Yee, 1990 ).
Meanwhile, a lower level of efficacy does not imply Macao pre-service teachers are not ready for educational reform. Studies in “teacher efficacy doubts” suggested that doubts often “trigger” teacher learning and there are as well potential benefits for educational reform (Wheatley, 2002). For example, doubts about the effectiveness of one’s own teaching have lead to improvements in classroom management, and to the use of a more constructivist approach to teach students (Tertell, Klein, & Jewett, 1998).

C-TSE: Variations with the Pre-service Teachers

Results of the item analysis indicated the item “How much can you assist families in helping their children do well in school?” was potentially problematic and should be excluded from the scale when applied to the cohort of pre-service teachers. The low value of the item mean could imply that this specific teacher training issue has not been taken into reasonable account by the pre-service training programmes in both places. To test this hypothesis, informal interviews were conducted with groups of Hong Kong and Macao final year students studying the programmes.² The interviews highlighted that, on the one hand, the supervised teaching practice did not give them opportunity to have contact with parents or family members of the children, and on the other hand, parent-teacher relationship attracted less attention when there were other teaching and learning matters that come in priority. Relationship between teachers and parents is crucial to student learning, and it is therefore recommended that pre-service teacher education in the two places should put more effort on this.

Results of the measures of fit of the hypothesized two-factor model for the two cohorts questioned the robustness of the C-TSE in measuring pre-service teachers’ sense of efficacy. Although the hypothesized model did not work well for the two cohorts, it did not imply that the task to conceptualize and extract dimensions for pre-service teachers’ efficacy beliefs was not practical. In terms of “classroom management”, the limited use of the factor in explaining the correlations of items, as discussed, might due to partial experience they
have in taking control over the classroom atmosphere. In terms of learning and teaching, given the reality that the majority of pre-service teachers, no matter in Hong Kong or Macao, were investigating their time and effort to make sense of what effective teaching means and what elements constitute effective learning during their teacher training, the concept is by all means developing and will gradually get concrete with later actual teaching experience. Therefore, more efficacy items that envisage and reflect particular classroom tasks and situations will result in greater dimensionality of efficacy beliefs. As explained by Deemer and Minke (1999):

Clearly, teachers' sense of efficacy may vary across the many tasks of teaching. For example, some teachers may be very confident in their ability to write lesson plans but feel less efficacious about implementing those plans with a group of unruly students. Instruments that separately assess teachers' perceptions in specific domains of teaching can be expected to tap the variations in efficacy judgments and increase the predictive power of efficacy perceptions. (p. 9)

This echoed Tschannen-Moran and Woolfolk Hoy's (2001) recommendation of using the full 24-item scale for pre-service teachers. Though this 12-item C-TSE was not quite suitable for the use of Hong Kong and Macao pre-service teachers in this study, the results generated from this study might reflect that there is a need to develop a new scale which is appropriate for measuring and comparing efficacy of teachers during their pre-service training and in-service teaching. Findings of such studies can contribute in designing better teachers' training programmes for both pre- and in-service teachers. With the results of the 12-item C-TSE found in this study and also results of the full 24-item scale for pre-service teachers found in other studies, a closer step of developing a new version of teacher efficacy scale that is suitable for pre- and in-service teachers has been taken.

Moreover, for the cultural difference embedded, an in-depth investigation of what classroom practices that pre-service teachers of
the two places implement and achieve was necessary. As Woolfolk Hoy said, "I believe qualitative methods are appropriate for an exploration of factors that mediate efficacy development and cultural influences on the construction of efficacy beliefs" (Shaughnessy, 2004, p. 155).

Variations of efficacy beliefs for Hong Kong and Macao pre-service teachers are complex. Before coming to any conclusion of dimensionality of efficacy beliefs, a re-examination of the issue using the full 24-item Teachers' Sense of Efficacy Scale by adding items that envisage and reflect particular classroom tasks and situations would be useful.

CONCLUSION

This study compared the efficacy beliefs between 66 Hong Kong and 66 Macao pre-service teachers during their final year of teacher education. The robustness of the use of the Chinese version of the 12-item short form Teachers' Sense of Efficacy Scale (C-TSE) for pre-service teachers was in doubt. Although factors were not extracted as proposed, findings were still valid on the item level. Hong Kong pre-service teachers were more efficacious in practices related to classroom management. Educators should take the advantage to provide students with more authentic experience of classroom management. On the dimension level, before coming to any conclusion of the dimensionality of the pre-teachers' sense of efficacy, it was necessary to re-examine the issue with a more comprehensive instrument.

Understanding pre-service teachers' efficacy beliefs is important because on the one hand it allows pre-service teachers to mediate their beliefs and practices within the educational context (Lin & Gorrell, 1998). On the other hand, such understanding can enhance the design of pre-service teacher education programme and field experience, and prepare pre-service teachers as active contributors to the educational reform agendas. Field experience is effective in shaping professional beliefs and the learning experience that the programme has
impact on efficacy beliefs (Li & Zhang, 2000). The more chances field experience exposes pre-service teachers to different practice areas, the more they are prepared for real teaching later on and the more substantial and reality-congruent perceptions of efficacy beliefs will be found.

NOTES

1 An earlier version of this paper was presented at the conference “Implementation and Rethinking of Education Reform in Mainland China, Hong Kong, Taiwan and Macau” held by the University of Macau, May 28 – 29, 2005.

2 Details of the informal interviews would not be discussed here, since the main purpose of this study was to use the C-TSE to measure pre-service teachers’ efficacy beliefs and to test the robustness of the instrument.

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