A Cross Sectional Study of Pre-service Teacher Efficacy Throughout the Training Years

Stuart Woodcock
University of Wollongong, stuart.woodcock@mq.edu.au

A Cross Sectional Study of Pre-service Teacher Efficacy Throughout the Training Years

Stuart Woodcock
University of Wollongong

Abstract: Teachers' judgments in their ability to motivate students and promote learning can play a vital role in determining a student's performance in the classroom and once a belief has been held for a long time, it can become difficult to change. Utilising a sample of 467 beginner and final year pre-service teachers training to become primary (elementary) and secondary teachers, the aim of this study was to examine to what extent pre-service teachers' level of teacher efficacy changed during their teacher training years. Results showed that the training courses for primary school teachers appeared to have no influence on teacher efficacy levels. Moreover, the results demonstrate that for secondary school pre-service teachers, the training courses increased their general teacher efficacy levels, however, decreased their personal teacher efficacy levels. The findings have implications for teacher training programs and future research.

Introduction

Teachers' own judgments of their abilities to enhance students' learning and achievements can play a vital role in determining a student's performance in the classroom, even more, perhaps, than student characteristics (Cheung, 2006; Woolfolk-Hoy & Spero, 2005). Over a quarter century ago, Albert Bandura introduced the concept of self-efficacy or ''beliefs in one's capacity to organize and execute the courses of action required to produce given attainments'' (Bandura, 1997, p. 3). Since that time, research in many arenas has demonstrated the power of efficacy perceptions in human learning, performance, and motivation (Woolfolk-Hoy & Spero, 2005). In the past two decades, relationships have been identified between student achievement and three kinds of efficacy—the self-efficacy of students, the level of efficacy of teachers, and the collective efficacy of schools (Goddard, Hoy, & Woolfolk Hoy, 2000; Pajares, 2007; Ross, 1994, 1998; Tschannen-Moran et al., 1998). Teachers' level of efficacy is the focus of this study.

Literature Review

The beliefs teachers harbor in relation to their own effectiveness are known as 'teacher efficacy' and underlie their instructional decisions, which ultimately shape students' educational experiences, and in turn affect academic achievement outcomes (Romi & Leyser, 2006). Teacher efficacy is defined as a teacher's "judgment of his or her capabilities to bring about desired outcomes of students' engagement and learning, even among those students who may be difficult or unmotivated" (Tschannen-Moran & Woolfolk-Hoy, 2001, p. 783). Researchers (Ashton & Webb, 1986; Tschannen-Moran & Woolfolk-Hoy, 2001; Woolfolk & Hoy, 1990) have characterized teacher efficacy as comprising two independent dimensions.

Firstly, teachers harbor beliefs about their own personal abilities to influence their students' learning and achievements. This was termed 'personal teacher efficacy' (PTE). Secondly, teachers also hold beliefs concerning the extent to which teaching can overcome external influences on the student. This was termed 'general teacher efficacy' (GTE). These two dimensions (PTE & GTE) may differentially relate to pre-service and in-service teachers' beliefs about control, management, and motivation (Woolfolk & Hoy, 1990; Woolfolk, Rosoff & Hoy, 1990; Woolfolk-Hoy & Spero, 2005). For example, a teacher might possess a high level of PTE but lower GTE if he or she believes that the home and environmental factors that are outside the teacher's control, have a greater impact on student learning than the teacher. Conversely, a new teacher who feels overwhelmed and at times unprepared may believe that teachers, in general, can teach children effectively, but the teacher him/herself personally lacks the skills required to help students master the curriculum.

Teacher efficacy has been found consistently to relate to positive teacher behaviors and student achievement (Cakiroglu, Cakiroglu, & Boone, 2005). Teachers who assume external factors are more influential than their own skills, believe that they cannot effect much change in a classroom, especially with low-achieving students, which perception can perpetuate low expectations and low student outcomes, often resulting in higher levels of stress and the likelihood of teacher burnout and their exit from the profession (Durgunoglu & Hughes, 2010). Conversely, teachers with a high level of teacher efficacy are likely to have higher end-of-year goals (Allinder, 1995), be motivated, and tend to persevere through the challenges (Stripling, Ricketts, Roberts, & Harlin, 2008) and create positive teacher practices and policies that are then implemented in the classroom (Wolters & Daugherty, 2007). Thus, teacher efficacy could be the key to determining the success or failure of the teacher. As teacher recruitment and retention become of greater concern for education, teacher efficacy may also become an important factor (Wheeler & Knobloch, 2006).

Teachers form beliefs about teaching and the classroom prior to training to become a teacher (Pajares, 1992). People's beliefs are formed throughout all schooling experience as a student. From years of experience as a student, people have made decisions regarding 'good' and 'bad' teachers (Pajares, 1992). One of the difficulties arising from these early perceptions is that once a belief has been held for a long time, it becomes extremely difficult to change (Woolfolk-Hoy & Spero, 2005). In addition, teacher efficacy is one of the main determinants of job satisfaction for teachers (Caprara, Barbaranelli, Borgogni, & Steca, 2003; Ware & Kitsantas, 2007), and is negatively correlated to teacher burnout (Fives, Hamman, & Olivárez, 2007; Skaalvik & Skaalvik, 2007). Fifteen percent of new teachers leave the profession within the first two years (Darling-Hammond, 1997), and as many as half of all teachers leave by the end of their sixth year (Marson & Pigge, 1997). As a result, much of the literature focus has turned recently to pre-service teachers and the creation of a firm foundation for future beliefs and learning. The argument is that the opportunity to have the greatest impact in changing a teacher's belief is likely to be during the formative years of pre-service training (Woolfolk-Hoy & Spero, 2005). Professional development courses generally make an impact over the short term, usually immediately after the course, but teacher practices gradually deteriorate to where they were prior to commencing the course (Fritz, Miller-Heyl, Kreutzer, & Macphee, 1995). Interestingly, research by Fritz and colleagues (1995) has shown that professional development courses impact more upon teachers with a high level of teacher efficacy than those with a low level of teacher efficacy since those with a high level of teacher efficacy are more likely to risk new procedures and attempt implementation of the new training techniques in their classroom (Fritz et al., 1995). Thus, it is vital that by the time pre-service teachers graduate as new in-service teachers, their level of teacher efficacy is high.

Some of the most powerful influences on the development of teachers' level of efficacy are experiences during their student-teaching and the induction year (De la Torre Cruz & Casanova Arias, 2007; Mulholland & Wallace, 2001; Roberts et al., 2006; Stripling, et al., 2008; Woolfolk-Hoy & Spero, 2005). Some of these studies have confirmed that teacher efficacy is highest among pre-service teachers and that this level of efficacy drops, often to a great extent, during the first year of teaching (Brousseau, Book & Byers, 1988; Durgunoglu & Hughes, 2010; Soodak & Podell, 1997; Woolfolk-Hoy & Spero, 2005). Furthermore, efficacy levels continue to drop as experience is gained (Anderson, Greene & Loewen, 1988; Brousseau et al., 1988; Woolfolk-Hoy & Spero, 2005). In contrast, Soodak and Podell (1997) found that after the initial drop in the first year of teaching, there was an increase in efficacy beliefs with experience, although the levels of efficacy never reached the same levels as during the pre-service training. Moreover, Soodak and Podell (1997) found that these high changes in efficacy levels occurred in only primary (elementary) school teachers. De La Torre Cruz and Arios (2007) examined pre-service teachers in their final year and in-service teachers who had been teaching for an average of fifteen years. They found that the experienced teachers had a higher teacher efficacy than pre-service teachers.

Others have found varying differences between pre-service and in-service teachers' level of efficacy. For example, Gorrell and Dhamadasa (1994) found that pre-service and in-service teachers had distinctly different levels of efficacy for different tasks. They found that pre-service teachers had higher levels of efficacy for implementing new methods and techniques of instruction while in-service teachers had higher levels of efficacy in classroom management and organization. Other studies have found no change or a decline in the level of teacher efficacy over the years of teacher education (Lin & Gorrell, 2001; Plourde, 2002; Yeo, Ang, Chang, Huan, & Quek, 2008). Yeo and colleagues (2008) found that Singaporean teachers who had been teaching for five or more years reported stronger efficacy towards classroom management than their pre-service counterparts.

Methodology

The purpose of the study was to examine the extent to which pre-service teachers' level of efficacy changes during their teacher education years. Most psychological measurements of attitudes and beliefs have employed self-reported survey questionnaires (Cunningham, Preacher & Banaji, 2001). Moreover, survey questionnaires are one of the most efficient research methods for collecting information from participants to describe, compare and explain their knowledge, attitudes, beliefs, and behaviours (Fink, 2003; Gay, Mills & Airasion, 2006; Mertens, 1998, 2005; Neuman, 2003; Punch, 2003). Using survey questionnaires, data can be collected from a relatively large number of respondents across a large spectrum of areas (Best & Kahn, 2006). The pre-service teachers in this study were drawn from four regional and suburban universities in New South Wales, Australia. Subjects were undertaking a Bachelor of Education (primary/secondary) degree which prepares graduates to teach children from Kindergarten to Year 6, ranging in age from five to 12 years of age (primary), and students from Year 7 to year 12, ranging from 13-18 years of age (secondary). Participants included 467 pre-service teachers enrolled in four-year teacher-education programs. Primary school pre-service teachers consisted of 19% male and 81% female, and secondary school pre-service teachers consisted of 40% male and 60% female. The overall ratio was 27% male and 73% female pre-service teachers, a similar ratio to that of male and female primary/secondary teachers in Australia (Anderson, 2004; Callan, 2004). Participants included pre-service teachers from the beginning and end of the four years of the primary and secondary teaching courses.

The instrument included Hoy and Woolfolk's (1993) ten-item Teacher Efficacy Scale (TES), which examined two specified dimensions of teacher efficacy (general and personal teacher efficacy). The ten-item TES included five statements relating to GTE (such as: *'when it comes right down to it, a teacher really can't do much because most of a student's motivation and performance depends on his or her home environment'*), and five statements relating to PTE (such as: *'If I try really hard, I can get through to even the most difficult or unmotivated students'*). Respondents were asked to read each statement and then respond to each one on a Likert-scale. The Likert-scale included six points ranging from 0 (strongly agree) through to 5 (strongly disagree). Statements were either written positively or negatively. The statements that were written positively were reverse-coded so that all statement scores were consistent. Thus the higher a respondent's score, the more efficacious was the respondent. The items were categorized into two sub-scale variables through factor analysis using principal components extraction and Varimax rotation, and consisted of: PTE and GTE. Internal reliability analyses (Cronbach's alpha) resulted in acceptable (>.7) alpha coefficient scores for PTE and GTE.

A pilot study of the instrument was conducted to obtain feedback on the questionnaire items with 40 pre-service teachers (not included in this data set). Based on their feedback, minor changes to the instrument were made. All participants for the present study were approached at the end of a lecture and the surveys were distributed by colleagues of the researcher. Ethics approval was obtained by the relevant university committee.

Results

Means, standard deviations, and multivariate analyses of variance (MANOVAs) were carried out to examine pre-service teachers' GTE and PTE. The MANOVAs aimed to investigate whether school context, and/or training courses affected the teacher efficacy levels for pre-service teachers.

Comparison	Group	Analysis	Variables	Sig.	η_p^2
Beginning Course	Scale Variables	Multivariate Test		.000*a	.040
		Between Subjects	GTE	.001*b	.039
Primary:			PTE	.287	.006
N = 167+					
	GTE	Multivariate Test		.008*a	.062
Secondary:		Between Subjects	GTE 2	.009*c	.034
N = 97+			GTE 5	.006*c	.036
Ending Course	Scale Variables	Multivariate Test		.000*a	.058
		Between Subjects	GTE	.399	.005
Primary:			PTE	.000*b	.058
N = 128+					
Secondary:	PTE	Multivariate Test		.019*a	.077
N = 75+		Between Subjects	PTE 3	.002*c	.038
			PTE 8	.002*c	.039

Table 1: Significant Comparisons of General and Personal Teacher Efficacy

*a = Significant at the .05 level
*b = Significant at the .025 level
*c = Significant at the .01 level
+ = Number of respondents from the sub-scale variable MANOVAs.

As can be seen in Table 1, significant differences were found between primary and secondary school pre-service teachers at the beginning of their training course in regards to GTE levels (F (1, 264) = 12.546, *p*< .01, η_p^2 = .039). Primary school pre-service teachers had an overall higher level of GTE (M = 2.75) than secondary school pre-service teachers (M = 2.39) at the beginning of their respective training course. Specific differences were evident between primary and secondary school pre-service teachers in relation to GTE statements concerning students' behaviour. Primary school pre-service teachers scored higher GTE levels (M = 2.28) than secondary school pre-service teachers (M = 1.72) with regard to discipline at home (F (1, 467) = 12.324, *p*< .01, η_p^2 = .034), and parenting support (M1 – M2 = .47, F (1, 467) = 11.743, *p*< .01, η_p^2 = .036). There were no significant differences regarding PTE levels between primary and secondary school pre-service teachers at the beginning of their training courses.

Pre-service teacher education courses result in a mediation of significances towards pre-service teachers' efficacious levels (F (1, 467) = 14.083, *p*< .001, η_p^2 = .058). As Table 1 shows, there were significant differences between primary school pre-service teachers and their secondary counterparts towards the end of their training courses in PTE level (M^1 – M^2 = .33, F (1, 467) = 12.083, *p*< .001, η_p^2 = .058). Primary pre-service teachers who were nearing the end of their teacher-education course held an overall higher level of PTE than did their secondary counterparts. More specifically, in regards to pre-service teachers' PTE, it was the belief that they could get through to the most difficult students (F (1, 467) = 10.783, *p*< .01, η_p^2 = .038) and accurately assess the level of task difficulty (F (1, 467) = 10.950, *p*< .01, η_p^2 = .039) that resulted with significant differences. Primary pre-service teachers held higher levels of PTE overall than their secondary counterparts in that they believed that they could get through to the most difficult students (M^1 – M^2 = .40) and accurately assess the level of task difficulty (M^1 – M^2 = .42).

Comparison	Group	Analysis	Variables	Sig.	η_p^2
Primary	Scale Variables	Multivariate Test		.606	.004
Beginning: N = 167[+]		Between Subjects			
End: N = 128[+]					
Secondary	Scale Variables	Multivariate Test		.000*[a]	.143
Beginning: N = 97[+]		Between Subjects	GTE	.000*[b]	.057
			PTE	.000*[b]	.077
End: N = 75[+]					
	GTE	Multivariate Test		.025*[a]	.075
		Between Subjects	GTE1	.008*[c]	.035
			GTE2	.004*[c]	.056
			GTE10	.007*[c]	.040
	PTE	Multivariate Test		.005*[a]	.121
		Between Subjects	PTE3	.001*[c]	.090
			PTE8	.009*[c]	.056
			PTE9	.004*[c]	.060

Table 2: Influence that Pre-service Course Completion has on General and Personal Teacher Efficacy
*a = Significant at the .05 level
*b = Significant at the .025 level
*c = Significant at the .01 level
+ = Number of respondents from the sub-scale variable MANOVAs.

As can be seen in Table 2, the teacher education courses for preparing primary school teachers did not appear to influence or affect their overall teacher efficacy levels throughout the training years (F (1, 295) = 0.848, *p*> .05, η_p^2 = .004). However, the teacher-education courses appear to exert a significant influence and effect on overall teacher efficacy levels of secondary school pre-service teachers (F (1, 172) = 12.741, p< .001, η_p^2 = .143). Moreover, the teacher-education courses for secondary teachers significantly influenced the pre-service teachers' GTE (F (1, 172) = 9.337, *p*< .001, η_p^2 = .057) and PTE (F (1, 172) = 13.452, *p*< .001, η_p^2 = .077). However, as the pre-service teachers go through their training courses, their GTE levels significantly increase ($M^1 - M^2$ = .45), but their PTE levels decrease ($M^1 - M^2$ = -.42).
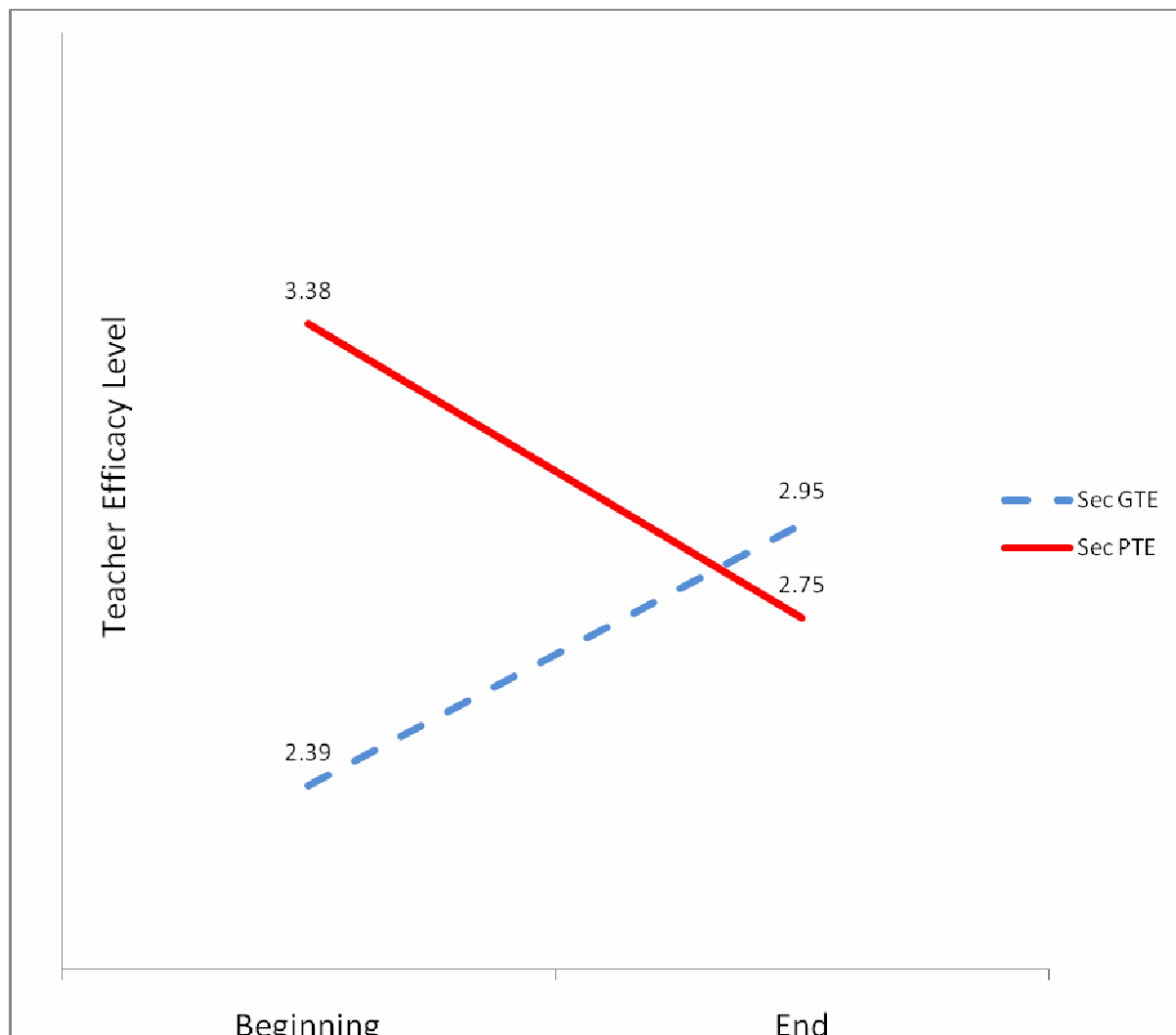
Figure 1: Secondary School Pre-service Teachers' Course Influence

Furthermore, as Figure 1 shows, that in relation to GTE, the teacher-education courses particularly increased secondary pre-service teachers' belief in the influence teachers have over the family background ($(M^1 – M^2 = .60)$, in teachers' influence in discipline of students over the home discipline ($M^1 – M^2 = .53$), and, teachers' beliefs that they can motivate and improve a child's performance no matter what the home environment ($M^1 – M^2 = .43$). However, in regards to the PTE, the teacher-education courses appeared particularly to influence and decrease secondary pre-service teachers' beliefs about their ability to reach the most difficult students ($M^1 – M^2 = -.59$), accurately assessing the difficulty of the task ($M^1 – M^2 = -.51$), and, being able to reach the most unmotivated students ($M^1 – M^2 = -.54$).

Discussion

The present study demonstrates that pre-service teachers differ according to their training and school context in regards to teacher efficacy. In comparison to secondary school pre-service teachers, primary school pre-service teachers reported a higher level of GTE (in particular, discipline within the classroom, and parental support) at the beginning of their training course. Furthermore, by the end of their training there was a shift observed in differences between primary and secondary pre-service teachers. By the end of their training primary school pre-service teachers exhibited a significantly higher level of PTE than secondary pre-service teachers. This is especially so in relation to reaching the most difficult children, and being able to accurately assess the level of task difficulty. By the end of training primary school pre-service teachers believed they could get through to the most difficult child more so than their secondary counterparts believed about themselves. This study also supports Woodcock and Reupert's (in press) study on primary school pre-service teacher education courses in that the confidence and success of these teachers increased in relation to behaviour management strategies. Moreover, they were more likely to believe that they could accurately assess the level of task difficulty. This result demonstrates a substantial change regarding the primary school pre-service teachers' personal beliefs in their ability to change and impact upon their students. Although at the beginning of the course primary school pre-service teachers possessed a greater level of GTE compared to secondary pre-service teachers, by the end of the course the difference in GTE narrowed while the PTE widened.

Furthermore, in relation to the influence of the teacher-education courses that the primary and secondary pre-service teachers completed, it was only the secondary teacher-education courses that appeared to exert any influence on teacher efficacy levels. Thus, no significant changes occurred for primary pre-service teachers throughout their training. This study supports previous studies (Lin & Garrell, 2001; Plourde, 2002; Yeo et al., 2008) in that there was no change in the level of teacher efficacy over a teacher education course. Furthermore, the present study has found that this only appeared to apply to primary school pre-service teachers. For secondary teacher-education courses, the GTE levels increased (particularly in regards to discipline in the classroom, being able to influence the student no matter what the home environment, and influence of the family background). By the end of the course secondary pre-service, teachers believed that teachers in general could influence and impact upon the students' achievement. However, while their GTE levels increased through the training their PTE levels significantly dropped by the end of their training. This was particularly regarding their perceived ability to get through to the most difficult child, being able to accurately assess the task difficulty, and also getting through to the most unmotivated student. This finding supports previous studies demonstrating that teacher efficacy can decline in levels over the years of preparation (Lin & Garrell, 2001; Plourde, 2002; Yeo et al., 2008).

It might be that secondary school pre-service teachers, through training and experience, come to realize that generally teaching is a worthwhile profession and that teachers can influence and change students' learning, development, and achievements. However, from this realization comes the added awareness that they, as professionals, are not yet ready to effect such changes personally and that they will require real experience in their years of teaching to be able to gain a higher level of personal efficacy. This is concerning, as once a belief has been held, it can become difficult to change (Woolfolk-Hoy & Spero, 2005), and in this situation efficacy levels decline as experience is gained (Anderson et al., 1988; Brousseau et al., 1988; Durgunoglu & Hughes, 2010; Soodak & Podell, 1997; Woolfolk-Hoy & Spero, 2005).

The present study suggests that the structure of preparation programs might affect or reinforce one form of teacher efficacy but have no impact on a different form of teacher efficacy within varying school contexts. Primary pre-service teacher programs appeared to have little impact upon building teacher efficacy. Secondary pre-service programs appeared to exert a positive impact on building up the belief of the impact teachers have on students' achievement and learning, however, these programs appeared to exert a negative impact on reducing the personal belief that, as teachers, they can effect any change that will impact and influence the students' learning and achievements. The results highlight a need for teacher-education courses to focus more explicitly on developing and building overall general and personal teacher efficacy levels through both on-campus learning, and practical school experiences.

A limitation to the current study was its cross-sectional design, which means results can only be considered as a snapshot in one period of time. There could well be differences across pre-service teacher cohorts that are not reflected in these results but would be identified in a longitudinal, prospective study. Future studies could employ such a prospective design as well as qualitative data to tap the underlying issues regarding pre-service teachers' beliefs about teacher efficacy. This study was carried out across various institutions with pre-service teachers working in similar cultural contexts. As teacher education programs differ in terms of content and duration (Alvarez, 2007) future studies would profit from surveying pre-service teachers from other countries. At the same time, the study does indicate that pre-service teachers present with varying teacher efficacy needs and challenges throughout their university programs, of which training institutions and schools need to be mindful.

Teachers' own judgments of their abilities to enhance students' learning and achievements have raised issues over the years. This study has broadened and added to the research base on pre-service teacher efficacy. The transformation of classrooms with inclusive and diverse classes, and the changing views of teaching all students and meeting everyone's needs represent significant challenges. The development of programs for new teachers to address these emerging challenges in and enhance the students' learning is central to the focus of this study. While primary pre-service teachers' personal and general teacher efficacy levels did not change over the course of their teacher education, secondary pre-service teachers' personal and general teacher efficacy levels did. Although their level of general teacher efficacy increased, their personal teacher efficacy levels decreased. In order for the pre-service teachers to play their important role educating the younger generation it is important that teacher education programs need to evaluate efficacy levels of their teacher education students and begin to find ways to enhance their efficacy beliefs.

References

Allinder, R. (1995). *An examination of the relationship between teacher efficacy and curriculum-based measurement and student achievement*. Remedial and Special Education, 16(4), 247–254.

Alvarez, H. (2007). *The impact of teacher preparation on responses to student aggression in the classroom*. Teaching and Teacher Education, 23(7), 1113-1126.

Anderson, Hon, John. (2004). *Mark Latham's failure on male teachers*. Media Release, Minister for Transport and Regional Services.

Anderson, R., Greene, M., Loewen, P. (1988). *Relationships among teachers' and students' thinking skills, sense of efficacy, and student achievement*. Alberta Journal of Educational Research, v34(2), 148-165.

Ashton, P., Webb, R. (1986). *Making a difference: teachers' sense of efficacy and student achievement.* New York, Longman.

Bandura, A. (1997). *Self-efficacy. The exercise of control.* New York, Freeman.

Best, J., Kahn, J. (2006). *Research in Education (10th Ed).* Sydney, Allyn & Bacon.

Brousseau, B., Book, C., Byers, J. (1988). *Teacher beliefs and the cultures of teaching.* Journal of Teacher Education, v36(6), 33-39.

Cakiroglu, J., Cakiroglu, E., Boone, W. (2005). *Pre-service teacher self-efficacy beliefs regarding science teaching: A comparison of pre-service teachers in Turkey and the USA.* Science Educator, v14(1), 31-40.

Callan, S. (2004) *Male teacher scholarships back on agenda: The Howard Government is still determined to discriminate by providing scholarships for male teachers.* Sydney, NSW Teachers Federation.

Caprara, G., Barbaranelli, C., Borgogni, L., Steca, P. (2003). *Efficacy beliefs as determinants of teacher's job satisfaction.* Journal of Educational Psychology, 95(4), 821–832.

Cheung, H. (2006). *The Measurement of teacher efficacy: Hong Kong primary in-service teachers.* Journal of Education for Teaching, v32(4), 435-451.

Cunningham, W., Preacher, K., Banaji, M. (2001). *Implicit Attitude Measures: Consistency, Stability, and Convergent Validity.* Psychological Science, v12(2), 163-170.

Darling-Hammond, L. (1997). *Doing what matters most: Investing in quality teaching.* New York: National Commission on Teaching and America's Future.

De Le Torre Cruz, M., Arias, P. (2007). *Comparative analysis of expectancies of efficacy in in-service and prospective teachers.* Teaching and Teacher Education, v23, 641-652.

Durgunoglu, Y., Hughes, T. (2010). *How prepared are the U.S. pre-service teachers to teach English language learners?* International Journal of Teaching and Learning in Higher Education, v22(1), 32-41.

Fink, A. (2003). *The Survey Handbook (2nd Ed.).* London, Sage Publications.

Fives, H., Hamman, D., Olivárez, A. (2007). *Does burnout begin during student teaching? Analyzing efficacy, burnout, and support during the student teaching semester. Teaching and Teacher Education, 23,* 916-934.

Fritz, J., Miller-Heyl, J., Kreutzer, J., MacPhee, D. (1995). *Fostering personal teaching efficacy through staff development and classroom activities.* Journal of Educational Research, v88, 200-208.

Gay, L., Mills, G., Airasian, P. (2006). *Educational Research: Competencies for Analysis and Applications (8th Ed).* NJ: Upper Sadler River, Pearson.

Goddard, R., Hoy, W., Woolfolk-Hoy, A. (2000). *Collective teacher efficacy: Its meaning, measure, and impact on student achievement.* American Educational Research Journal, v37(2), 479-507.

Gorrell, J., Dharmadasa, K. (1994). *Perceived self-efficacy of pre-service and in-service Sri Lankan teachers.* International Education, v24(1), 23-36.

Hoy, W., Woolfolk, A. (1993). *Teachers' sense of efficacy and the organization of schools on teachers' efficacy and satisfaction.* Sociology of Education, v64, 190-208.

Lin, H. Gorrell, J. (2001). *Exploratory analysis of pre-service teacher efficacy in Taiwan. Teaching and Teacher Education, 17,* 623-635.

Marso, R., Pigge, F. (1997). *A longitudinal study of persisting and non persisting teachers' academic and personal characteristics. The Journal of Experimental Education, 65*(3), 243-254.

Mertens, D. (1998). *Research Methods in Education and Psychology: Integrating Diversity with Quantitative and Qualitative Approaches.* Thousand Oakes, Sage Publications.

Mertens, D. (2005). *Research and Evaluation in Education and Psychology: Integrating Diversity with Quantitative, Qualitative, and Mixed Methods (2nd Ed)*. London, Sage Publication.

Mulholland, J., Wallace, J. (2001). *Teacher induction and elementary science teaching: Enhancing efficacy. Teaching and Teacher Education*, 17, 241-261.

Neuman, W. (2003). *Social Research Methods: Qualitative and Quantitative Approaches*. Sydney, Allyn & Bacon.

Pajares, F. (1992). *Teachers' beliefs and educational research: Cleaning up a messy construct.* Review of Educational Research, v62, 307-332.

Pajares, F. (2007). *Self-efficacy beliefs, motivation, and achievement in writing: A Review of the Literature*. Reading and Writing Quarterly, v19, 139-158.

Plourde, L. (2002). *The influence of student teaching on pre-service elementary teachers science self-efficacy and outcome expectancy beliefs*. Journal of Instructional Psychology, 29, 245–254.

Roberts, T., Harlin, J., Ricketts, J. (2006). *A longitudinal examination of teaching efficacy of agricultural science student teachers. Journal of Agricultural Education, 47*(2), 81-92.

Romi, S., Leyser, Y. (2006). *Exploring inclusion pre-service training needs: A study of variables associated with attitudes and self-efficacy beliefs.* European Journal of Special Needs Education, v21(1), 85-105.

Ross, J. (1994). *The impact of an in-service to promote cooperative learning on the stability of teacher efficacy.* Teaching and Teacher Education, v10(4), 381-394.

Ross, J. (1998). *The antecedents and consequences of teacher efficacy.* In J. Brophy (Ed.), Advances in Research on Teaching, Vol 7. Greenwich, JAI Press, pp49-73.

Skaalvik, E., Skaalvik, S. (2007). *Dimensions of teacher self-efficacy and relations with strain factors, perceived collective teacher efficacy, and teacher burnout*. Journal of Educational Psychology, 99(3), 611–625.

Soodak, L., Podell, D. (1997). *Efficacy and experience: Perceptions of efficacy among pre-service and practicing teachers.* Journal of Research and Development in Education, v30, 214-221.

Stripling, C., Rickets, J., Roberts, T., Harlin, J. (2008). *Pre-service agricultural education teachers' sense of teaching self efficacy.* Journal of Agricultural Education, 49(4), 120-130.

Tschannen-Moran, M., Woolfolk-Hoy, A. (2001). *Teacher efficacy: Capturing an elusive construct.* Teaching and Teacher Education, v17, 783-805.

Tschannen-Moran, M., Woolfolk-Hoy, A., Hoy, W. (1998). *Teacher efficacy: Its meaning and measure.* Review of Educational Research, v68, 202-248.

Ware, H., Kitsantas, A. (2007). *Teacher and collective efficacy beliefs as predictors of professional commitment.* Journal of Educational Research, 100(5), 47–48.

Wheeler, J., Knobloch, N. A. (2006). *Relationships of teacher and program variables to beginning agriculture teachers' sense of efficacy*. Paper presented at the annual meeting of the American Association for Agricultural Education, Charlotte, NC.

Wolters, C. A., Daugherty, S. G. (2007). *Goal structures and teachers' sense of efficacy: Their relation and association to teaching experience and academic level.* Journal of Educational Psychology, 99(1), 181–193.

Woodcock, S., Reupert, A. (In Press). *A Cross-sectional study of student teachers' behaviour management strategies throughout their training years.* Australian Educational Researcher.

Woolfolk, A., Hoy, W., (1990). *Prospective teachers' sense of efficacy and beliefs about control*. Journal of Educational Psychology, v82, 81-91.

Woolfolk, A., Rosoff, B., Hoy, W. (1990). *Teachers' sense of efficacy and their beliefs about managing students*. Teacher and Teacher Education, v6, 137-148.

Woolfolk-Hoy, A., Spero, R. (2005). *Changes in teacher efficacy during the early years of teaching: A comparison of four measures*. Teaching and Teacher Education, v21, 343-356.
Yeo, L., Ang, R., Chong, W., Huan, V., Quek, C. (2008). *Teacher efficacy in the context of teaching low achieving students.* Current Psychology, v27, 192-204.