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ABSTRACT

This study compared the efficacy beliefs of Taiwanese preservice teachers at the beginning of early childhood teacher preparation with those of preservice teachers near the end of preservice preparation. The 298 predominantly female participants were from 4 teacher colleges and a polytechnic institute. Participants completed a slightly revised version of the Teacher Efficacy Scale (Gibson and Dembo, 1984) that emphasized early childhood education. The scale had them rate attitudes regarding: student background, difficult students, teacher's extra effort, home environment, guidance at school, adjusting to students' levels, better ways of teaching, cultural diversity, more effective teaching methods, parent support, knowledge of intervention, ability to positively negotiate differences, knowledge of strategies to handle misbehavior, positive school experiences overcoming outside school experiences, providing appropriate learning alternatives, inability to reach children, and ability to teach effectively. Data analysis found no substantive difference in mean scores for each item between the two groups, indicating no distinct difference regarding sense of efficacy. However, results suggested that the two groups may have some conceptual differences. The results indicate that preservice teachers' efficacy beliefs are partially constructed during teacher preparation and may be constructed and integrated with social and cultural perspectives. (Contains 4 tables and 25 references). (SM)

Running Head: TEACHERS' EFFICACY

# PRE-SERVICE TEACHERS' EFFICACY BELIEFS IN TAIWAN

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# PRE-SERVICE TEACHERS' EFFICACY BELIEFS IN TAIWAN

Research has shown important relationships between teachers' efficacy beliefs and their effectiveness in several dimensions, such as student achievement (Allinder, 1995; Anderson, Greene, & Loewen, 1988; Ashton & Webb, 1986; Gibson & Dembo, 1984; Rich, Lev, & Fischer, 1996; Ross, 1992, 1995), students' autonomy (Midgley, Feldlaufer, & Eccles, 1988), teachers' classroom behavior (Saklofske, Michayluk, & Randhawa, 1988), motivation to teach (Ashton & Webb, 1986), students' self-management strategies (Saklofske, Michayluk, & Randhawa, 1988; Woolfolk, Rosoff, & Hoy, 1990), and task persistence (Ashton, Webb, & Doda, 1983; Schunk, 1991; Woolfolk, Rosoff, & Hoy, 1990). These findings support Bandura's (1997) view that teacher efficacy beliefs are strong predictors of teachers' motivation and behavior, which also can contribute to students' learning experiences.

Ashton & Webb (1986) and Gibson & Dembo (1984) claim that teacher's sense of efficacy is a multidimensional construct which corresponds to Bandura's (1977, 1997) two-dimension model of self-efficacy (outcome expectations, and efficacy expectations). In applying Bandura's model of self-efficacy to teacher efficacy, Gibson and Dembo (1984) differentiate teaching efficacy (TE), which refers to teachers' general beliefs about their ability to have influences on students regardless of students' home environment, family background and parental influences, and personal teaching efficacy (PE), which refers to teachers' beliefs about whether

they personally can enhance significantly the learning of their students. Their Teacher Efficacy Scale (Gibson & Dembo, 1984) has been used in a number of investigations and has become the most commonly used teacher-efficacy scale.

Some studies, such as Woolfolk and Hoy's investigation of teacher management beliefs (1990) used two Rand items that also break teacher efficacy into general and personal efficacy dimensions, 4 others that referred to the adequacy of pre-service teachers along with 16 items of the Gibson and Dembo (1984) instrument with 182 prospective teachers enrolled in teacher education program at a state university. Woolfolk and Hoy used principal components factor analysis with varimax rotation following Gibson and Dembo's procedure. Their results indicate that teacher efficacy relates most consistently to Gibson and Dembo two factor model of teacher efficacy. They discovered that the two independent dimensions of teaching efficacy (TE) and personal efficacy (PE) in pre-service teachers' sense of efficacy was related to their beliefs about controlling students. Hoy and Woolfolk (1990) conducted another study to examine the changes in the perceptions of 191 pre-service teachers by using Teacher Efficacy Scale (Gibson & Dembo, 1984). Two-factor analysis of the instrument revealed that the pre-service teachers remained optimistic about their personal ability to motivate students (PE) while they were less sure about their ability of teachers in general to counteract the influence of home and family (TE).

Drawing from the literature review of the importance of teacher efficacy and the common use of teacher efficacy scale developed by Gibson and Dembo (1984), there are several reasons pointed to the need for our study regarding Taiwan pre-service teachers' efficacy beliefs. First, while researchers have examined pre-service teachers' efficacy extensively in United States, researchers are just beginning to explore the nature or structure of pre-service teacher efficacy

beliefs in other countries. For example, Rich, Y., Lev, S., and Fischer, S. (1996) conducted a study to examine the validity of the Gibson and Dembo teacher efficacy scale. When translated to Hebrew and administrated to Israeli teachers, results indicated that the factorial structure of teacher efficacy scale was the same as with the American sample.

Using a modified form of the Gibson and Dembo (1984) scale, a study comparing American, Swedish, and Sri Lankan pre-service teachers (Gorrell, Hazareesingh, Carlson, & Sjoblom, 1993) found that American pre-service teachers were consistently more positive in their beliefs about the general efficacy of teaching than the Swedish and Sri Lankan teachers. On the other hand, on one measure of personal efficacy, Sri Lankan pre-service teachers revealed higher levels of efficacy than American pre-service teachers. This study, however, did not consider the factor structures of the instrument in each country and, therefore, may mask some important conceptual differences in perceived efficacy among respondents in each country.

Gorrell and Hwang's (1995) study of beginning and ending pre-service early childhood and elementary students in South Korea showed higher levels of personal teaching efficacy beliefs among the ending students than among the beginning students, even though they did not differ in their responses to the general teaching efficacy items. This study yielded results that were interpretable in terms of the two-factor structure of teacher efficacy, but the actual factor structure for the Korean sample was not formally explored because of the limited (N=90) sample size.

Finally, Gorrell and Dharmadasa (1994) used a different approach to teacher efficacy by constructing a 29-item set of classroom situations and background knowledge common to all teaching levels in Sri Lanka. The instrument concentrated solely upon identifiable school

situations that each pre-service and in service teacher might encounter, making no attempt to look at differences in personal and general efficacy. This study showed pre-service teachers exhibiting higher levels of efficacy than in-service teachers on many issues associated with successful teaching. Those issues in which students felt more efficacious compared to experienced teachers were associated with new techniques and methods of instruction; for experienced teachers, the areas that emerged as more positive were associated with management of the classroom, organization of instruction, and impact upon students -- areas that certainly would be presumed to improve with appropriate successful teaching experiences.

Results from the studies in Israel, Korea, Sweden, and Sri Lanka tend to confirm the general finding that, when teachers gain experience, their sense of personal efficacy becomes more salient (Soodak, & Podell, 1996). Thus, the growth of knowledge during teacher education programs may lead to strengthening and crystallizing pre-service teachers' efficacy beliefs.

A second reason for this study grows out of some differences between American and Chinese culture and orientations toward school. A teacher in Chinese culture, such as found in Taiwan, is perceived as a central educational figure who is to mediate in translating Chinese social values into the daily school reality. Moreover, there is a special structure to teacher education. In Taiwan, teacher education programs are embedded within teachers colleges. Those are the reasons that led us to hypothesize that pre-service teachers' efficacy beliefs may contain a factor structure or conceptions of efficacy that are different from Western culture.

Third, there is little published on the impact of teacher preparation programs in regard to pre-service teacher efficacy beliefs in Taiwan. Thus study can add additional information about levels and changes in efficacy beliefs as students progress through their teacher-preparation

programs. Knowledge of pre-service teachers' efficacy beliefs is an important step in understanding teaching practice within the educational context which mediates between the beliefs and practice of teachers. Such knowledge can enhance the possibility of designing positive educational experiences for pre-service teachers in professional teacher education schools which prepare teachers for what early childhood education programs must become in the future.

In sum, the purposes of this study were to examine the factor structure of the Gibson and Dembo (1984) Teacher Efficacy Scale in a traditional Chinese culture by using a sample of pre-service teachers in Taiwan, and to compare efficacy beliefs of pre-service teachers in Taiwan who are at the beginning of early childhood teacher preparation with those who are near the end of their preparation programs. In this study, we are gaining understandings of pre-service teachers' sense of efficacy related to their learning experience during their teacher education program.

## Method

### Participants

All of the participants were enrolled in the practical college-based teacher training programs in Taiwan. In 1996, they were selected to be in this study from four teacher colleges and one polytechnic institute which admits senior high (vocational) graduates to receive four years of education. Teacher colleges are charged with preparing students in the areas of early childhood and elementary education in Taiwan. Polytechnic institutes are charged with providing professional child care service training which incorporates teaching and child care. Three hundred and ninety-eight early childhood pre-service teachers who are prepared for teaching children in child care, preschool, and kindergarten participated in this study. Data were collected from two

teacher education programs in the north (N=77), one teacher education program in the middle of Taiwan (N=103), and two in the south (N=107). The sample was composed of two groups: (a) those students entering teacher education programs -- 188 students completing their first year of the teacher training program, and (b)students near the endpoint in their teacher education programs -- 110 students completing their third year of the teacher training program. Ninety-nine percent of the subjects were under twenty-five years of age. Approximately 98 % of the participants was female. The teacher education curriculum requirements differed very little between programs. The difference between the two groups is that the students completing their third year of the teacher training program, in addition to completing two more years of background and methods courses, completed the requirement for teaching a week in kindergarten. Subjects participated voluntarily in answering questionnaires.

Participant background information. High school graduates are admitted to teachers colleges after passing nationwide Joint College Entrance Examinations administered by the Ministry of Education. Teaching has been a popular occupation for many low-income individuals up to the recent past because teacher education is free, jobs are guaranteed, and the teaching profession is highly respected (Yang, 1995). Now high school graduates who are admitted to teachers' colleges no longer come from lower socioeconomic backgrounds, due to the improvement in living standards in Taiwan, allowing low-income individuals more opportunities to enter other occupations. However, admission to teachers' colleges is still a top priority for many students because it requires the highest score on the entrance examination. Therefore, aspiring teachers are still talented individuals. When they enter the teacher preparation program, they don't differ greatly in their professional preparation, quality, or contexts of practice.

Instruments

The teacher efficacy scale was developed by Gibson and Dembo (1984) for measuring the two dimensions of personal teaching efficacy (PE) and general teaching efficacy (TE). Sixteen out of the original thirty items had acceptable reliability coefficients based upon principal components factor analysis. In the present study, the instrument was a slightly revised form of Gibson and Dembo's (1984) Teacher Efficacy Scale in order to reflect an early childhood education emphasis. The current instrument contains those 16 items plus two other items that reflect issues associated with cultural differences (items # 9 & 13). Demographic information includes age, gender, level of the teacher, and minor or collateral field and degree. Each item is rated on a 5-point Likert scale from strongly agree (5) to strongly disagree (1) with a neither agree nor disagree as the mid point (See Appendix for examples of the items). Higher scores on this scale reflect higher levels of perceived efficacy.

Data analysis

The teacher efficacy scale was used for measuring pre-service teacher efficacy beliefs. The 298 cases used in the analysis were divided into two groups: entering teacher education students who prepare to teach in early childhood education, and pre-service teachers in who are at the endpoint in their teacher-education program. Separate factor analyses was used to analyze the underlying factor structure of pre-service teacher responses to the 18-item scale. In addition, two group differences in the latent variables were evaluated using this approach. Correlation matrices for each group were analyzed using Maximum Likelihood extraction and direct oblimin rotation. In this process, factor structural models are described and tested. The degree of variance across groups is assessed and interpreted.

Four factors were extracted based on Cattell's scree test and Kaiser's criterion. Oblique rotation was used to compare item loadings and degree of correlations between factors. The criterion for significance of factor loadings to include the individual items in the factor structure was higher than or equal to .30.

## Results

A statistically significant Bartlett's chi-square test, and acceptable Kaiser-Meyer-Olkin Measure of sampling adequacy (.774, $p < .001$ for entry level group; .698, $p < .001$ for ending level group) showed that the Taiwan sample was satisfactory for using factor analysis (Kaiser, 1974). The 18 questions from the Teacher Efficacy Scale were subjected to Maximum Likelihood factor analysis. Four criteria were used to determine the number of factors to rotate: the a priori hypothesis that the measure was two dimensional, Kaiser's criterion, Cattell's scree test, and criteria based on the variance accounted for by the factor solution. The scree plot indicated that the initial hypothesis of two dimensionality was incorrect. The factorial structure of teacher efficacy scale developed by Gibson and Dembo (1984) was not the same as with the Taiwan sample when translated to Chinese and administrated to Taiwan pre-service teachers. We then imposed a four-factor solution on our participants' responses to explore other possible dimensions of pre-service teacher efficacy beliefs in Taiwan.

Entering Pre-service Teachers

An oblique rotation was applied as a follow-up procedure to explore possible correlations among the factors. The analysis revealed four factors with an eigenvalue over 1.0 (see Table 2). These factors were extracted from factor analysis, with Factor 1 accounting for 20.22 % of the total variance, Factor 2 accounting for 12.97 % of the total variance, Factor 3 accounting for 8.53 % of the total variance and Factor 4 accounting for 6.55 % of the total variance. These four factors accounted for 48.27 % of the total variance and communality values were quite low for many of the items. As well, internal consistency estimates was .645. Table 2 shows those variables that loaded on each factor.

An inspection of the items that loaded on each factor indicated that most could be interpreted in terms of apparent themes which are described below.

Factor 1: professional knowledge. Items 6, 9, 12, 13, 14, 16 reflect the pre-service teachers' sense of personal ability to intervene, adjust to students or offer appropriate them learning experiences. These views all relate to pre-service teachers' views of how they can work independently and directly with children using their teacher professional knowledge, decision-making, and planning. Factor 1 accounts for 20.22 % of total variance. The average mean score on these items was 3.86.

Factor 2: effective teaching. Items 3 (extra effort), 8 (better ways of teaching), 10(more effective ways of teaching), 18 (able to teach effectively) represent the pre-service teachers' beliefs that with extra effort and by knowing better or effective ways of teaching, they can teach effectively. Factor 2 accounts for 12.97 % of the total variance. The average mean score on the

item 3 (M=2.95), 8 (M=3.23), 10 (M=3.57), 18 (M=3.09) was 3.21.

Factor 3: guide difficult children. Item 2 (M=3.44 SD=.89) was coded as Factor 3 which represented the pre-service teachers' confidence about their ability to guide the difficult children. The loading on Factor 3 is -.84 which indicates that this factor is negative correlated with the other factors. This items explained 8.53 % of the total variance.

Factor 4: home environment. Item 1 (family background), item 4 (home environment), items 5 (guidance at home), 7 (home environment), 17 (not able to reach children) reflect the pre-service teachers' expectation for support from children's home environment and family. The factor represents the teachers' perceived importance of family responsibility in student learning. These five items explained 6.55 % of the total variance. The average mean score was 2.38.

Endpoint Pre-service Teachers

Results of the factor analysis, constrained to a four-factor solution with an oblique rotation formed factors associated with adapting to students, providing for success, effective teaching, and home influences. These four factors explained 48.07 % of the variance. Internal consistency estimates was .59. The unrotated factor and rotated factors loading matrix appear in Table 3.

Factor 1: providing for success. Item 16 (provide appropriate alternatives for success) loaded most heavily on this factor (Table 3) and establishes the theme of this factor. Moreover, it is further identified by the other items (13, 14, 15,18) that positively correlated with item 16. These three items (13, 14, 15,18) indicated the belief about ability to teach effectively, positively negotiate differences, knowing strategies to deal with children's misbehavior and providing positive school experience. The average score on these 5 items was 3.73.

Factor 2:effective teaching. The items that loaded on this factor indicated a belief that teachers' efforts played important role of teaching effectively. Item 7 (home environment) had negative loading, and it was negative correlated with item 3 (extra effort) , item 8 (better ways of teaching) , item 10 (more effective ways of teaching) and item 18 (able to teach effectively). Item 18 (able to teach effectively) that loaded on factor 2 overlapped with factor 1.

Factor 3: adapting to students. Four items (2, 6, 9, 11, 12) loaded on the third factor which included guide difficult children, adjustment to student level, offer culturally appropriate learning experiences, parent support, and know how to intervene. This factor represents pre-service teachers' beliefs about their teaching function and effective teaching depending on parents' support. Factor 3 accounts for 23.89 % of the total variance. It indicates that pre-service teachers' confidence about pedagogy knowledge is not independent from a sense of a share of responsibility with parents for children's learning. The average mean score on the item 2 (M=3.45), item 6 (M=4.18), 9 (M=3.8),11 (M=1.40), 12 (M=4.06) was 3.38 which indicates the pre-service teachers have strong and positive efficacy beliefs. Consequently, agreement with items 2, 6, 9, 12, correlated with item 11, reflects teachers' beliefs in parental support as being integral to their effectiveness as a teacher.

Factor 4:home influences. Items 5, 8, 17 loaded modestly on factor 4 which included guidance at home, better ways of teaching, and not able to reach children. Factor 4 accounts for 6.92% of the total variance. The average rating of these three items was 2.51. Item 8 was over loaded on factor 2 highly.

## Discussion

There is no substantive difference of mean scores for each item between these two groups (see Table 1). This suggests that there is no distinct difference regarding sense of efficacy between entry-level pre-service teachers and senior-level candidates who are prior to student teaching. But results from exploratory factor analyses suggest that these two groups may have some conceptual differences.

Entry-level pre-service teachers displayed optimal confidence in their own abilities to facilitate student learning. This perspective is consistent with their stronger desire to have support from students'' family and home environment. The strongly negative correlation (-.84) of item 2 with the 3 factors of professional knowledge, affective teaching, and home environment reveals that the entry level students, while having confidence in many aspects of teaching, are not confident about teaching difficult children. This response results from entry-level students' desires to teach normal children because they are considered to be easy to teach.

Pre-service teachers who were at the ending point of their teacher preparation show more confidence in their abilities to teach difficult children as may be seen in this item's now being positively correlated and contained in a new factor labeled adapting to children (factor 3) that may be improved by growth of their profession knowledge. At the same time, their desire for parents' support becomes a lesser concern as may be seen in a reduction in the number of items that now comprise the factor of home environment. In fact, one item related to home environment in the entry-level responses become parts of factors labeled effective teaching. Item 11 (parent support) which was unloaded in the entry-level factors loaded on the factor labeled adapting to students.

The changes suggest that the relationships between family and teacher effectiveness is more integrated into the ending-point students' conceptions of teaching. They believe they have to take a share of the responsibility for children's' learning with parents, but, at the same time, they consider themselves as either having professional knowledge fully or being fully capable of performing effective teaching.

The results from the present study support to the idea of a multidimensional teacher-efficacy construct. Not consistent with the research of Ashton and Webb (1986), Gibson and Dembo (1984), Woolfolk and Hoy (1990), and Rich, Lev, and Fischer (1996), our analysis discovered more than two efficacy dimensions.

Education in Taiwan is valued by the family which is the core of the education system. Parents are highly respected by their children as a result of the Confucian influence. Therefore, parents are expected to take a major role in supporting and encouraging their children's education. As the consequence of Confucian influence, teachers have been given indisputable authority in their roles (Chiang & Green, 1995). The prestige of teachers is high in Taiwan (Lin, 1983). It seems reasonable to assume that teachers in Taiwan are better supported by the family and society

In Chinese society, teachers carry a major responsibility in which they are expected to possess a deep knowledge base (Paine, 1990). That knowledge base makes them bring the material alive in their teaching. Teaching is coaching in the sense of Chinese culture which refers to meaning regular, close observation and focused, constructive criticism of a person's personal and academic performance (Paine, 1990). Teachers place their efforts on responding to students' questions and they guide students who are encounting difficulty.

The entry-level pre-service teachers feel they must count on support from home environments for their success in teaching. Support from Chinese parents and children's families is the major issue for young teachers, which is understandable. Chinese parents are highly motivated to enhance their children's success and thus may be receptive to various intervention strategies that would benefit their children. The children's achievements are seen as giving honor to their family groups. As a result of this cultural perspective, pre-service teachers show that they attempt to include home environment, family support as factors in their efforts in teaching in order to improve the performance of children at school. During teacher preparation, pre-service teachers also build their goals as knowledgeable teachers to provide "coaching" of their students from the Chinese culture perspective.

## Conclusion

There was evidence that pre-service teachers who were at the entry level and near-ending point of teacher preparation programs hold various beliefs about their roles as teachers and their potentials for success. We consider that pre-service teachers' efficacy beliefs are at least partially constructed during teacher preparation. The finding from the examination of efficacy beliefs at two different points in teacher preparation program could imply that pre-service teachers' sense of efficacy may be constructed and integrated with social and cultural perspectives.

Pre-service teachers' efficacy beliefs in Taiwan are linked to willingness to take special responsibility for students' learning. This sense of responsibility reveals their perspectives concerning parent support & home environment, suggesting that they feel less threatened by parental feedback and that they believe that the potentially negative effects of the school can be

overcome by enlisting parental support. The present finding does not suggest teacher education programs are unable to contribute to efficacy development and growth. What it does imply is teacher education programs must be designed, not only through teacher knowledge content, but by connecting parents' invclvement in their children's education.

Bandura's (1997) theoretical model of efficacy suggests that successful teacher preparation programs ought to increase pre-service teachers' sense of efficacy. The data gathered in the present study appear to lend just partial support for this postulate. A two factor model (personal efficacy and general teaching efficacy) by using Teacher Efficacy Scale constructed by Gibson and Dembo (1984), it indicated that the model does not fit the data. The present study provides evidence that some aspects of teaching efficacy may be cultural and that some items from the Teacher Efficacy Scale (Gibson & Dembo, 1984) may not suit other cultures.

Table 1. Items on the teacher efficacy scale

| Item | Item Text | M G1 | M G2 | SD G1 | SD G2 |
|---|---|---|---|---|---|
| *Q1 | The amount a child can learn is primarily related to family background. | 3.03 | 2.87 | 1.18 | 1.2 |
| Q2 | I can successfully guide even the most difficult children. | 3.44 | 3.45 | .89 | .77 |
| Q3 | When a child learns something better than he or she normally learns, many times it is because I exerted extra effort. | 2.95 | 2.94 | 1.06 | 1.03 |
| *Q4 | The hours in my class have little influence on children compared to the influence of their home environment. | 2.04 | 1.88 | .81 | .88 |
| *Q5 | If children do not receive guidance at home, they aren't likely to accept any guidance. | 2.37 | 2.33 | .97 | .92 |
| Q6 | When a child is having difficulty with a task, I am usually able to adjust it to his or her developmental levels. | 4.16 | 4.18 | .53 | .54 |
| *Q7 | A teacher is very limited in what he or she can achieve because a child's home environment is a large influence on his or her development. | 2.59 | 2.33 | 1.03 | .94 |
| Q8 | When a child performs at a higher developmental level for his or her age, it is usually because I have found better ways of working with that child. | 3.23 | 3.27 | .93 | .99 |
| Q9 | I can offer culturally appropriate learning experiences to children from diverse backgrounds. | 3.79 | 3.82 | .62 | .69 |
| Q10 | When children improve their ways of working with materials, it is usually because I found more effective ways of facilitating their learning. | 3.57 | 3.74 | .79 | .73 |
| *Q11 | If parents would do more with their children, I could do more. | 1.61 | 1.40 | .82 | .58 |
| Q12 | If a child gets frustrated interacting in a learning situation, I know how to intervene to help him or her feel successful. | 3.92 | 4.06 | .68 | .51 |
| Q13 | I have the ability to positively negotiate differences I have with parents and children from different ethnic, economic, and cultural backgrounds. | 3.71 | 3.81 | .77 | .71 |
| Q14 | If a child in my class becomes disruptive and noisy, I feel assured that I know some strategies for dealing with the situation. | 3.80 | 3.83 | .64 | .65 |
| Q15 | Positive experiences at school can make up for negative experiences outside school. | 3.84 | 3.73 | .78 | .89 |
| Q16 | If a child is not successful completing a learning experience, I would be able to provide appropriate alternatives to help that child succeed. | 3.80 | 3.85 | .62 | .62 |
| *Q17 | Even a teacher with good teaching abilities may not reach many children. | 1.89 | 1.93 | .71 | .82 |
| Q18 | If a child learns something thoroughly, this might be because I was able to teach him or her effectively. | 3.09 | 3.41 | .90 | .85 |

* Items are reverse-scaled to create a total score

Table 2. The rotated factor loading matrix for entry level group

| Item | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1. family background | .0221 | -.054 | .0573 | .393 |
| 2. guide difficult children | .164 | -.011 | -.839 | .0302 |
| 3.Extra effort | -.099 | .603 | .0328 | .0019 |
| 4.Home environment | .0011 | -.048 | .184 | .361 |
| 5.Guidance at home | -.0176 | .107 | -.0386 | .464 |
| 6.Adjust to student's level | .382 | .0669 | -.0268 | .0813 |
| 7.Home environment | .132 | -.0829 | -.0461 | .601 |
| 8.Better ways of teaching | -.027 | .718 | .028 | -.0462 |
| 9.Offer culturally learning experiences | .485 | .102 | -.025 | .0299 |
| 10.More effective ways of teaching | .0757 | .590 | -.136 | -.111 |
| 11.Parent support | .163 | .0366 | .0669 | -.150 |
| 12.Know how to intervene | .783 | -.099 | -.005 | -.045 |
| 13.Ability to positively negotiate differences | .652 | .0469 | .110 | .156 |
| 14.Teacher know strategies to deal with children's misbehavior | .537 | -.027 | -.239 | .0098 |
| 15.Positive school experience overcomes outside school experience | .192 | .212 | -.163 | .05113 |
| 16.Provide appropriate alternatives | .710 | -.098 | -.171 | -.080 |
| 17.Not able to reach children | .0286 | -.028 | -.101 | .382 |
| 18.Able to teach effectively | .0843 | .557 | .0515 | .0315 |
| Eigenvalue | 2.804 | 1.918 | 1.404 | 1.219 |
| % total variance | 20.22 | 12.97 | 8.531 | 6.551 |

Note. Numbers in parentheses are the squares of the factor loadings

Table 3. The rotated factor loading matrix for ending level group

| Item | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1. family background | .0279 | -.277 | .142 | .0247 |
| 2. guide difficult children | .222 | -.130 | .377 | .0928 |
| 3.Extra effort | .0064 | .447 | .126 | -.188 |
| 4.Home environment | -.0913 | -.108 | -.173 | -.110 |
| 5.Guidance at home | -.126 | -.061 | .0824 | .437 |
| 6.Adjust to student's level | .0160 | .0624 | .587 | .0788 |
| 7.Home environment | .0697 | -.371 | -.155 | .0331 |
| 8.Better ways of teaching | .253 | .528 | -.00657 | .392 |
| 9.Offer culturally learning experiences | .247 | -.184 | .621 | -.243 |
| 10.More effective ways of teaching | .264 | .395 | .271 | -.233 |
| 11.Parent support | -.089 | .077 | .418 | -.052 |
| 12.Know how to intervene | .222 | -.055 | .644 | .100 |
| 13.Ability to positively negotiate differences | .500 | .059 | .178 | .09556 |
| 14.Teacher know strategies to deal with children's misbehavior | .492 | .0168 | .0127 | -.012 |
| 15.Positive school experience overcomes outside school experience | .466 | .261 | .011 | .0362 |
| 16.Provide appropriate alternatives | .857 | -.148 | .107 | -.237 |
| 17.Not able to reach children | .213 | -.085 | -.257 | .308 |
| 18.Able to teach effectively | .324 | .459 | -.034 | .059 |
| Eigenvalue | 2.57 | 1.48 | 2.37 | .74 |
| % total variance | 22.10 | 10.12 | 8.90 | 6.92 |

Table 4. Comparison of Factors Related to Pre-Service Teachers' Efficacy in Taiwan

| | Entering Pre-service Teachers | Endpoint Pre-service Teachers |
|---|---|---|
| 1 | **PROFESSIONAL KNOWLEDGE**<br><br>Q6 (.382) - adjust to student<br>Q9 (.485) - offer culturally learning experiences<br>Q12 (.783) - know how to intervene<br>Q13 (.652) - ability to positively negotiate differences<br>Q14 (.537) - teacher know how<br>Q16 (.710) - provide appropriate alternatives | **PROVIDING FOR SUCCESS**<br><br>Q13 (.500) - ability to positively negotiate differences<br>Q14 (.492) - teacher know strategies to deal with children's misbehaviors<br>Q15 (.466) - positive school experience overcomes outside school experience<br>Q16 (.857) - provide appropriate alternatives<br>Q18 (.324) - able to teach effectively |
| 2 | **EFFECTIVE TEACHING**<br><br>Q3 (.603) - extra effort<br>Q8 (.718) - better ways of teaching<br>Q10 (.590) - more effective ways of facilitating learning<br>Q18 (.557) - able to teach effectively | **EFFECTIVE TEACHING**<br><br>Q3 (.447) - extra effort<br>Q7 (-.371) - home environment<br>Q8 (.528) - better ways of teaching<br>Q10 (.395) - more effective ways of teaching<br>Q18 (.459) - able to teach effectively |
| 3 | **GUIDE DIFFICULT CHILDREN**<br><br>Q2 (-.839) - guide difficult children | **ADAPTING TO STUDENTS**<br><br>Q2 (.377) - guide difficult children<br>Q6 (.587) - adjust to student<br>Q9 (.621) - offer culturally learning experiences<br>Q11 (.418) - parent support<br>Q12 (.644) - positive school experience overcomes outside school experience |
| 4 | **HOME ENVIRONMENT**<br><br>Q1 (.393) - family background<br>Q4 (.361) - home environment<br>Q5 (.464) - guidance at home<br>Q7 (.601) - home environment<br>Q17 (.382) - not able to reach children | **HOME ENVIRONMENT**<br><br>Q5 (.437) - guidance at home<br>Q8 (.392) - better ways of teaching<br>Q17 (.308) - not able to reach children |

Note. Numbers in parentheses are the factor loadings

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