



## SOURCES OF PERSONAL TEACHER EFFICACY AND INFLUENCE ON TEACHING METHODS AMONG TEACHERS IN PRIMARY SCHOOLS IN COAST PROVINCE, KENYA

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### Abstract

This study explored demographic and contextual predictors of Personal Teacher Efficacy and the extent to which they determine teachers' choice of either traditional or innovative teaching techniques. The study was conducted among a convenient sample of 80 primary school teachers (70.9% female and 29.1% male) attending a degree program at Kenyatta University in Mombasa campus, Coast Province, Kenya. Data were collected through a self-report questionnaire adapted from the Teachers' Sense of Self-Efficacy Scale (Tschannen-Moran & Hoy, 2001) and the Mentor Support Scale (Capa & Loadman, 2004). A series of multiple regression analyses was done on data collected. Teacher efficacy was found to vary by gender, length of teaching and subject taught. Demographic characteristics did not influence the choice of teaching techniques. Verbal persuasion and mastery predicted personal teacher efficacy. Mastery significantly predicted use of innovative techniques in teaching. Personal teacher efficacy mediated the relationship between verbal persuasion and mastery in the use of traditional methods but not for innovative methods. Recommendations for staffing and training were given.

**Key words:** mastery experiences, vicarious experiences, verbal persuasion, Personal Teacher Efficacy, choice of teaching methods.

### 1.1 Introduction

Personal teacher efficacy is an individual teacher's belief of his/her ability to make a difference in learners' lives. These beliefs predict teacher effectiveness and influence the instructional strategies teachers choose to use. Bandura (1986) proposed four sources of teacher efficacy: mastery experiences, vicarious experiences, verbal persuasion, and physiological arousal (Hoy, 2000).

Mastery experience or the interpreted result of one's purposive performance is cited as the most influential source of teacher self-efficacy. Their outcomes at task performance determine the extent to which teachers develop efficacy. Outcomes interpreted as successful raise self-efficacy while those interpreted as failures lower it (Pajares, 1997). The vicarious experience of the effects produced by the actions of others helps one gauge their own abilities in task performance. Models help instil self-beliefs that will influence the course and direction of teachers' task performance. Modelling can take three forms: when the teacher observes other experienced models at task performance, when the teacher is observed during task performance and when the teacher gets feedback concerning task performance. Social comparison made with other individuals therefore influence teacher efficacy. Individuals also create and develop self-efficacy beliefs as a result of the verbal persuasions they receive from others. These persuasions involve exposure to the verbal judgments that others provide. Finally, physiological states such as anxiety, stress, arousal, fatigue, and mood states also provide information about efficacy beliefs (Pajares, 1997). Subsequent studies based on Bandura's model have found mastery experiences as the source most correlated with teacher efficacy.

Research into teacher efficacy has focused on its importance in choice of use of innovative instructional techniques. Studies indicate that highly efficacious teachers are more likely to implement instructional innovation in the classroom (Zhao and Cziko, 2001 as cited in Teo, 2009). Such innovation includes the use of open-ended, inquiry and student-directed teaching strategies as opposed to teacher-directed strategies like lecture or reading from the textbook. This is because teachers in high efficacy have confidence in adopting difficult and risky innovative strategies and are open to new ideas and skills (Khurshid, Qasri & Ashraf, 2012). Because of this, it can be discerned that a link exists between teachers' efficacy and learning outcomes. However, to date research on the link between personal teacher efficacy and choice of instructional variation is sparse (Looney, 2003).

Contradictory findings exist on the link between demographic factors and personal teacher efficacy. Two major trends emerge in research: While some studies (Egger, 2006; Gur, Cakiroglu & Aydin, 2012; Hoy & Woolfolk, 1993) found out that gender, teaching experience and support from colleagues were not significant predictors of teaching efficacy, others, (Kurz, 2001, cited in Capa, 2005) have found differences in personal teacher efficacy on the basis of gender. A further review of the literature shows that researchers omit demographic variables in their analyses. For instance, a study by Ross, Cousins and Gadalla (1996) collected demographic information of teacher's years of teaching experience, gender, level of education and subject area but did not include the information in the analysis. This makes it difficult to identify the role of such variables in personal teacher efficacy.

Research on contextual predictors of personal teacher efficacy has reported mixed findings. While some studies (Capa, 2005; Tschannen-Moran & Hoy, 2001) report that support from colleagues within the department was not correlated with personal teacher efficacy, a minority (Looney, 2003) show that teacher efficacy was significantly and positively related to teachers' perceptions of a departmental community. Personal teacher efficacy was also significantly and positively correlated with verbal persuasion and teachers' views of colleagues as proficient teaching models. Finally,

research in the area of personal teacher efficacy is limited in Africa. The available studies have focused on teachers' perceptions of their self-efficacy (Adedoyin, 2010); the relationship between personal teacher efficacy and classroom management styles (Sridhar & Semana, 2011) and personal teacher efficacy in the use of Information Technology by teachers (Batchelor, 2011). These studies leave room for more research in the area of personal teacher efficacy and its relationship with the choices that teachers make in instructional methods.

## 1.2 Statement of the Problem

In an effort to increase access to education and improve learner outcomes, the Government of Kenya has invested in education through infrastructure development and the expected introduction of laptops in schools. However, the success of the endeavour requires an understanding of teachers' behaviours that improve effective learning, for instance personal teacher efficacy. This is important because teachers are the primary agents in implementing the curriculum and their personal perceptions concerning their ability ultimately influence instructional strategies and are related to learners' achievement. Teacher efficacy has been associated with teachers' choice of instructional decisions in content delivery, confidence in task performance and ultimately positive learner outcomes. Much of the research on personal teacher efficacy has been carried out outside Africa and has partially attempted to link personal teacher efficacy with choice of teaching method. Additionally, inconsistencies exist in the literature regarding the sources of efficacy information. Due to the paucity of research in the area of personal teacher efficacy in Kenya, this study was considered urgent. Since most findings support the importance of teacher efficacy on teaching, it is important to study the sources of efficacy to provide information on Kenyan teachers' efficacy beliefs. This is important for teacher motivation especially in the fast-changing curriculum. Therefore given the importance of teacher efficacy, this study aimed to identify the demographic and contextual variables linked to higher personal teacher efficacy and investigate the extent to which teacher efficacy mediates their effect on choice of teaching methods.

## 1.3 Study Objectives

The objectives of this study will be to:

- i. Establish the level of personal teacher efficacy among primary school teachers.
- ii. Establish the contribution of demographic characteristics of age, gender, level of education and years of teaching experience to personal teacher efficacy.
- iii. Determine the contribution of feedback concerning task performance to personal teacher efficacy.
- iv. Establish the contribution of identification with academic department to personal teacher efficacy.
- v. Find out the contribution of teacher's mastery of teaching methods to personal teacher efficacy.
- vi. Determine the extent to which demographic variables, vicarious experiences, verbal persuasion and mastery experiences determine choice of instructional methods.
- vii. Establish the extent to which personal teacher efficacy mediates teachers' choice of teaching methods.

## 1.4 Theoretical Framework

The study was based on the Self-efficacy theory as developed by Bandura (1986). Self-efficacy is a belief that one is capable of performing in a certain manner to attain certain goals (Khurshid et al. 2012). According to Bandura's model there are four principal sources of information on self-efficacy: mastery experiences or enactive attainment, modelling or vicarious experiences, verbal persuasion, and physiological arousal. Mastery experiences involve direct, personal performance of a task, or the actual experiences which an individual undergoes. Vicarious experiences involve observing someone else successfully complete a task and receiving feedback about the task. Research has shown that teacher efficacy can be influenced by watching an expert or model successfully complete a particular task (Hoy, 2000). Additionally, it is thought that vicarious experience is more influential when people have no prior experience and hence rely on models. Verbal persuasion is based on social comparison and is seen through praise of one's abilities from others (Lewandowski, 2005). It arises when one is told repeatedly that he/she is able to accomplish a particular task. One or more of these sources of efficacy are at play at a given time.

## 1.5 Conceptual Framework

The primary factor affecting teacher efficacy is the teacher's interpretation of the four sources of information on efficacy i.e. verbal persuasion, vicarious experience, mastery experiences and physiological arousal. However, the information is interpreted differently by each individual. Accordingly, judgments about efficacy are dependent on the interaction of demographic (age, gender, level of education, teaching experience and mastery of teaching methods) and contextual factors (support from colleagues in the academic department). In turn, personal teacher efficacy mediates their influences on the choice of instructional methods. This model has been developed to investigate the influence of three of the four sources of efficacy information developed by Bandura (1997), that is, mastery experiences, vicarious experiences and verbal persuasion. The study does not intend to control for physiological arousal.

## 2. Research Methodology

Participants were 80 (56 female, 24 male) teachers attending a holiday-based education degree course at Kenyatta University, Mombasa Campus. Respondents completed a questionnaire comprising of items adapted from the Teachers' Sense of Self-Efficacy Scale (Tschannen-Moran & Hoy, 2001) and the Mentor Support Scale (Capa & Loadman, 2004). The questionnaire was completed in the classroom. A hierarchical regression analysis was conducted to establish the respective contributions of demographic factors, vicarious experiences, verbal persuasion and mastery on personal teacher efficacy. To find out whether personal teacher efficacy influenced the choice of instructional techniques, further regression analyses were done. Since personal teacher efficacy was hypothesised to mediate the influence of predictors

on choice of instructional techniques, personal teacher efficacy was entered in the second equation as the mediator. Table 1 (Appendix 1) displays the means, standard deviations and Pearson correlations among all the variables.

### 2.1 Level of personal teacher efficacy among primary school teachers

The first objective of this study was to establish the level of personal teacher efficacy. Teachers were able to rate themselves on how they perceive their levels of professional effectiveness, and were also able to distinguish between two aspects of their professional work in which they feel more and less effective. The teachers perceived that they were able to incorporate a variety of innovative techniques in teaching (Mean = 4.1392) and felt confident about their teaching abilities (Mean = 4.5844). Generally, personal teacher efficacy was high (Mean = 4.3618).

The findings of this study seem to lend support to Adedoyin (2010) whose study on junior secondary school teachers' self-efficacy found that it was based on their professional abilities in the classroom to create a conducive learning and teaching atmosphere for effective learning outcomes. However, the findings contradict Rangraje (2002) whose findings indicate strongly that many teachers surveyed displayed a low sense of efficacy and found it difficult to cope with the challenges of their educational environment. This was found to be due to contextual challenges like teaching large classes, not being involved in decisions by school management, and poor staff development among others. It therefore seems that some working conditions are unhealthy for the development of personal teacher efficacy.

### 2.2 Demographic characteristics and personal teacher efficacy

The second objective of this study was to determine the contributions of demographic factors of age, gender, years of teaching experience, subject taught and number of teachers in the department on personal teacher efficacy. A summary of the relative contribution of demographic variables hypothesized to contribute to teacher efficacy was presented in Table 2.

Findings of the study show that teachers aged 35-45 reported highest personal teacher efficacy ( $M = 9.333$ ,  $sd = 1.15$ ) while female teachers reported higher teacher efficacy ( $M = 8.8519$ ,  $sd = 1.088$ ). Both teachers who had taught between 11-15 years and those who had no colleagues in their academic departments reported similar high levels of PTE ( $M = 9.6667$ ,  $sd = .57735$ ). Finally, Science teachers reported highest teacher efficacy ( $M = 9.000$ ,  $sd = 1.000$ ). It was found that .3% of the variance in teacher efficacy was accounted for by demographic factors,  $F(1, 71) = .217$ ,  $p < .05$ . Relative to the influence of gender, teachers whose length of teaching spanned 10-15 years reported higher teacher efficacy compared to those between 1-5 and beyond 16. The finding concerning the relationship between teaching experience and teacher efficacy partially supports findings by Soodak and Poodell (1997) who found teacher efficacy to be initially high for the elementary teachers during the pre-service teaching years but in the first year of teaching, this sense of personal efficacy fell dramatically. However, with more years of teaching experience, their personal efficacy gradually increased but their sense of their own effectiveness never reached the same levels achieved by secondary-level teachers. This might explain the dip in teacher efficacy of teachers who had more than 15 years of teaching experience. However, this contradicts Bandura's theoretical postulation which suggests that efficacy is most malleable early in learning, thus the first years of teaching could be critical to the long-term development of teachers' sense of efficacy. The implication is that the low levels of efficacy found among novice teachers (1-5 years) indicates that teacher efficacy is not directly related to age and years of teaching experience alone among this sample.

Additionally, more Science than Language, Mathematics and Social Studies teachers reported higher teacher efficacy. This finding seems to lend support to Gerges (2001) whose qualitative study found that a teacher's subject area influenced their choice of teaching methods. Three participants in the study expressed the belief that while some content areas, such as science and social studies, lend themselves to student-centered methods, others such as math and reading did not. A substantial number of studies support the notion that teachers do possess beliefs about content, and that such beliefs tend to shape the nature of their instructional practices (Blanton & Moorman, 1987; Brophy & Good, 1974; Nespor, 1987, cited in Gerges, 2001).

Age had a strong negative correlation with teachers' use of innovative instructional techniques, a finding that supports Hartfield (2011) who found teacher's experience to be associated with teacher efficacy. In line with previous research, demographic factors least explained teacher efficacy and choice of teaching methods. A number of studies (Egger, 2006; Gur et al., 2012; Hoy & Woolfolk, 1993; Khurshid et al., 2012) found no relationship between teachers' demographic characteristics and teacher efficacy but offer partial support to Kurz (2001) cited in Capa (2005) who found gender differences on teacher efficacy ratings. The finding concerning the relationship between length of teaching and teacher efficacy seems to offer support for Hartfield (2011) and Tschannen-Moran and Hoy (In press) who found somewhat lower mean self-efficacy beliefs among novices than among career teachers. This lower assessment of their teaching capabilities is linked to the relative inexperience of these teachers. This means that a complete understanding of teacher efficacy requires taking into account two different kinds of factors: general demographic factors common to all teachers as well as more personal factors specific to each teacher. These factors are yet to be studied simultaneously.

### 2.3 Vicarious experiences on personal teacher efficacy

Another objective of this study was to establish the contribution of vicarious experiences on teacher efficacy. It was hypothesised that greater similarities between a teacher and colleagues within the department would lead to higher teacher efficacy. For ease of analysis, vicarious experiences were identified and entered as three models (Vicarious 1, 2 and 3) on the basis of the teacher observing other teachers in task performance, other teachers observing the teacher in task performance and finally, receiving feedback on task performance. When entered in the hierarchical regression equation, vicarious 1 accounted for 3.5% of variance in teacher efficacy beyond that accounted for by demographic factor  $F(2, 68) = 1.218$ ,  $p < .05$ . Vicarious 2 and vicarious 3 explained 4% and 4.1% variance in teacher efficacy respectively [ $F(3, 67) = .937$ ,  $p < .05$ .;  $F(4, 66) = .698$ ,  $p < .05$ ]. Vicarious experiences cumulatively accounted for 1.9% variance in teacher efficacy while the regression equation was not found to be significant.

Teachers' observing others in task performance (Vicarious 1) were found to have high positive correlations with the use of traditional techniques while teachers who were observed during task performance (Vicarious 2) were more likely to adopt both traditional and innovative instructional techniques. Feedback given to teachers after task performance (Vicarious 3) accounted for the highest correlation with the use of traditional techniques. Research in the relationship between vicarious experiences and teacher efficacy has focused on the role of models. To that extent, these findings contradict Rangraje (2002) who found a large number of respondents (68%) to have indicated that there is much disharmony amongst teachers. The implication is that isolation and maintaining a low sense of inter-dependence does not cultivate an environment to learn from models. It is therefore expected that vicarious experience will not significantly influence the development of teacher efficacy.

#### **2.4 Verbal persuasion on personal teacher efficacy**

A further objective of the study was to establish the contribution of verbal persuasion on teacher efficacy. On its own, verbal persuasion had a strong positive and significant correlation with teacher efficacy ( $R=.246, p=.015$ ). The regression equation was also found to be significant  $F(1,75) = 4.835, p<.05$ . After controlling for the effects of demographic variables and vicarious experiences, verbal persuasion contributed an additional 8.5% to the variance in teacher efficacy. However, the hierarchical regression model was not significant  $F(5,65) = 1.203, p<.05$ . To that extent, the findings support previous research (LoCosale-Crouch, 2013; Looney, 2003) who found that teacher efficacy was related to verbal persuasion and vicarious experiences through mentorship. Results from hierarchical regression analyses in Looney's study indicate that perception of a departmental professional community was a significant and positive predictor of teachers' overall efficacy and efficacy for classroom management, instructional practices, and student engagement. Additionally, teachers' perception of shared norms and values within the department was the strongest and most consistent predictor of efficacy. This finding points to the importance of feelings of community within the academic department.

#### **2.5 Mastery experiences on personal teacher efficacy**

Finally, the study also sought to establish the contribution of mastery experiences on teacher efficacy. It was expected that mastery of subject content would provide the most direct feedback of teachers' capabilities and hence significantly contribute to teacher efficacy. Though mastery had a weak positive relationship with teacher efficacy, the relationship was significant ( $R=.199, p=.044$ ). It contributed 4% of variance in teacher efficacy. When mastery was added to the hierarchical regression equation the model accounted for 10.1% of variance in teacher efficacy, and was a significant predictor  $F(1, 75) = 4.835, p<.05$ . This finding supports other studies (Teo, 2009; Yan, 2002) who found that mastery in Information Technology was a significant predictor of the intention to use innovative teaching techniques including use of Information Technology and student-centred techniques. It also corroborates the study by Tschannen-Moran and Hoy (In press) who found that mastery experiences made the strongest contribution to teachers' efficacy for both novices and experienced teachers. The findings also provide strong support to Bandura (1997) who regarded mastery experiences as the most powerful influence on teachers' self-efficacy beliefs. With regard to the direction of effects of mastery, the findings of the present study suggest that teachers are highly likely to choose innovative instructional techniques if they are skilled in Information Technology. By allowing teachers to gain mastery in teaching software, the likelihood of use of innovative techniques increases.

#### **2.6 Determinants of the choice of instructional methods**

The second part of the study sought to determine what predicted teachers' use of traditional and innovative instructional techniques. To achieve that, regression analyses were done. Demographic characteristics were not found to be a significant predictor of the use of traditional techniques. This supports Yan (2002) who found no link between gender and choice of instructional methods. However, vicarious experiences, verbal persuasion and mastery were significant predictors of the use of traditional techniques of instruction [ $F(1, 75) = 12.994, p<.05$ ;  $F(1, 77) = 5.777, p<.05$ ;  $F(1, 75) = 4.017$ ] respectively. The regression equations were significant. The overall model accounted for 14.4% of variance in use of traditional techniques and was also significant  $F(4, 67) = 2.814, p<.05$ . When teacher efficacy was added to the equation, the model accounted for 15.8% of variance in the use of traditional methods and was significant  $F(5, 64) = 2.403, p<.05$ . This finding contradicts the findings of Gerges (2001) who found no relationship between instructional variation and teachers' efficacy.

In the second model, demographic characteristics, vicarious experiences, verbal persuasion, mastery and teacher efficacy were regressed on the use of innovative methods. The overall model accounted for 20.8% of variance in the use of innovative techniques and 45.6% of its prevalence ( $Beta = .456$ ). The model was significant  $F(5, 64) = 3.360, p<.05$ . Separately, demographic characteristics, vicarious experiences, verbal persuasion and teacher efficacy were not significant predictors of teachers' use of innovative techniques. Mastery was found to be a very significant predictor of the use of innovative techniques accounting for 21.8% of variance,  $F(1, 75) = 21.028, p<.05, B = .468, SE = .075, t = 4.586$ . This finding corroborates Yan (2002) who found out that teachers used more Information Technology when they had high mastery level of information technology ( $r=.436, p<.05$ ). Unlike Yan's study, teacher efficacy was not a significant determinant of the use of innovative teaching techniques.

#### **2.7 Mediation of personal teacher efficacy on choice of instructional methods**

To establish the mediation influence of teacher efficacy on use of traditional methods, vicarious experiences, verbal persuasion and mastery were entered in a regression model and then teacher efficacy controlled for in the second model. Mediation effects of teacher efficacy on verbal persuasion and mastery on use of traditional methods respectively were seen [ $F(2, 74) = 2.611$ ;  $F(2, 72) = 1.940$ ]. No mediation effects of teacher efficacy were seen in vicarious experiences. Similarly, teacher efficacy was an insignificant predictor of the use of innovative teaching techniques. In view of this no

further analysis of the mediation of teacher efficacy on teaching techniques was deemed necessary. The only variable that qualified for a mediation analysis was mastery in the use of innovative techniques. Mastery was regressed on use of instructional techniques first and then a second time while controlling for teacher efficacy. Results showed no mediation effects. The findings of this study support Yan (2002) who found no mediation effect of teacher efficacy on variables of interest and choice of teaching methods.

### 3. Conclusions of the study

On the strength of these findings, the use of Information Technology in teaching should be commissioned because of very high ratings in teacher efficacy and mastery in Information Technology. This is in line with findings showing mastery as the variable most correlated with the use of innovative techniques.

Since evidence shows that teacher efficacy is influenced by general as well as specific teacher factors, a multi-sectoral approach is required before the commissioning of Information Technology-based learning in schools. Meanwhile, greater attention should be paid to in-service training of teachers to increase their mastery in Information Technology. The negative correlation between teacher's age and the likelihood of choosing an innovative technique is food for thought. The management of the Information Technology program in schools should be put in the hands of trained personnel instead of the usual methods where the longest-serving teachers in schools get responsibilities bestowed on them.

Finally, departments should be strengthened due to their influence on teacher efficacy. Government should strive to meet the staffing needs of schools. At the school level, administrators should have a clear hierarchy to ensure that teachers learn from each other through feedback.

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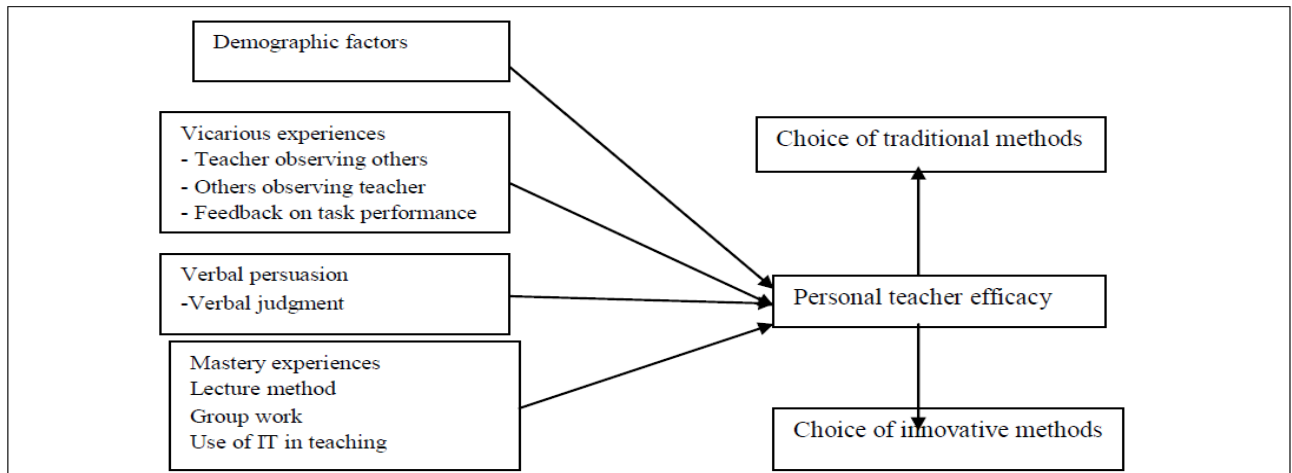
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**Appendix**

1.



**Figure 1.1:** Interaction of variables leading to personal teacher efficacy and choice of instructional methods.

2.

**Table 1** Means, standard deviations, and correlations between the variables of the study (N = 80)

	Variables	M	SD	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1.	Age	2.16	.75	.066	.468**	.058	-.081	-.101	-.005	-.127	-.086	-.009	.048	.062	-.226*	-.076	-.117
2.	Gender	-	-	-	-.174	.028	-.100	-.200	-.001	-.100	-.111	-.027	.008	-.194	-.116	-.012	.172
3.	Length (tech)	1.45	.79		-	-.023	.001	.208	.088	-.150	.108	-.064	.079	.227*	-.051	.091	.144
4.	Major subject	2.18	1.33			-	-.278*	-.116	-.116	-.031	-.317**	-.207	-.098	-.039	.163	-.080	.043
5.	No. of teach.	2.68	1.01				-	.045	.155	.035	.282*	.146	.259*	.140	.030	.192	-.164
6.	Mastery-Lectur	3.33	.89					-	.016	.216	.077	.049	.220	.178	.252*	.293**	.111
7.	Mastery-GW	3.55	.85						-	.053	.143	.100	.029	.436**	.201	.125	.264*
8.	Mastery-IT)	2.78	1.22							-	.217	.289*	.085	.067	.408**	.079	.102
9.	Vicarious 1	5.24	1.99								-	.754**	.553**	.549**	.084	.291**	.180
10.	Vicarious 2	5.17	2.07									-	.569**	.527**	.265*	.317**	.095
11.	Vicarious 3	7.82	2.92										-	.425*	.223	.415**	.134
12.	Verb Persuasio	14.93	2.65											-	.162	.264*	.246*
13.	Tech - Innovati	5.51	1.40												-	.294**	.085
14.	Tech - Tradt	5.22	1.54													-	.109
15.	PTE	8.72	1.16														-

3.

**Table 2.** Contribution of demographic variables to teacher efficacy

Variable	Mean	Standard deviation	R <sup>2</sup>
<b>Age (years)</b>			.003
20-24	8.50	.401	
25-30	8.70	1.17	
31-34	9.20	.222	
35-45	9.33	1.15	
<b>Gender</b>			.485
Male	8.45	1.39	
Female	8.90	1.02	
<b>Length of teaching</b>			.229
1-5	8.61	1.26	
6-10	9.04	.740	
11-15	9.66	.577	
Above 15	8.50	2.12	
<b>Major teaching subject</b>			-.013
Kiswahili	8.65	1.35	
English	8.90	1.12	
Mathematics	8.66	.86	
Science	9.00	1.00	
RE	8.75	.95	
<b>Number of teachers</b>			-.195
None	9.66	.577	
1-3	8.87	1.05	
4-6	8.73	1.15	
7-10	7.50	2.12	
Above 10	8.33	1.41	