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Positive Behaviour for Learning: Differentiating Teachers' Self-efficacy

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The objective of this research is to compare the self-efficacy of teachers from schools implementing Positive Behaviour for Learning (PBL) (experimental group) with teachers in schools who are on the wait list (control group). PBL is a behaviour management innovation adapted from the United States, Positive Behaviour Interventions and Supports (PBIS), which has been progressively introduced across schools by the NSW Department of Education and Training Western Sydney Region (DET WSR). It was hypothesised that teachers implementing PBL (experimental) would report higher teacher self-efficacy than those in the control group. The Ohio State Teacher Self-Efficacy Scale was used to measure teacher self-efficacy. The sample comprised 394 primary and secondary teachers from the WSR. Interestingly the results revealed that PBL teachers had equally high self-efficacy of instruction and management compared with the control group and there was no significant difference between teachers from PBL and non-PBL schools in their self-efficacy of engagement and classroom management. The implications of these findings are considered.

Teacher self-efficacy

Self-efficacy refers to the beliefs people hold about their capabilities, which determine how they feel, think, motivate themselves and behave in given contexts (Bandura, 1994). Teacher self-efficacy strongly predicts whether and how a teacher will respond in different contexts. In the classroom, a teacher's decision to modify disruptive student behaviour is dependent upon their self-efficacy. If they feel confident about their abilities, then they are more likely to be effective (Gibbs, 2002). Teachers with high a self-efficacy have been shown to: preserve in the face of a challenge (Gibson & Dembo, 1984), take more risks and employ innovative approaches to designing and implementing learning experiences for their students (Allinder, 1994; Cousins & Walker, 2000; Ghaith & Yaghi, 1997; Guskey, 1988), and adopt new teaching strategies and approaches which meet the individual needs of their students (Gibson & Dembo, 1984). Other benefits include higher levels of enthusiasm and commitment to the profession and reduced likelihood of burn-out and therefore these teachers tend to remain in the profession (Burley, Hall, VILLEME, & Brockmeier, 1991; Coladarci, 1992; Skaalvik & Skaalvik, 2009).

Students benefit from teachers with a high sense of self-efficacy. When teachers have a strong positive self-efficacy, the research shows that there are gains to students' academic achievement, increases in the levels of students' motivation and improvements to students' self-efficacy (Anderson, Greene, & Loewen, 1988; Brookover, Beady, Flood, Schweitzer, & Wisenbaker, 1979; Margolis, MacCabe, 2003; Midgley, Feldlaufer, & Eccles, 1989). Students further benefit because teachers with greater self-efficacy are more patient with students who experience difficulties and less critical of them (Ashton & Webb, 1986; Gibson & Dembo, 1984).

Although high levels of teacher efficacy have been associated with positive learning and teaching outcomes, a minority of studies have suggested that there are associated benefits with having doubts about abilities and having low levels of efficacy (Wheatley, 2002). Having uncertainty in your ability can induce desirable behaviours such as increasing the likelihood that self-reflection occurs and it can spur motivation to learn. Furthermore, when teachers' beliefs about themselves and their existing practices are challenged, they are more likely to transform their thinking because the disequilibrium associated with the experience, causes them to act and this action can result in self-improvement (see for example Boulden, Hiester, & Walti, 1998). On the other hand, doubt in ones' abilities could lead to avoidance behaviours (Woolfolk Hoy & Spero, 2005). Overall, the majority of researchers agree on the importance of maintaining higher rather than lower levels of self-efficacy because consistent and positive associations have been found between high self-efficacy and critical educational outcomes (Ross, 1998).

Individuals' self-efficacy judgments are based on their perceptions of competence rather than the actual level of competence. Consequently, it is possible for individuals to either over or under-estimate their level of ability. Judgments by an individual on their perceived level of competence can determine whether and how an individual will respond to different contexts and govern the amount of effort expended. Under-estimators tend to: (a) avoid challenging tasks, (b) be less persistent and give up, (c) avoid taking risks, and (d) be inflexible. These characteristics explain, to some extent, why under-estimators of self-efficacy have poorer performance than those who over-estimate their abilities (Bandura, 1997). It is also evidence substantiating the benefits of over rather than under-estimating ability.

Self-efficacy has been an area of research that has received considerable attention and has been comprehensively investigated however; teachers' efficacy in relation to classroom management has been underexplored (Morris-Rothschild & Brassard, 2006). An example of under exploration is evident from the debate on how and whether self-efficacy can change over time. Some researchers argue that once teachers' self-efficacy has formed, the likelihood of it changing is minimal because "once efficacy beliefs are established they appear to be somewhat resistant to change" (Gencer & Cakiroglu, 2007, p. 665). Contrary to these findings is the research suggesting that teacher self-efficacy declines with more years in the profession (Anderson, et al., 1988). More researchers however, support the notion that

self-efficacy can change over time and this it is most malleable in the earlier stages of learning, suggesting that the initial years of teacher training are fundamental to the long-term development of teachers' self-efficacy (Woolfolk Hoy & Spero, 2005). Rather than having self-efficacy beliefs that fluctuate, experienced teachers have more stable levels of self-efficacy (Lin & Gorrell, 2001; Romi & Daniel, 1999). This may however, be harmful, especially for those who have developed a lower opinion of themselves.

Classroom management

Student behaviour and its implications for learning are a frequent concern of teachers, parents and policy makers in Australia and elsewhere. Disruptive student behaviour not only impedes learning outcomes for students but also impacts negatively on teacher efficacy and wellbeing (Tschannen-Moran & Woolfolk Hoy, 2001; Lewis, 1999). Importantly, research shows that teachers' self-efficacy levels are associated with their classroom management approach (Ashton & Webb, 1986). Teachers with high levels of self-efficacy favour management strategies that are more effective in addressing misbehaviour compared to teachers with lower levels of self-efficacy (Morris-Rothschild & Brassard, 2006).

Teachers who have a lower self-efficacy are more likely to feel overwhelmed and undermined by: (a) poor student behaviour, (b) low student engagement, and (c) lack of student motivation. These teachers are less effective in the classroom and experience less satisfaction (Brouwers & Tomic, 2000). Although these teachers perceive difficulties in managing student behaviour, they do little to improve the situation. The lack of belief in their ability leads these teachers to feel the need to 'control' their students. This control orientation relies on teacher-directed instruction and upon punitive measures such as punishment to coerce students to behave. Research findings show that coercive discipline can have aversive effects on students' behaviour and can aggravates problem behaviour (Lewis, 2001). They are more likely to resign from their positions, leading to an exacerbation of poor educational outcomes and associated behavioural problems and contributing to the problem of 'hard-to-staff' schools (Howard & Johnson, 2002).

Teachers who have a higher self-efficacy believe they have the capacity to manage student behaviour and consequently persist in the face of a challenge. These teachers use more preventative measures to promote good behaviour rather than employ a reactive approach (Jordan, Kircaali-Iftar, & Diamond, 1993). Teachers, who hold a greater belief in their ability, are more inclined to be trusting of their students and therefore promote student autonomy. These teachers tend to foster a humanistic orientation to classroom management (Woolfolk & Hoy, 1990). Corresponding with a humanistic approach, the high efficacy teachers employ constructivist approaches to teaching including designing hands-on experiences (Riggs & Enochs, 1990) and reduced teacher-directed lessons (Ashton & Webb, 1986; Gencer & Cakiroglu, 2007).

Although the management approach adopted by teachers with higher levels of self-efficacy is more inclusive, since they are more likely to include students who have learning and behaviour difficulties (Ashton & Webb, 1986), they too can experience challenges. A recent study of primary teachers in Western Sydney found that even teachers who felt confident about their teaching abilities expressed concern about student disobedience, distractability and disruption of others, as well as less frequent but more challenging behaviours such as physical aggression and bullying (Stephenson, Linfoot & Martin, 2000). Focus group discussions conducted by DET WSR in 2004 revealed widespread dissatisfaction with the ways that behaviour problems in schools were being dealt with.

Research on classroom management across Australia has found that teachers frequently revert to coercive and ineffective forms of discipline when they are challenged with difficult behaviour (Lewis, 1997). Further, DET WSR noted disparities across the region in the capacities of different schools to deal effectively with student behaviours. For instance some schools in the WSR have adopted the Glasser (1992) model of discipline. Glasser's model advocates that students should be given the opportunity to take responsibility for making their own behavioural choices, however, this has been frequently invoked by teachers as a means of threatening students to choose between two aversive teacher-imposed 'choices'.

The Glasser model has been misunderstood and therefore misused. Consequently, the establishment of workable, positive and sustainable processes for dealing productively with student behaviour has been an educational challenge for the WSR region and others.

The DET WSR has highlighted the need for schools and teachers to employ more effective behaviour management programs and emphasised the adoption of a consistent region-wide professional development program for behaviour management (NSW DET, 2006). The initiative implemented into WSR schools on a voluntary basis, to address these concerns, has been Positive Behaviour for Learning (PBL).

Behaviour Management Intervention

The DET WSR adapted Positive Behaviour Interventions and Supports (PBIS) and developed the Positive Behaviour for Learning (PBL) initiative. This initiative was implemented to address the inconsistencies and improve the management approached employed by teachers in the WSR. Consistent with PBIS, PBL emphasises positive behaviour using established and research-validated practices of behaviour management. The approach aims to teach and reinforce identified target behaviours and minimise the use of punishment (Sulzer-Azaroff & Mayer, 1994). "Teaching behavioural expectations and rewarding students for following them is a much more positive approach than waiting for misbehavior to occur before responding. The purpose of school-wide PBIS is to establish a climate in which appropriate behaviour is the norm" (OSEP Center on PBIS, 2006). Thus, the PBIS model encourages schools to use data to inform the adoption of systems and practices that apply sound behavioural principles in their approach to managing student behaviour. It aims to equip schools to identify and teach behaviours that they have determined are appropriate for their students.

Instead of reacting to misbehaviour, PBL focuses on developing and maintaining primary (school-wide), secondary (classroom), and tertiary (individual) systems of support (Lewis & Sugai, 1999). The PBIS (and hence PBL) model extends the use of behavioural data to focus on observing patterns of behaviour in a range of school settings, for example, school-wide (school expectations for all), non-classroom (routines, procedures, playground, hallway assemblies, cafeteria), classroom (classroom management systems and learning environment and pedagogy) and individual (small proportion of the student population whose behaviours have a disproportionately high impact on school-wide, non-classroom and classroom systems) (Lewis & Sugai, 1999). These data are analysed by a team of school staff and are used to inform decisions as to whether changes need to be made to systems and/or practices. The aim is to make the smallest change that has the biggest impact. The team uses data to determine which behaviours need to be taught to students and which settings or locations need to be monitored for improvements (Lewis-Palmer, Sugai & Larson, 1999; Todd, Horner, Sugai & Sprague, 1999). Staff are involved in developing a matrix of up to five key behavioural expectations to be taught systematically to all students, with an emphasis on behaviours indicated for specific settings. This forms the basis of a universal-level intervention to prevention of problem behaviours, referred to in PBIS literature as universal prevention, which targets all students and staff in a school (OSEP, 2004). As shown in the Figure 1 below, the PBIS model acknowledges that universal prevention needs to be supplemented for approximately 20% of students by more specialised targeted interventions at targeted group interventions (5-15%) and intensive individual intervention levels (1-5%).

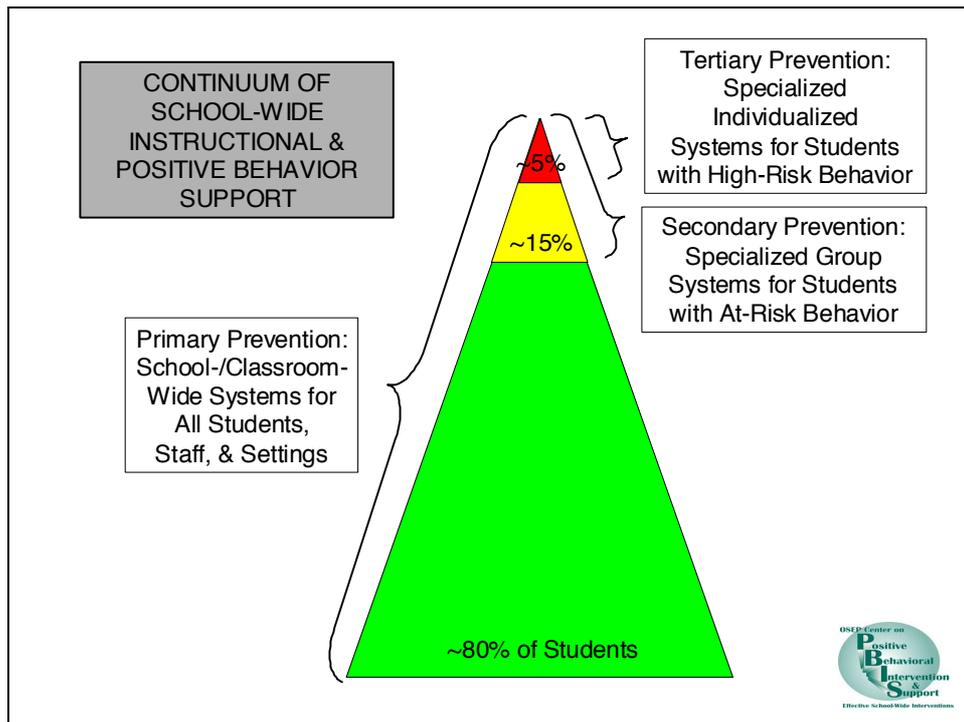


Figure 1: School-wide continuum of instructional and positive behaviour support

A noteworthy feature of the PBIS model is its systemic focus. This was explicit in the design of PBIS from its genesis, where the aim was to develop a means of changing school-wide discipline practices so as to achieve better support and reduce the risk for children with special education needs placed in mainstream settings (interview with Tim Lewis, 9/10/07). PBIS emphasises the need for schools to comprehensively monitor student behaviour as a basis for developing and applying school-wide and teacher-initiated behaviour management strategies. Furthermore, to address issues of sustainability, the PBIS model promotes an explicit, structured, team-based, problem solving process for developing schools' capacities to assess and address behaviour issues (OSEP Center on PBIS, 2004).

Studies of teacher self-efficacy indicate that it is strongly linked to effective teaching practices and that self-efficacy is enhanced by positive classroom experiences (Hoy & Woolfolk, 1993; Tschannen-Moran, Woolfolk Hoy & Hoy, 1998; Tschannen-Moran & Woolfolk Hoy, 2001). Teachers' levels of self-efficacy vary as a function of the instructional context and nature of the group of students (Raudenbush, Rown, & Cheong, 1992). Since PBL aims to improve student behaviour and learning, it is hypothesised that the instructional situation and group of students will be better in PBL schools compared with non-PBL schools. Consequently, teachers' self-efficacies are predicted to be higher in PBL schools than in non-PBL schools. Furthermore, if PBL leads teachers to establish effective educational practices we can consequently expect to see a corresponding increase in teacher self-efficacy. We employed The Ohio State Teacher Self-Efficacy Scale (OSTES; Tschannen-Moran & Woolfolk Hoy, 2001) to evaluate teacher self-efficacy. It comprises three key factors: efficacy for instructional strategies, efficacy for classroom management and efficacy for student engagement.

Method

Participants

The participants were from 31 randomly selected government schools in the WSR which represented different phases of PBL implementation. For instance Phase 1 schools invited to participate in the research belonged to the first group of schools trained in PBL (November 2005) who had been implementing PBL for 18 months whereas the control group were 10 schools on the waiting list to implement PBL. Table 1 provides an overview of the number of staff from both the experimental (n= 319) and control group schools (n=75). Table 2 presents an overview of the staged implementation of PBL and the relevant phases from which the 31 schools in this study were invited to participate.

Table 1: Satisfaction survey participants

	staff	
	Males	Females
Experimental and Control group		
Number	79	315
Percentage	20	80
Total	394	

Table 2: Phases of PBL schools – training and participation

Schools	PBL Training	Length of participation
Phase 1 Schools	November 2005	18 months
Phase 3 Schools	September 2006	9 months
Phase 4 Schools	May-June 2007	1 month

Material and Procedure

Teacher self-efficacy refers to the beliefs people hold about their capabilities, which determine how they feel, think, motivate themselves and behave in given contexts (Bandura, 1994). Studies of teacher self-efficacy indicate that it is strongly linked to effective teaching practices and that it is enhanced by positive classroom experiences (Hoy & Woolfolk, 1993; Tschannen-Moran, Woolfolk Hoy & Hoy, 1998; Tschannen-Moran & Woolfolk Hoy, 2001). If PBL leads teachers to establish effective educational practices we can consequently expect to see a corresponding increase in teacher self-efficacy. We employed The Ohio State Teacher Self-Efficacy Scale (OSTES; Tschannen-Moran & Woolfolk Hoy, 2001) to evaluate teacher self-efficacy. It comprises three key factors: efficacy for instructional strategies, efficacy for classroom management and efficacy for student engagement. Table 3 provides a sample of the OSTES scales.

Teachers' self-concept could have changed as a result of the implementation of PBL within the school setting. As teachers engage in a team-based process that supports their efforts at improving student behaviours, positive shifts in problem solving self-concept, general self-esteem and emotional stability self-concept were expected. Relevant scales from the well established Self Description Questionnaire III instrument developed by Marsh (1993) were selected to assess these dimensions of teacher self-concept. Sample items from the SDQ III are displayed in Table 3.

Table 3: Sample items from The Ohio State Teacher Self-Efficacy and SDQ III Scales

<i>Efficacy for instructional strategies</i>	
	To what extent can you use a variety of assessment strategies?
	To what extent can you craft good questions for your students?
<i>Efficacy for classroom management</i>	
	How much can you do to control disruptive behaviour in the classroom?
	How much can you do to get children to follow classroom rules?
<i>Efficacy for student engagement</i>	
	How much can you do to help your students value learning?
	How much can you do to foster student creativity?
<i>Emotional stability</i>	
	I am usually pretty calm and relaxed.
	I am happy most of the time.
<i>Self-esteem</i>	
	Overall, I lack self-confidence.
	Overall, I am pretty accepting of myself.

Statistical Analyses

Reliabilities. In preliminary, we examined the alpha estimates of internal consistency of each *a priori* scale and conducted confirmatory factor analysis (CFA) to examine a four factor measurement model. Figure 2 displays this model. It shows the structure of the model positing two teacher self-concept factors (self-esteem and emotional stability self-concept) and two teacher self-efficacy factors (Instruction and Management). Procedures for conducting CFAs have been described elsewhere (e.g., Byrne, 1998; Joreskog & Sorbom, 1993; Pedhazur & Schmelkin, 1991) and are not further detailed here. All CFAs outlined this paper were conducted with the SPSS version of PRELIS and LISREL (Joreskog & Sorbom, 1988). The goodness of fit of the CFA models was evaluated based on suggestions of Marsh, Balla, and McDonald (1988) and Marsh, Balla, and Hau (1996), with an emphasis on the Tucker-Lewis index (TLI) as the primary goodness-of-fit index. The chi-square test statistic, the relative noncentrality index (RNI) and root mean square error of approximation (RMSEA) are also reported. For an acceptable model fit, the values of TLI and RNI should be greater than .9, whereas for RMSEA, values of .05 or less are taken to reflect a close fit and values of .08 or less are taken to reflect a reasonable fit (see Joreskog & Sorbom, 1993; Marsh, Balla, & Hau, 1996). Then based on the scales established in the CFA model, we conducted a repeated-measures multivariate analysis of variance (MANOVA) with the two self-concept scales (self-esteem and emotional stability self-concept) and two self-efficacy scales (Instruction and Management) and as dependent variables.

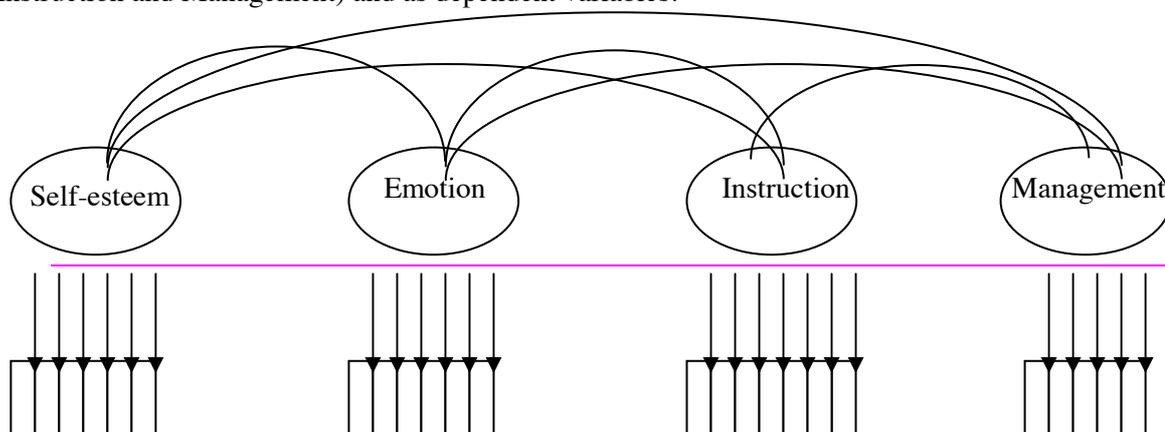


Figure : Four teacher self-concept and self-efficacy factors derived from 24 measured variables

Note: N = 394

Results

The means and standard deviations of the scales are presented in the Appendix. The analysis found that one of the items for Instruction self-efficacy and three items for Management self-efficacy tended to lower the alpha reliabilities of the respective scales. These items were deleted from subsequent analysis. The scales with 5 items for self-esteem, 5 items for emotional stability, 7 items for Instruction self-efficacy, and 5 items for Management self-efficacy had acceptable alpha reliability estimates, which were higher than the target reliability of at least .70 (Garson, 2005; George & Mallery, 1995; Lewicki & Hill, 2006; Nunnally, 1978). The alpha estimates are presented in Table 4.

CFA. The CFA model tested the ability of the four factors to explain the relationships among the 24 items. The model provided a reasonable fit to the data (TLI = .89, CFI = .90, RMSEA = .073). The solution was fully proper and the factor structure was well defined with all factor loadings being positive and significant, from .30 to .91. However, the TLI value was < .90. Because there were negative items in the self-esteem and emotional stability scales which might have errors due to a negative wording method effect, a second model was tested with the error terms of the negatively worded items correlated within each of these scales. For the two negatively worded items in self-esteem, there was one correlated uniquenesses added, and for the three negatively worded items in emotional stability self-concept, there were three correlated uniquenesses added. Hence because of adding a total of four correlated uniquenesses in the model, the *df* was reduced from 246 to 242. This model provided a good fit to the data (TLI = .92, CFI = .93, RMSEA = .064). The solution of this model is presented in Table 4. All factor loadings were larger than .30. The correlations were mostly medium. Although the correlation between self-esteem and emotional stability was fairly high ($r = .85$), they were still distinguishable from each other. In sum, there was support for the four-factor model. Since the four factors have been validated, these factors derived from the CFA were used for subsequent analysis.

Table 4: Alpha reliability and CFA solution of a 4-factor teacher self-concept and self-efficacy model

	Self-esteem	Emotion	Instruction	Management	Uniqueness
Alpha	.84	.73	.91	.91	
Factor Loadings					
Self-esteem 1	.73	--	--	--	.46
Self-esteem 2	.63	--	--	--	.61
Self-esteem 3	.78	--	--	--	.40
Self-esteem 4	.91	--	--	--	.18
Self-esteem 5	.58	--	--	--	.66
Self-esteem 6	.61	--	--	--	.62
Emotion 1	--	.63	--	--	.61
Emotion 2	--	.54	--	--	.71
Emotion 3	--	.75	--	--	.44
Emotion 4	--	.64	--	--	.59
Emotion 5	--	.69	--	--	.52
Emotion 6	--	.30	--	--	.90
Instruction 1	--	--	.78	--	.39
Instruction 2	--	--	.70	--	.51
Instruction 3	--	--	.76	--	.43
Instruction 4	--	--	.77	--	.41

Instruction 5	--	--	.76	--	.43
Instruction 6	--	--	.79	--	.38
Instruction 7	--	--	.77	--	.41
Management 1	--	--	--	.87	.24
Management 2	--	--	--	.75	.44
Management 3	--	--	--	.85	.29
Management 4	--	--	--	.79	.38
Management 5	--	--	--	.84	.29
Factor Correlation					
Self-esteem	--				
Emotion	.85	--			
Instruction	.51	.42	--		
Management	.43	.41	.77	--	

Note: $N = 394$. Parameters estimates are completely standardised. All estimates were statistically significant ($p < .05$).

Group differences

To examine whether PBL would have noteworthy impact on teacher self-efficacy, the scores for instruction and management self-efficacy scales in the experimental and control groups were compared. The self-esteem and emotional stability self-concept of the two groups were also compared. The MANOVA with the four constructs did not find any significant between-group difference. The means and standard deviations of scores and the univariate F -statistics are presented in Appendix are presented in Table 5.

Both the experimental and control groups had similarly high self-esteem, $F(1, 392) = 0.00$, $MSE = 0.50$, high emotional stability, $F(1, 392) = 0.21$, $MSE = 0.53$, very high instruction efficacy, $F(1, 392) = 0.26$, $MSE = 0.37$ with a mean of 5.24 and 5.28 for the experimental and control groups respectively, and very high management efficacy, $F(1, 392) = 0.01$, $MSE = 0.42$ with a mean of 5.24 for both groups. None of these comparisons were statistically significant (all $p > .05$). This is an interesting aspect for further research in a future time phase especially when exploring the effects of PBL embedded into classroom settings.

Table5: Means and (Standard Deviations) of teachers' self-esteem, emotional stability, and instruction and management efficacy scores

	Experimental	Control	F (1,392df)	MSE
	$N= 319$	$N= 75$		
Self-esteem	4.95 (0.71)	4.96 (0.71)	0.00	0.50
Emotional Stability	4.69 (0.74)	4.65 (0.67)	0.21	0.53
Instruction	5.24 (0.61)	5.28 (0.59)	0.26	0.37
Management	5.24 (0.63)	5.24 (0.72)	0.01	0.42

Note: Because of missing data, for this analysis, total $N = 394$. * $p < .05$. ** $p < .001$.

Discussion

Levels of teachers' self-efficacy are determined by the nature of the student group and by the instructional situation (Raudenbush et al., 1992; Wolters & Daugherty, 2007). PBL aims to bolster students' behaviour and refine teachers' instructional approaches. Rather than employing a collage of individual behaviour management plans, PBL offers a systematic continuum of positive behaviour support which is underpinned by evidence-based practices that enhance the capacity of schools, families, and communities to respond effectively. It was hypothesised that since PBL focuses on enhancing student learning through improving student behaviour, teachers in PBL schools, would report higher levels of self-efficacy compared with non-PBL teachers. Although teachers in PBL schools did report higher levels of self-efficacy of instruction and management and self-esteem, these differences were small and not significant. Teachers from PBL and non-PBL schools did not differ in their self-efficacy of engagement and classroom management. These results attest that teachers in the WSR have a high sense of self-efficacy.

Emmer and Hickman (1991) conducted research into teachers' classroom management and discipline self-efficacy. Their findings highlighted disparities in self-efficacy ratings between the classroom teachers and the ratings of their supervisors. That is, teachers rated themselves more highly than their supervisors. Emmer and Hickman (1991) supported the accuracy of the supervisors' ratings over the teachers. This was due to the fact that the supervisors completed extensive observations of the teachers. Furthermore, they argued that the unrealistically high teacher self-efficacy ratings could be a result of protective mechanisms kicking in, whereby a high self-efficacy helps avoid negative feelings which would naturally occur with more accurate ratings. Protecting oneself from negative feelings could be an explanation for why teachers in the WSR had high levels of self-efficacy. If this is true, it is possible that this denial may impede a teacher from improving their performance since they believe they are already good.

Teachers in this research reported high levels of teacher self-efficacy. If we believe the minority of studies that suggest having a low self-efficacy is important because it induces desirable behaviours such as self-reflection and spurs teachers' motivation, then these findings could be seen as problematic (Wheatley, 2002). Having uncertainty in your ability can induce desirable behaviours such as increasing the likelihood that self-reflection occurs and it can spur motivation to learn (Woolfolk Hoy & Spero, 2005). If this is the case, then it is concerning that teachers in this paper reported undiscernibly high levels of self-efficacy, especially since research shows that once efficacy beliefs are established, they are resistant to change (Gencer & Cakiroglu, 2007). This conclusion needs to be placed in perspective because there are more studies that support the importance of teachers having high self-efficacies. Furthermore, low self-efficacy has been associated with avoidance behaviours (Woolfolk Hoy & Spero, 2005).

Teachers in the WSR have reported high self-efficacies and this is beneficial because these teachers have been shown to: (a) persist in the face of a challenge, (b) use more preventative measures to promote good behaviour (Jordan, Kircaali-Iftar, & Diamond, 1993), (c) be trusting of their students and therefore promote student autonomy, (d) foster a humanistic orientation to classroom management (Woolfolk & Hoy, 1990), (e) employ constructivist approaches to teaching including designing hands-on experiences (Riggs & Enochs, 1990), and (f) reduce the number of teacher-directed lessons (Ashton & Webb, 1986; Gencer & Cakiroglu, 2007).

Teacher efficacy has been shown to decline with more years in the profession (Anderson et al., 1988). Importantly, some research suggests that self-efficacy can be enhanced through teacher training courses (Stein & Wang, 1988). The willingness of teachers to implement innovations has been shown to relate positively to high teacher efficacy (Guskey, 1988). The present research supports the significance of these findings because the PBL initiative has been based on schools volunteering to be apart. One of the objectives of PBL was to improve the levels of teachers' self-efficacy through the training in PBL. It appears that teachers in PBL schools already had high levels of self-efficacy which would

therefore make them more likely to be receptive to the innovation. The WSR can benefit by teachers having high self-efficacies, knowing that new initiatives will be more likely be received positively.

This research found no differences in teacher efficacy between PBL and control group schools. This might suggest the possibility that the influence of PBL has as yet not moved sufficiently from school-wide and non-classroom settings to classroom settings, or that teachers themselves do not see PBL as related to their instructional capacity. Since efficacy scores were fairly high for both groups it would appear that, currently at least, teachers assess their own teaching competence with a view to other dimensions of teaching rather than to practices associated with PBL. However, this may change over time, given that PBL implementation at this stage has only just begun addressing classroom level practices that would be expected to have the most direct effects on teacher efficacy.

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Appendix

**Means and (Standard Deviations) of teachers' self-esteem, emotional stability,
and instruction and management efficacy scores**

	Experimental	Control	F (1,392df)	MSE
	<i>N</i> = 319	<i>N</i> = 75		
Self-esteem	4.95 (0.71)	4.96 (0.71)	0.00	0.50
Emotional Stability	4.69 (0.74)	4.65 (0.67)	0.21	0.53
Instruction	5.24 (0.61)	5.28 (0.59)	0.26	0.37
Management	5.24 (0.63)	5.24 (0.72)	0.01	0.42

Note: Because of missing data, for this analysis, total *N* = 394. * $p < .05$. ** $p < .001$.