

INITIAL TEACHER EFFICACY OF IN-SERVICE SECONDARY TEACHERS IN TRINIDAD AND TOBAGO

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Teacher efficacy is largely unexplored in Trinidad and Tobago, resulting in a deficit in understanding of teachers' beliefs about their ability to teach. This is important since teachers' beliefs influence how they feel about their work, how they assess and perform teaching tasks, and the educational experiences they provide for their students. This study examined three dimensions of teacher efficacy of secondary school teachers who were newly enrolled in an in-service teacher training programme at a university in Trinidad and Tobago. Teacher efficacy for classroom management, instructional strategies, and student engagement was measured using the Teachers' Sense of Efficacy Scale, and analysed for differences by participants' sex, age, years of service, and school type. There were no differences in teacher efficacy by teachers' sex and years of service. Teachers over 45 years reported significantly stronger teacher efficacy for classroom management than younger colleagues. Teachers at government-assisted schools reported significantly higher teacher efficacy for classroom management and student engagement than those at government schools. Follow-up research should examine the sources of efficacy information that influence teachers' practice, in order to determine the contextual factors related to the school environment that influence teacher efficacy, and the influence of teacher training on teacher efficacy beliefs.

Introduction

Teachers' beliefs are one of the most influential resources that teachers take with them into the classroom. Teachers' beliefs influence their behaviours and their decision making (Swars, Hart, Smith, Smith, & Tolar, 2007); how they "feel, think, [and] motivate themselves" (Bandura, 1993, p. 118); and "the quality of the educational experiences of their students" (Nelson, 2007, p. 10). Teacher efficacy refers to teachers' beliefs about their capabilities to perform various aspects of the teaching tasks. The deficit in teacher efficacy research in Trinidad and Tobago is worrying because teacher efficacy continues to be associated with teacher and student outcomes. These beliefs influence and predict teacher behaviours like effort on the job, persistence in overcoming obstacles, resilience when

facing failure, and levels of stress or depression experienced in managing demanding situations (Anderson, 2004; Tschannen-Moran & Woolfolk Hoy, 2007). They also influence teachers' beliefs about students' ability to learn, so that they expend more effort in teaching with clarity, which results in better student outcomes (Shidler, 2009). However, it is also unclear whether teacher efficacy beliefs are consistent among different groups of teachers, or if they vary by teacher characteristics and school environments in Trinidad and Tobago. Hence, this study sought to measure the initial teacher efficacy beliefs of a group of secondary school teachers in Trinidad and Tobago who were just beginning a 10-month in-service teacher training programme, to determine if such differences were observed.

Teachers' own past classroom experiences inform their beliefs about teaching and learning; and though individual teachers develop their beliefs differently, beliefs tend to become rooted and somewhat stable. Self-efficacy beliefs are future-oriented beliefs (Hoy, 2004) about one's capability to take the necessary actions to achieve a specific goal (Bandura, 1997). They refer to *perceived* ability, rather than *actual* ability; but are sufficiently powerful to influence thoughts and emotions, and, ultimately, action (Bandura, 2006). These beliefs are so important that research has been extended to various careers, including teaching. However, teacher efficacy research has focused primarily on pre-service primary teachers in North America, Europe, and Australia, and, more recently, in Turkey, Malaysia, and Botswana. While there is some research involving secondary teachers globally, there is an evident gap in the research in the Caribbean. Researchers in Trinidad and Tobago have not kept pace with research in other educational contexts, and the limited teacher efficacy research in Trinidad and Tobago has focused on primary teachers.

Recent research suggests that teacher efficacy may be altered and strengthened through consistent and deliberate exposure to professional development and teacher training that includes strengthening of teachers' content knowledge (Bayraktar, 2009; Tschannen-Moran & Johnson, 2011). It is against this backdrop that the present study was undertaken, to measure the teacher efficacy beliefs of secondary teachers who had been teaching for some time without prior professional training, and who voluntarily sought out teacher training at a tertiary institution in Trinidad and Tobago. This paper reports the findings of the first phase of a larger study to determine the influence of the in-service programme on its participants' teacher efficacy in three dimensions of the teaching task—classroom management, student engagement, and instructional strategies.

Contextual Background to the Current Study

Trinidad and Tobago is the southernmost state along the chain of Caribbean islands, and its significant deposits of oil and natural gas have positioned it as an economic pillar in the Caribbean. It gained independence from Great Britain in 1962, and is today considered a developing nation. Its government continues to prioritize the education of its citizens, albeit in a manner largely reflective of a colonial past that remains highly examination-driven, from early childhood to tertiary level. In this context, placement at primary and secondary schools is competitive as parents seek the *best* educational opportunities available for their children, particularly at the secondary level.

Secondary school teachers in Trinidad and Tobago are employed through the Teaching Service Commission. While they can enter the teaching service at any age from 18 to 45 years, retirement is compulsory at age 60 years. There is approximately twice the number of female teachers as male teachers in the secondary school system. The primary qualification for employment is an undergraduate degree, but some individuals who have not yet completed an undergraduate degree or who have only secondary level qualifications are also considered for employment. Currently, pre-service training is not a criterion for employment, but teachers have opportunities to engage in professional development within and outside of their schools to address their content and pedagogical knowledge. These circumstances suggest that individuals with some content knowledge can learn how to teach while on the job. Thus, it is likely that teachers initially rely on their own past experiences as students, and adopt the practices of their former teachers to cope with the demands of the classroom. These practices become habits when they are reinforced by some modicum of success with some students over time, even if they are not beneficial to the students. Thus, secondary teachers at any given school vary in age, academic qualification, content and pedagogical knowledge, and teaching experience. However, both academic and professional qualifications are fundamental to successful teaching (Agyeman, as cited by Okyere-Kwakye, 2013).

Although there are a few private schools and schools for students with special educational needs in Trinidad and Tobago, secondary schools primarily fall into a dual classification of government and government-assisted schools. Government schools are owned, funded, and managed by the state. Government-assisted schools are funded by the state but managed by faith-based organizations. Placement at secondary schools is based on a highly competitive, high-stakes selection examination that places top achievers at government-assisted schools, and has

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unintentionally created a perception that they are *better* than government schools. These perceptions are often shared by teachers at these schools, but it is unclear whether this dichotomous classification of schools influences the efficacy of teachers there.

Government investment in education extends to teacher training at little or no cost to teachers themselves. For most secondary teachers, formal training occurs during their full-time employment (in-service training), which becomes optional upon completion of at least two years of service. In the last decade, there has been an increased emphasis on training and certification of all teachers, which is now a criterion for promotion to administrative positions in the school or the education district. The state-funded In-Service Post-Graduate Diploma in Education Programme (PGDipEd), offered at the St. Augustine Campus of The University of the West Indies (UWI) in Trinidad and Tobago, is currently the most heavily subscribed formal training opportunity for practising secondary teachers in Trinidad and Tobago. However, despite the presence of similar training at other institutions, there remains a backlog of untrained secondary teachers. Teachers who access the PGDipEd are generally from government and government-assisted schools, which underscores the need to investigate how teacher efficacy may differ not only by teacher variables, but also by school type in the local context.

Theoretical Overview

Social Cognitive Theory (Bandura, 1989) suggests that individuals' internal processing of information from their current and past behaviour, their personal characteristics, and their environment influence their motivation and behaviour (Crothers, Hughes, & Morine, 2008), though these sources are not necessarily equally prioritized or simultaneously considered (Wood & Bandura, 1989). This theory comprises four interrelated goal-realization processes that influence motivation and goal attainment: self-observation, self-evaluation, self-reaction, and self-efficacy. The last of these, *self-efficacy*, plays a powerful role in predicting behaviour and behavioural change (Bandura, 1997).

A belief is an acceptance that some idea is true, even in the absence of supporting evidence. Self-efficacy beliefs are informed by an individual's *mastery experiences* (successful completion of appropriately challenging tasks with little assistance); their *vicarious experiences* (observing and assessing the successes of others whose abilities may or may not match theirs); their *emotional arousal*, pertaining to performing some tasks; and the *social persuasion* by competent others who express confidence in them (Bandura, 1977). Individuals with strong self-efficacy believe that they

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can accomplish a task in a given circumstance, even if it initially appears immediately insurmountable (Snyder & Lopez, 2007). They expect that engaging in particular behaviours will yield specific outcomes (Swars, 2005), but tend to pursue outcomes that they are more certain they can accomplish, rather than those about which they are less certain (Lunenburg, 2011).

Teacher self-efficacy, commonly referred to as *teacher efficacy*, is “a teacher’s individual beliefs in his/her capabilities to perform specific teaching tasks at a specified level of quality in a specified situation” (Dellinger, Bobbett, Olivier, & Ellett, 2008, p. 752), regardless of their particular educational setting, and across cultures and countries (Klassen et al., 2009). These beliefs refer to what teachers believe they *can* do, rather than what they *will* do (Bandura, 2006), and act as filters through which they interpret their situation and decide on their plans and actions (Pajares, 1992). Teachers with strong teacher efficacy tend to be creative, curious, persistent, and resilient go-getters in their classroom approach. However, these beliefs are subject to the individual teacher’s analysis of specific teaching tasks and his or her related teaching competence (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998), and their assessment of their teaching context (Bandura, 1997). Hence, teacher efficacy is a complex construct that changes as teachers’ experiences change over their careers, and interacts with their pedagogical choices. It has been well established as an important topic in education.

Measuring Teacher Efficacy

Attempts to measure teacher efficacy can be traced back to the RAND Corporation studies in the 1970s, and concerns still abound about our understanding of its nature and the precision and accuracy of traditional methods to clarify it. Research to advance understandings of teacher efficacy has been guided by two predominant models: the RAND model and the Bandura model. The RAND model deconstructed teacher efficacy into general and personal teacher efficacy, while the Bandura model positioned teacher efficacy within the realm of self-efficacy. Subsequently, the thrust in teacher efficacy research leaned towards Bandura’s model of self-efficacy. In 1984, Gibson and Dembo developed the Teacher Efficacy Scale using Bandura’s self-efficacy construct as its foundation, deconstructing efficacy into two independent dimensions: personal teaching efficacy and teaching outcome expectancy. Instruments to measure teacher efficacy continue to evolve as researchers attempt to clarify the “differentiated set of self-beliefs linked to distinct realms of functioning” (Bandura, 2006, p. 307).

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Various scales that have been developed or adapted for different contexts and domains include the Culturally Responsive Teaching Self-Efficacy Scale (Siwatu, 2007); the Collective Efficacy Scale (Goddard, Hoy, & Woolfolk, 2000); the Turkish Teacher's Sense of Efficacy Scale (Çapa, Çakıroğlu, & Sarıkaya, 2005); the Science Teaching Efficacy Belief Instrument (Riggs & Enochs, 1990); the Mathematics Teaching Efficacy Beliefs Instrument (Enochs, Smith, & Huinker, 2000); and the Teachers Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001). The last scale measures teacher efficacy in three areas of teachers' work: classroom management, instructional strategies, and student engagement; and has been widely used to measure these domains of teachers' daily practice. This scale most effectively demonstrates that teacher efficacy may vary among various components of teachers' day-to-day activities, and has also been found to be reliable and valid in various educational and cultural contexts. However, it remains unclear if Tschannen-Moran and Woolfolk Hoy's (2001) three-factor solution is appropriate for practising teachers (Fives & Buehl, 2010) in the context under study.

Three Domains of Teacher Efficacy

Teacher efficacy has been associated with positive student outcomes in behaviour, learning, motivation, and achievement. The three domains of interest in this study are teacher efficacy for classroom management, for student engagement, and for instructional strategies. Tschannen-Moran and Woolfolk Hoy (2001) define *teacher efficacy for classroom management* as teachers' perceived ability to manage and respond to disruptive student behaviour, and to establish expectations and rules to guide classroom behaviour. Efficacious teachers "have a classroom management system that reinforces good behaviour and weakens the undesirable behaviours of the student" (Steere, 1988, p. 159). Teachers' classroom management style is a reflection of their instructional strategies (Woolfolk Hoy & Weinstein, 2006).

Teacher efficacy for instructional strategies refers to teachers' perceived ability to create classroom environments that are conducive to learning by selecting instructional strategies that engage students in meaningful learning. It influences teachers' decisions about the nature and structure of classroom activities, as well as students' evaluation of their "intellectual capabilities" (Bandura, 1997, p. 240). Teachers with strong beliefs in this domain "invest more time teaching than controlling students who struggle with learning and/or behaviour difficulties" (Yeo, Ang,

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Chong, Huan, & Quek, 2008, p. 194), and appropriately modify instruction, when necessary, to engage students in meaningful learning.

Teacher efficacy for student engagement refers to teachers' perceived ability to develop relationships with all students, to motivate them to think creatively, to value learning, to improve their understanding, and to develop and strengthen their self-efficacy. Highly efficacious teachers find creative ways to keep students engaged during learning, and believe they can assist students to "become and remain involved, invested or motivated for learning" (Wolters & Daugherty, 2007, p. 182). Teachers who feel efficacious about their instruction, management, and relationships with students may have more cognitive and emotional resources available to press students towards completing more complex tasks and developing deeper understandings (Woolfolk Hoy & Davis, 2006).

Teacher Efficacy and Teacher Characteristics

Research has also explored the relationship between teacher efficacy and various teacher demographic characteristics and contextual factors, including teachers' sex, age, years of teaching experience, and teaching context. However, it must be noted that although there are general trends among research findings, these findings are not consistent across contexts, which may be due to variations in research contexts, populations from which samples are drawn, and the precision of the instruments used to measure the construct. Klassen, Tze, Betts, and Gordon (2011) argued that despite the volume of teacher efficacy research, the construct has yet to be completely clarified, and there remains "measurement and conceptual problems ... and uncertain relevance of teacher efficacy research to educational practice" (p. 21). Hence, the following review of the literature attempts to summarize some research in the areas of teacher efficacy and teacher characteristics of sex, age, years of teaching experience, and teaching context, with cognizance of these tensions.

Teacher efficacy and teacher sex. Tschannen-Moran and Woolfolk Hoy (2002) and Yeo et al. (2008) reported that male and female teachers did not differ significantly in their teacher efficacy; but Cheung (2006) reported that female teachers had significantly stronger efficacy beliefs than males. Klassen and Chiu (2010) and Shaukat and Iqbal (2012) reported that male teachers held stronger efficacy beliefs than females in classroom management, but not in instructional strategies and student engagement. However, research has not addressed how male and female teachers' efficacy beliefs in these three domains have influenced the teaching and learning environment, and, ultimately, student outcomes. As such, Brandon (2000) suggested that the beliefs of prospective male and

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female teachers about their ability to perform certain tasks and their general competencies should be assessed prior to exposure to the classroom, especially since sex-based teacher efficacy beliefs have not been conclusively dispelled as an influential factor in the classroom.

Teacher efficacy, age and teaching experience. Robinson and Edwards (2012) and Shaukat and Iqbal (2012) associated stronger teacher efficacy beliefs with younger teachers rather than older teachers; while Tschannen-Moran and Woolfolk Hoy (2007) found no such relationship existed. However, if Bandura is right about efficacy beliefs change over time, then these findings are debatable, since the maturation that accompanies aging is likely to influence perspective and, ultimately, beliefs. Teacher efficacy is fluid early in a teacher's career, regardless of age, but is difficult to change once it crystallizes and become rooted (Hoy, 2000).

On the other hand, Fives and Buehl (2010) and Page, Pendergraft, and Wilson (2014) reported no significant relationship between teacher efficacy and years of teaching experience. However, others suggest that efficacy beliefs strengthen as teachers accumulate teaching experience (Blackburn & Robinson, 2008; Cheung, 2006; de la Torre Cruz & Casanova Arias, 2007; Tschannen-Moran & Woolfolk Hoy, 2007; Wolters & Daugherty, 2007). This may be reflective of increasing confidence arising out of their mastery experiences and successes with students that less experienced teachers may not have accumulated over their much shorter time in the classroom (Wolters & Daugherty, 2007). In contrast, some suggest that teacher efficacy beliefs weaken through the latter years (Klassen & Chiu, 2010). Wolters and Daugherty (2007) reported a small effect of teaching experience on efficacy for instructional strategies and classroom management, but not for student engagement.

Teacher efficacy and the teaching environment. Teachers may believe themselves efficacious at certain tasks in certain contexts, but as elements of these tasks or contexts change, so too do efficacy beliefs (Tschannen-Moran & Woolfolk Hoy, 2007). The reciprocal relationship between teacher efficacy and the teaching environment is one of the internal processes described in social cognitive theory. The teaching environment is in part determined by the school climate. Teachers who work in a school with a positive school climate—where faculty strive for academic achievement, share a sense of community, and benefit from positive collegial feedback, support, and collaboration (Tschannen-Moran & Woolfolk Hoy, 2007)—have reported stronger teacher efficacy than those who do not. These characteristics have typically been associated with government-assisted schools in Trinidad and Tobago. Elements of school climate that reduce teacher efficacy include “excessive role demands, poor

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morale, lack of recognition ... low status ... professional isolation, uncertainty, and alienation” (Webb & Ashton, as cited by Tschannen-Moran & Woolfolk Hoy, 2007, pp. 6-7), which are characteristics that have been typically associated with government schools in Trinidad and Tobago.

Teacher Efficacy Research in the Caribbean

It is challenging to find teacher efficacy research in the Caribbean region, specifically among the secondary teacher population, but there has been some attention to teacher efficacy research in Trinidad and Tobago. In 2003, Pierre and Worrell compared teacher efficacy of primary (n = 77) and secondary (n = 146) teachers enrolled in an educational psychology course at UWI. They administered a questionnaire that comprised the Teacher Efficacy Scale (Gibson & Dembo, 1984); the Teacher Self-Efficacy Scale (Bandura, 2006); and two items from the RAND scale. The primary teachers in their sample were generally older and teaching for longer than the secondary teachers, and reported significantly stronger teacher efficacy than secondary teachers, especially as related to classroom practice. They attributed these differences to the compulsory training that primary teachers received, which was optional for secondary teachers (at that time). However, they reported that teaching experience was not a significant factor for teacher efficacy. They suggested that future research should attempt to determine the “potential of increasing the self-efficacy of secondary teachers through teacher training” (p. 112).

Worrell, Watkins, and Hall (2006) examined the demographic characteristics, educational qualifications, and teacher efficacy of 496 primary teachers in Trinidad and Tobago using Bandura’s Teacher Self-Efficacy Scale. Approximately 90% of the teachers in their sample were trained, with more years of teaching experience than their younger colleagues who were untrained. They reported no significant differences in the teacher efficacy for classroom management, student engagement, and instructional strategies, by sex; though females reported marginally higher means than males on these dimensions. They reported that years of teaching experience positively influenced teacher efficacy of teachers in their sample. Gowrie and Ramdass (2014) investigated differences in these same three dimensions of teacher efficacy, by school type, size, demography, sex, and years of teaching experience, among 532 primary teachers in Trinidad and Tobago. They reported no significant differences among the three dimensions investigated by school type, location, and size; or by teacher sex and years of teaching experience. However, they reported that school type and location were significantly correlated;

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suggesting that among primary teachers, those at rural, government-assisted schools interacted and shared more than those at other schools.

The Present Study

The PGDipEd is a 10-month teacher training programme offered by UWI and sponsored by the Ministry of Education of Trinidad and Tobago. It provides initial training to secondary teachers who have an undergraduate degree, at least two years of teaching experience at the secondary level, and who are currently in service at a secondary school in Trinidad and Tobago. Teachers are trained in the curriculum areas of mathematics, science, English, foreign languages, social studies, educational administration, visual and performing arts, and information technology. This paper reports on the findings of the first phase of a study of in-service secondary teachers' teacher efficacy beliefs, pre- and post-exposure to formal PGDipEd teacher training. This phase sought to answer the following research questions in relation to in-service secondary teachers at the start of their professional training:

1. *What is the nature and strength of the relationship among their teacher efficacy for classroom management, student engagement, and instructional strategies?*
2. *Which of the variables, sex, age, years of teaching experience, and school type, were significant factors for teacher efficacy for classroom management, student engagement, and instructional strategies?*

This study was premised upon the assumption that teacher efficacy beliefs could be adequately measured using the selected teacher efficacy scale, and participants would respond to the scale items with integrity and professionalism.

Method

This quantitative study sought to explore the initial teacher efficacy of in-service secondary teachers at the beginning of an in-service teacher training programme (2013–2014). Registered participants were administered a teacher efficacy instrument pre-training. This paper summarizes the findings of the pre-training phase of the research.

Participants

Participants were 174 in-service teachers from the 230 teachers to whom questionnaires were distributed, producing a response rate of 76% (n = 27 males and n = 147 females) whose ages ranged from 23 to 56 years (M = 35.25 years, SD = 6.45); with years of teaching experience ranging from 2 to 30 years (M = 9.44 years, SD = 5.45); and who taught at government schools (n = 120) and government-assisted schools (n = 69). Their curriculum concentrations were mathematics (n = 14); science (n = 35); English (n = 29); education administration (n = 14), visual and performing arts (n = 21), social studies (n = 42); modern languages (n = 14); and information technology (n = 7). Respondents were volunteers who received no inducement or reward for their participation, nor penalties for non-participation. Table 1 summarizes the demographic data.

Table 1. Demographic Data for Study Participants by School Type, Age, and Teaching Experience

	School Type		Age Range (yrs)			Teaching Experience (yrs)		
	Gov't	Ast'd	20-29	30-45	46+	0-5	6-15	16+
Male	18 (10.3%)	9 (5.1%)	3 (1.7%)	21 (12.1%)	3 (1.7%)	6 (3.4%)	15 (8.6%)	6 (3.4%)
Female	102 (58.6%)	45 (25.8%)	33 (19.0%)	101 (58.0%)	21 (12.1%)	42 (24.1%)	90 (51.7%)	15 (8.6%)

Instrumentation

The instrument comprised two sections: a demographic questionnaire and the Teachers' Sense of Efficacy Scale (long form) (Tschannen-Moran & Woolfolk Hoy, 2001), for which permission for use was obtained. The instrument measured teacher efficacy for classroom management (8 items); teacher efficacy for student engagement (8 items); and teacher efficacy for instructional strategies (8 items). Each Likert-type item was scored on a 9-point scale with *nothing* (1); *very little* (3); *some influence* (5); *quite a bit* (7); and *a great deal* (9). A mean score closer to 9 indicates strong efficacy beliefs, while a mean score closer to 1 indicates weak efficacy beliefs. Table 2 presents some examples of items in each dimension of teacher efficacy measured. The scale's developers reported high subscale reliabilities on this instrument (Table 2).

Table 2. Examples of Teacher Efficacy Items

Dimension	Sample items
Classroom Management	How much can you do to control disruptive behaviour in the classroom?
	How much can you do to calm a student who is disruptive or noisy?
Student Engagement	How much can you do to motivate students who show low interest in schoolwork?
	How much can you do to get students to believe they can do well in school work?
Instructional Strategies	To what extent can you provide an alternative explanation or example when students are confused?
	How well can you implement alternative teaching strategies in your classroom?

Procedures

Participants were debriefed about the study by the researcher between lecture sessions during the second week of the PGDipED. They were also provided with a brief introductory letter explaining the nature of the study and instructions for completing the instrument. They were allotted 20 minutes to complete the instrument, on site. Upon completion of the instrument, they were collected and immediately placed into an envelope to assure respondents of confidentiality. Data were entered into Excel, and later transferred to SPSS20 for analysis.

Variables

Constructs are mental abstractions of ideas that are not directly observable, and they sometimes are ambiguous. Hence they must be operationally defined to transform them to variables, which have characteristics that can be measured. The constructs of teacher efficacy for classroom management, student engagement, and instructional strategies in this study were operationally defined as the dependent variables; each variable was a metric continuous variable that was the mean of scores on eight Likert-type items related to it. The independent variables were less abstract constructs that were measured using categorical variables of respondents' sex, age, years of teaching experience, and school type.

Data Management

Prior to analysis, data were screened to ensure that they were accurate, complete, and consistent with the underlying assumptions of statistical tests, including sampling adequacy. Variables were examined for outliers and for skewness and kurtosis. Statistical analyses included Principal Component Analysis (PCA) with Varimax factor rotation to verify the factor structure of the TSES. This method is commonly used for instrument validation through testing and confirming the factor structure of the TSES in various contexts, and different study populations (Brouwers & Tomic, 2001; Gavora, 2011; Goddard & Goddard, 2001; Schultz & Whitney, 2005). The three-factor structure identified in the North American and other contexts had not been demonstrated in the Trinidad and Tobago context. While the reliability and validity of the TSES has been established in other educational contexts (Çapa, Çakıroğlu, & Sarıkaya, 2005; Fives & Buehl, 2010; Garberoglio, Gobble, & Cawthon, 2013; Nie, Lau, & Liau, 2012; Tsigilis, Grammatikopoulos, & Koustelios, 2007), minor variations have also been reported (Johar & Badrasawi, 2009; Wolters & Daugherty, 2007), which researchers attributed to contextual and sample differences. Validating the TSES for local use ensured that inferences from data analysis were reliable and valid. Statistical analysis also included descriptive statistics for comparing the dimensions of teacher efficacy across teacher variables; tests of association were computed to examine relationships among dimensions of teacher efficacy; and means-difference tests were used to identify significant differences among dimensions of efficacy across teacher variables.

Results

Factor Structure of Teachers' Sense of Efficacy Scale (long form)

PCA initially returned four components that explained 63.4% of the variance. Item 24, which refers to challenging capable students, loaded separately. However, omitting Item 24 from the scale and reducing the teacher efficacy for instructional strategies subscale to seven items improved its reliability and explained 60.62% of the variance. Table 3 presents the reliabilities of the measures of teacher efficacy, with Item 24 included and excluded from teacher efficacy for instructional strategies.

Table 3. Reliability for Overall Efficacy and Three Dimensions Including and Excluding Item 24

Measure of Efficacy	Reliability (α) for TSES	Reliability (α) Including Item 24	Reliability (α) Excluding Item 24
Classroom Management	.90	.91	.91
Instructional Strategies	.91	.83	.88
Student Engagement	.87	.88	.88

In the final analysis, it was concluded that the three-factor structure represented in the measurement model in Figure 1, which excluded Item 24, would be used for the analysis.

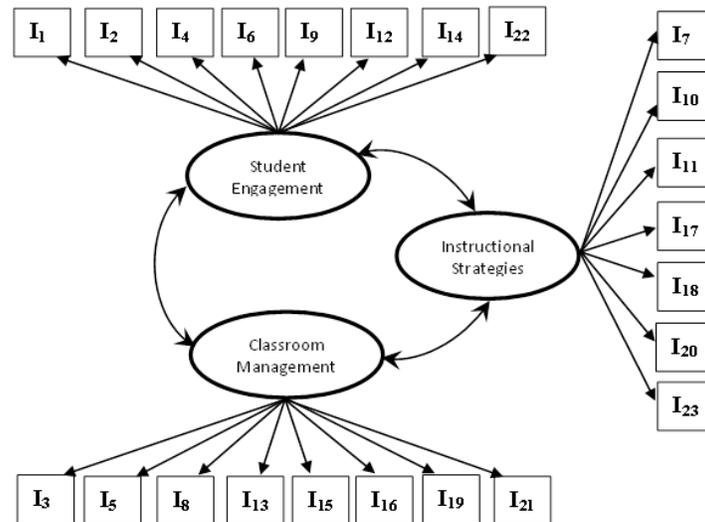


Figure 1. Measurement model of teacher efficacy.

Pearson’s rank-order correlations revealed strong positive significant correlations among teacher efficacy for classroom management, instructional practice, and student engagement (Table 4).

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Table 4. Pearson’s Rank-Order Correlation Between Measures of Efficacy

Measures of Efficacy	Instructional Strategies	Classroom Management
Student Engagement	.687**	.724**
Instructional Strategies		.650**

** $p < .001$ (2-tailed).

Relationships Between Teacher Efficacy and Teacher Variables

Sex. An independent samples t-test compared the means of male and female in-service teachers’ reported teacher efficacy for classroom management, instruction, and student engagement. A summary of the results is provided in Table 5.

Table 5. Summary of t-test for Measures of Efficacy by Sex (equal variances assumed; n = 174)

Measures of Efficacy	Sex								
	Overall		Male		Female		df	t	Sig.
	M	SD	M	SD	M	SD			
Instructional Strategies	6.75	1.03	6.95	1.10	6.71	1.02	172	1.13	.26
Student Engagement	6.19	1.11	6.19	1.11	6.19	1.11	172	.21	.98
Classroom Management	6.81	1.13	6.93	1.29	6.79	1.20	172	.59	.55

Non-significant results were noted for teacher efficacy for classroom management, $t(172) = .59$, $p = .55$; teacher efficacy for instructional strategies, $t(172) = 1.13$, $p = .26$; and teacher efficacy for student engagement, $t(172) = .21$, $p = .98$. The overall score for the entire group of teachers was lowest for student engagement, with males and females reporting equally strong efficacy beliefs. Overall, male teachers felt more efficacious than their female counterparts in all measures of teacher efficacy.

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Age. Univariate between-subject ANOVA examined the effect of age on teacher efficacy beliefs of in-service teachers. Table 6 summarizes teachers' perceptions of efficacy by age.

Table 6. Summary of Means, Standard Deviations, and Univariate ANOVA for Measures of Efficacy by Age (equal variances assumed; n = 174)

Measures of Efficacy	Age								
	20-29		30-45		over 45		df	F	Sig
	M	SD	M	SD	M	SD			
Instructional Strategies	6.54	.160	6.71	.096	7.45	.184	2	4.60	.011
Student Engagement	6.07	.168	6.16	.104	6.73	.238	2	2.18	.117
Classroom Management	6.52	.179	6.84	.105	7.19	.228	2	2.18	.116

Results indicated that age was a significant factor for instructional strategies only. Tukey HSD post hoc comparisons indicated that all age groups of in-service teachers differed significantly from each other in teacher efficacy for instructional strategies. Those in the 20–29 age group reported significantly weaker efficacy beliefs than those in the 30–45 and over-45 age groups; those in the 30–45 age group reported significantly weaker efficacy beliefs than those in the over-45 age group. For overall teacher efficacy, the only significant difference occurred between in-service teachers in the 20–39 and over-45 age groups. Here, too, in-service teachers reported the lowest efficacy beliefs for student engagement. Overall, older in-service teachers reported stronger teacher efficacy beliefs than younger ones.

Years of service. Univariate between-subject ANOVA examined the effects of years of teaching experience at the secondary level on in-service teachers' efficacy beliefs. Table 7 summarizes these results.

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Table 7. Summary of Means, Standard Deviations and Univariate ANOVA for Measures of Efficacy by Years of Service (equal variances assumed; n = 174)

Measures of Efficacy	Years of Service						df	F	Sig.
	0-5		6-15		over 16				
	M	SD	M	SD	M	SD			
Instructional Strategies	6.84	.156	6.68	.091	6.87	.303	2	.598	.551
Student Engagement	6.31	.12	6.10	.099	6.37	.302	2	.971	.381
Classroom Management	6.32	.127	6.10	.099	6.38	.302	2	.042	.959

Teaching experience was not a significant factor for measures of teacher efficacy. Teacher efficacy for classroom management was the lowest for all groups. However, it is noted that in-service teachers with more than 16 years of teaching service reported stronger teacher efficacy than their less experienced colleagues, but the 6–15 years group reported the weakest teacher efficacy beliefs among all teachers surveyed.

School type. An independent samples t-test compared teacher efficacy of in-service teachers at government and government-assisted schools. A summary of results is provided in Table 8.

Table 8. Summary of Means, Standard Deviations, and t-test for Measures of Efficacy by School Type (equal variances assumed; n = 174)

Measures of Efficacy	School Type				df	t	Sig.
	Government		Assisted				
	M	SD	M	SD			
Instructional Strategies	6.71	1.07	6.82	.94	172	-0.64	.523
Student Engagement	6.05	1.14	6.51	.98	172	-.2.57	.011
Classroom Management	6.61	1.14	7.24	.96	172	-3.54	.001

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In-service teachers at government-assisted schools reported statistically significant stronger teacher efficacy for classroom management, $t(172) = -3.54, p = .001$; and teacher efficacy for student engagement, $t(172) = -2.57, p = .011$ than teachers at government schools. However, though the difference in teacher efficacy for instructional strategies was not significant, in-service teachers at government-assisted schools ($M = 6.82, SD = .94$) reported higher teacher efficacy than those at government schools ($M = 6.71, SD = 1.07$). It was noted that the mean for efficacy for student engagement was the lowest among all measures of teacher efficacy. Overall, in-service teachers at government-assisted schools held stronger teacher efficacy beliefs than their colleagues at government schools, in all measures of teacher efficacy.

Discussion

This study explored the teacher efficacy beliefs of secondary teachers who were enrolled in a graduate-level professional development programme at a tertiary institution in Trinidad and Tobago. Analysis sought potential relationships among teacher efficacy for classroom management, student engagement, and instructional strategies; and to determine if, for the current sample, these dimensions of teacher efficacy differed by teachers' sex, age, years of teaching experience, and school type. The significant relationships among all dimensions of teacher efficacy observed in this sample corroborated earlier research that correlated teachers' beliefs about various aspects of teachers' work: their perceived ability to manage their classroom, appropriately select their instructional strategies, and meaningfully engage their students. Although this sample comprised in-service secondary teachers in Trinidad and Tobago, these findings mirrored those from studies of pre-service teachers in preparation for work in both primary and secondary schools (Gowrie & Ramdass, 2014).

Although sex was not a significant factor for teacher efficacy for this sample (Tschannen-Moran & Woolfolk Hoy, 2002; Yeo et al., 2008), male teachers reported stronger efficacy for instructional strategies and classroom management than female teachers (cf. Klassen & Chiu, 2010; Shaukat & Iqbal, 2012). Quite possibly, the legacy of male dominance in Trinidad and Tobago has currency in the classroom, fuelling the beliefs of male teachers about their ability to manage their classrooms and make decisions about their instruction, while females are nurturers whose role it is to engage children. However, the latter explanation may be unfounded since male and female teachers in this study reported equal efficacy for student engagement. Of note, however, is that teacher efficacy for student engagement was lowest for both male and female teachers. This suggests

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the presence of other factors in the classroom that neither sex has been able to address sufficiently to strengthen their perceived ability to engage their students, such as capturing and retaining the attention of children who live in a highly advanced technical world by using strategies that emerged during the pre-digital era.

Mature teachers (over 45 years) and latter-career teachers (over 15 years of experience) in this study reported the strongest efficacy beliefs; while middle-aged teachers (30–45 years) and mid-career teachers (6–10 years of experience) reported the weakest efficacy beliefs, even weaker than their youngest and least experienced colleagues (cf. Bandura, 2006). This particular finding is curious, because teacher efficacy, as with any other belief, may be expected to strengthen with age and with years of teaching experience. One may conjecture that teachers who have encountered sufficient challenges during their early years in teaching may begin to experience burnout and dissatisfaction by the time they are mid-career, and begin to doubt or question their capability to perform the various components of the teaching task successfully (Bandura, 1997; Day et al, 2006). Burnout has been associated with jobs like teaching (Haberman, 2004; Hakanen, Bakker, & Schaufeli, 2006), in which individuals perceive their remuneration is not commensurate with the amount of work they produce and the responsibility for others that they shoulder (Scott, 2014), in the under-resourced and poor working conditions in which they function (Hutman, Jaffe, Segal, Kemp, & Dumke, 2005). However, it is likely that older teachers and latter-career teachers have matured in the profession and have accumulated mastery experience and successes that have, over time, strengthened their efficacy beliefs (Wolters & Daugherty, 2007) and mitigate feelings of burnout.

In-service teachers at government-assisted schools reported stronger efficacy beliefs in all dimensions of teacher efficacy than those at government schools. This finding may be indicative of how teachers' experiences at their schools, opportunities to learn vicariously from colleagues, and verbal support from significant stakeholders, may have influenced how they feel about their work and how they view themselves (Bandura, 1997). In Trinidad and Tobago, school type has become a form of stereotype for teachers and students at these two different types of schools, and most government schools are overshadowed by government-assisted schools. It is not uncommon to hear the teachers at government schools echo the sentiments of Webb and Ashton (as cited by Tschannen-Moran & Woolfolk Hoy, 2007) that schools like government-assisted ones are better and have better students, working conditions, and better teachers than government schools. Teachers are members of the very society in which they live and work, and in Trinidad and Tobago, government-

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assisted schools are highly regarded while government schools are underestimated and undervalued. Thus, it is not surprising that, in this study, teachers at government schools have weaker teacher efficacy than those at government-assisted schools.

Limitations

This study is not without its limitations, which must be acknowledged prior to discussing the implications of its findings. For example, although the sample size was adequate for the statistical analyses conducted in this study, these findings remain tentative and localized to this sample until they are confirmed by further research. Additionally, the assumption that teacher efficacy is a measurable construct remains contentious in the research community, since, despite the considerable amount of teacher efficacy research, conceptual and measurement problems still exist (Klassen, Tze, Betts, & Gordon, 2011). Hence, differences in research findings may be due to differences in research contexts, populations, construct definition, and instrumentation. Finally, the design and nature of this quantitative study provides a snapshot of teachers' beliefs at a particular time, without consideration of factors that may influence these beliefs.

Conclusion and Recommendations

The present study explored the initial teacher efficacy of in-service secondary teachers in Trinidad and Tobago, who were at the start of a 10-month teacher training programme at UWI, St. Augustine. This study contributes to the research on teacher efficacy in the Caribbean contexts, particularly to the study of teachers in Trinidad and Tobago who are teaching at schools *without* prior formal teacher training in their curriculum content area. While the objectives of the present study were met, it raised many questions that require a more in-depth understanding of teacher efficacy, which a quantitative study cannot provide.

One such question arises around the potential influence of teacher sex on teacher efficacy beliefs. While the present study did not reveal significant differences between male and female in-service secondary teachers' teacher efficacy, there were differences between males and females in their reported teacher efficacy for classroom management, student engagement, and instructional strategies. A closer look at how males and females develop their teacher efficacy beliefs is warranted—examining their prior classroom experiences as students and as teachers, the role of the sex of their own teachers, and how teacher efficacy beliefs

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are manifested in the classroom. A closer examination of contextual factors, other than the significant factor of school type explored in the present study, is warranted to examine how the nature of teachers' daily experiences influence their assessment of the teaching task and related efficacy beliefs. Such contextual factors include relationships among teachers and administration, students, and parents; and support and opportunities for professional development, since sources of efficacy information may influence younger/older or less/more experienced teachers differently. Further, since it is not known how the previous experiences and cultural background of teachers in Trinidad and Tobago have influenced their beliefs about their success as teachers in their teaching context, in-depth interviews and observations of these teachers' school and classroom practices may reveal other factors that influence their teacher efficacy, such as locus of control and personality factors.

This study of teacher efficacy in the Trinidad and Tobago context captured some, but not all, aspects of the construct and its influence on the teaching and learning environment. For instance, the present study did not examine the sources of teacher efficacy that in-service secondary teachers prioritized during their years of service, including information from their teaching contexts and their own past and present experiences in the classroom. Such information is not only of importance to teachers themselves, but to teacher educators and programme developers as well. Professional development that is guided by this information can be so structured as to strengthen the components that provide the sources of information to which teachers are most attentive, and which will further support and strengthen teachers' efficacy beliefs. Research also ought to focus on how professional development for teachers strengthens their teacher efficacy in all dimensions, and how these beliefs change during ongoing professional development. Such information may guide teacher educators in the content, and pedagogical experiences and support they provide to teachers who pursue these programmes, and who are at different stages in their professional lives, which, in turn, may influence the quality of teaching and learning.

Finally, the current research provides empirical data about teacher efficacy beliefs, specifically those beliefs of a specific group of untrained secondary school teachers who were at the beginning of their formal teacher training. This study provides the groundwork for a more comprehensive study of secondary teachers' teacher efficacy on a national scale, having validated the instrument for use in the Trinidad and Tobago educational context. It also provides opportunity for further explorations of teacher efficacy beliefs, to determine the relationship between secondary teachers' teacher efficacy and secondary students' outcomes

like student efficacy, student confidence to do their subjects, and student achievement in various curriculum content areas in Trinidad and Tobago.

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