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THEY ARE ABLE WHO THINK THEY ARE ABLE: RELATIONSHIP BETWEEN SELF EFFICACY AND IN-SERVICE TEACHER EDUCATION

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ABSTRACT

In a country like Pakistan (and similar developing countries) where teachers are not represented in decision making bodies and perception of the profession itself is low; a broader question which needs to be deliberated upon is how is it possible 'to produce' teachers/teacher-educators who 'think they are able' to make a difference? A case study of a Masters in Education program at one of the private universities of Pakistan was carried out in order to explore the link between teacher education and their level of self-efficacy. One would expect that with the systematic exploration of school improvement related issues and concerns, the graduates understanding of what makes teachers/teacher educators more efficacious will grow and so will their faith in themselves. With this premise the specific purpose of the research was to assess whether the Masters in Education program at the university had changed the perceptions of teacher graduates about their own ability to effect educational change? The data for the study was collected at two points in time, i.e., entry into the program (Time 1) and exit (Time 2) and consisted of responses to the six subscales of Bandura's teachers' self efficacy scale. The pre-test provided a base against which the post-test scores were measured. The findings suggest that the two year Masters in Education program at the university did bring about changes in the perceptions of graduating students about their efficacy as change agents. Implications of the findings for teacher education are also discussed.

Key Words: Teacher education, self efficacy, change agent, Pakistan.

INTRODUCTION

Albert Bandura (1977), a psychologist who introduced the concept of self-efficacy defines it as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (1997, p.3). Since then a large body of research literature has emerged in which this notion of self-efficacy has been conceptually applied to and empirically tested on teachers whose daily lives revolve around organizing activities and executing tasks related to specifically improving education standards by promoting student learning (Agbaria, 2013; Maddux, 2011; Tschannen-Moran and McMaster, 2009; Dellinger, Bobbett, Olivier and Ellett. 2008; Ross & Bruce, 2007; Brinkerhoff , 2006; Hoya and Sperob, 2005; Ramey-Gassert, Shroyer and Staver. 1996; Evans and Tribble, 1986 just to name a few). The concept of self efficacy has its origin in the social cognitive theory which proposes that human actions are determined by interaction among three types of factors; cognitive (or personal factors), environmental factors and behavioral factors which are made-up of clusters of constructs. Self efficacy along-with two other constructs like skills and practice, is part of behavioral factors. Cognitive factors (also known as 'personal factors) include knowledge, expectations and attitudes whereas social norms, access in community and influence on others make up the environmental factors (Bandura, 2005, 1997, 1982). All these factors and their dimensions are interlinked and jointly determine

human behavior; nevertheless, the primary focus of the conceptual discussion and empirical evidence in the present research is on teachers' self efficacy which is defined as; "beliefs about the ability to coordinate skills and abilities to attain desired goals in particular domains and circumstances" (Maddux, 2011: 60). The rationale for delimiting the research to teachers' self efficacy lies in the background of the current study.

Study context

The study is conducted in Pakistan where the government has taken many initiatives for improving the 'quality 'of teachers and teacher education (pre- and in-service). The seminal work of Bandura (1977; 1997) recognizes teachers' ability to effect educational change at various levels but do teachers also 'think' they are able as the power of their beliefs in their own ability to effect change is more important than the knowledge of simply having this ability. Hence, teachers' self efficacy beliefs gain centrality in the process of bringing effective change in the field of education as desired by the government and people of Pakistan. Moreover, teachers' self efficacy beliefs are also linked to the professional preparation of teachers at all levels (Santiago, 2012; Wong & Wong, 2009; Wenner. 2001; Pigge & Marso, 1994; Martin, 1989). This implies that teacher education programs can be directed to affect the beliefs of teachers about their own abilities to bring about changes in education (Poulou, 2007; Chan, 2005; Ashton, 1984). In a country like Pakistan where teachers are not represented in decision making bodies (Mudhani, 2007), have low status in the society (Kirk, 2007) and feel generally powerless (Warwick and Reimers, 1995) is it possible 'to produce' teachers/teacher-educators who think they are able to bring about changes in schools? The present research is an attempt to answer this broader question by exploring the relationship between teachers' professional development and teachers' self efficacy.

METHODOLOGY

Purpose

The focus of the study is the self efficacy ratings of students enrolled in Masters in Education degree program at one of the private universities of Pakistan at two points in time; entry into the program (Time 1) and after two years at the end of the program (Time 2). The purpose was to gauge the relationship between in-service teacher education and teachers' beliefs in their abilities to improve educational standards. The degree program aims to prepare teacher-educators by enhancing their pedagogical content knowledge and formal and informal leadership skills to act as change agents in their own contexts. The courses thus offered are designed to advance skills related to classroom instruction and management, engaging and motivating students and other stakeholders, reflective teaching and effective school management. Therefore, it is reasonable to expect that these teachers will have strong positive beliefs about their own abilities to use the acquired new knowledge, disposition and skills for enhancing their students' learning through improved practices. The latter will improve not only their schools but will also raise the standard of overall education in Pakistan. With this premise the specific purpose of the research was to assess whether the Masters in Education program at the university had changed the beliefs of teacher graduates about their own ability to effect educational change? Given the nature of the program, the specific hypothesis was that the graduates would have higher levels of efficacy compared to their baseline scores at the time of entry into the program.

Participants

Participants were the entire cohort of in-service teachers /teacher educators enrolled in a two-year Masters in Education degree program at a private university in Pakistan 2009. They were informed about the purpose and procedure of the research through an information letter via e-mail. The letter also mentioned that their participation was voluntary and they could withdraw without negative consequences besides assuring them confidentiality and anonymity. The following table presents their demographic profile.

Table 1: Demographic Profile of Respondents

Variables	Categories	Frequency	Percentage
Gender	Male	24	60
	Female	16	40
Location	Rural	15	38
	Urban	25	62
System	government	8	20
	Private	4	10
	Community Schools	28	70
Age (years)	25 - 30	18	45
	31-35	12	30
	36-40	10	25
Experience	1-5	15	38
	6-10	19	47
	11-15	3	8
	>16	3	7
Grade level taught	Primary	12	30
	Secondary	13	32
	Both	15	38
Academic qualification	Bachelors	18	45
	Masters	22	55
Professional degree	No certification	7	16
	Teaching Certificate	2	6
	Bachelors Edu (B-Ed)	15	38
	Masters Edu (M-Ed)	16	40

Research Design

The study was conducted through one group Pretest-Posttest design methodology with an intact group (Erden, 2009), of 40 in-service teacher educators. They were followed through two years of their program. At the conclusion of the study the participants had evaluated their self efficacy at two points in time[1], i.e., start of the first year (pre), and at the end of the program (post).

Research Instrument

Bandura's 'Teacher self-efficacy scale' was used. The instrument consists of 30 items divided into six [2]subscales corresponding to areas important for school improvement. These areas, explicitly or implicitly, are embedded in the content and methodology of the program and should be visible in these aspects of self efficacy which include;

1. efficacy to influence decision making (EID)
2. instructional self-efficacy (ISE)
3. disciplinary self-efficacy (DSE)
4. efficacy to enlist parental involvement (EEPI)
5. efficacy to enlist community involvement (EECI)
6. efficacy to create positive school climate (ECPSC)

[1] Following Martin (1989), a mid point was also added to have two post-test measurements to verify the developmental stages of teachers' self efficacy. It is not reported here due to space limitation.

[2] The 'efficacy to influence school resources' was also a subscale with only one item which was merged with the Instructional self efficacy sub-scale.

Test of internal consistency was conducted for the scale and subscales which is presented in Table 2. The range of Cronbach Alpha vales is similar to those reported by other researchers (Page, Pendergraft and Wilson, 2014:35-37; Celiki, 2013: 58; Lam, 2012:3-4; Skaalvik and Skaalvik, 2010:1061).

Table 2: Reliability Results

Scale	Cronbach's Alpha (CA)	CA based on Standardized items	# of Items
Total	.940	.942	30
EID	.859	.859	2
ISE	.815	.841	8
DSE	694	.717	3
EEPI	.820	.821	3
EECI	.826	.833	4
ECPSC	.859	.863	8

Procedure

Self-efficacy Scale was administered during regular classes and took 20-30 minutes for filling in the questionnaires. Students put them in envelopes, wrote their ID numbers and sealed them. Then one of the staff members assigned pre-prepared codes to these envelopes randomly. She paired the codes with student IDs, wrote the codes on questionnaires and retained the envelopes. Same codes were used at Time 2. The researcher worked with coded questionnaires to protect the identity of respondents.

Analysis

The study is a population based research; therefore, descriptive statistics like Means and SDs are used for describing the difference in self efficacy scores by sub-scales at Entry (Time 1) and Exit (Time 2) rather than inferential statistics. Readers are cautioned not to generalize the results beyond the sample from only one in-service teacher education program. Further, as no control group or random selection of participants was carried out, therefore, no claim to have established cause-effect relationship between in-service education program and teacher self-efficacy is made.

RESULTS

The specific purpose of the research was to assess changes in the self efficacy scores of teacher graduates over the two-year Masters in Education program. All calculations are based on total scores as with limited sample size average scores can produce misleading findings. The results indicate that self efficacy scores of course participants were higher at Time 2 (M2 = 207.11, SD2 =24.42 and M1= 184.08, SD1 =32.91) and the correlation between Time 1 and Time 2 scores ($r = .358^{*}$) was statistically significant ($p<.05$) showing a 'Moderate'[3] positive relationship (Mann, 2013). The difference reflected change in teachers' self efficacy and the path of the relationship was also in the expected direction. In order to explore differences within the sample, teachers were divided into three groups based on their total scores. Group Means and SDs were used for this purpose. For teachers with *low self efficacy* at Time 1 (LSE1), the score was arrived at by subtracting standard deviation from the arithmetic mean (184 -33 = 151). By adding standard deviation to the arithmetic mean, scores for *high self efficacy* (HSE1), were calculated (184 +33 = 217. Teachers with scores between 151 and 217 were considered *moderately self efficacious.* For Time 2 M and SD were (207 +, - 24) and the boundaries were, < 183, between 183 & 231, and > 231 for low, moderate and high levels respectively.

[3] For the present study, if the coefficient is < 0.3 correlation is 'weak'; => 0.3 but < 0.59 is 'moderate', 0.6 -0.79 is 'strong' and > 0.8 is 'very strong' (Mann, 2013).

Table 3: Levels of Teachers' Self Efficacy

	Time 1		Time 2	
SE Levels	Frequency	Percent	Frequency	Percent
Low SE	10	25%	*4	10%
Moderate SE	20	50%	20	50%
High SE	10	25%	16	40%
	40	100	40	100

- Results for Time 2 did not have scores for Low SE. However, 4 cases were lost during the study period reducing N to 36 for Time 2.

The results clearly show an upward movement in the levels of teachers self efficacy scores from Time 1 to Time 2. Similar trend was shown by the overall differences by subscales. The highest difference between the reported scores was for Instructional efficacy (7.16), closely followed by efficacy to enlist community involvement (5.13) and to create positive school climate (5.12). The lowest difference between Time 1 and Time 2 (0.53) was reported for disciplinary self-efficacy.

Table 4: Descriptive statistics for Teachers' Self Efficacy by subscales

Sub-scales	Mean		SD		Min		Max	
	T1	T2	T1	T2	T1	T2	T1	T2
EID	12.25	13.78	3.66	2.73	3.00	7.00	18.00	18.00
ISE	61.15	69.31	11.16	8.23	25.00	50.00	79.00	89.00
DSE	20.58	21.11	3.72	2.93	9.00	12.00	26.00	27.00
EEPI	19.08	21.64	4.78	3.49	8.00	12.00	27.00	27.00
EECI	18.48	23.61	6.86	6.47	5.00	4.00	30.00	36.00
ECPSC	52.55	57.67	10.06	8.01	28.00	36.00	70.00	72.00

- N is 40 and 36 for Time 1 and Time 2 respectively.

Correlation analysis of subscales by time revealed significant relationships for efficacy to influence decision making, efficacy to enlist parental involvement, efficacy to enlist community involvement and efficacy to create positive school climate with correlation coefficients ranging between 'moderate' to 'strong' (r =.357*), (r =.438**),(r=.642**) and (r =.397*) respectively. Analysis of correlation coefficients also revealed inter-dimensional connections of subscales. For instance, efficacy to influence decision making with instructional self-efficacy and efficacy to enlist parental and community involvement and to create positive school climate remained significant at both Time 1 and Time 2 with the values of r1 and r2 (.528**, .511**), (.508**, .517**), (.474**, . 408*), (.536**, . 460**) respectively. However, the coefficients were weaker for Time 2 with one exception (parental involvement). In the same way, was instructional self-efficacy with efficacy to enlist parental and community involvement and to create positive school climate with correlation coefficients ranging from (.717**.551**),(.469**.452**) and (.584**.492**) with weaker coefficients for Time 2. Likewise, disciplinary self-efficacy with efficacy to enlist parental and community involvement with coefficients (.622**.407**),(.455**.455**) remained significant with a weaker coefficient for parental and unchanged for community involvement at Time 2 respectively. Also, efficacy to enlist parental involvement with efficacy to enlist community involvement and to create positive school climate remained significant with coefficients of (.535**.528**) and (.706**536**) respectively with weaker coefficients at Time 2. Furthermore, efficacy to enlist community involvement with efficacy to create positive school climate had coefficients of (.745**.665**) for Time 1 and Time 2 showing 'strong' correlation.

Table 5: Correlation Matrix of Teachers self efficacy

	EID1	EID2	ISE2	ISE1	DSE1	DSE2	EEPI2	EEPI1	EECI1	EECI2	ECPSC2
EID2	.357*										
ISE2	.081	.511**									
ISE1	.528**	-.011	.049								
DSE1	.349*	.084	.201	.603**							
DSE2	.136	.283	.328	-.030	.080						
EEPI2	.304	.517**	.551**	.056	-.055	.407*					
EEPI1	.508**	.089	.286	.717**	.622**	.321	.438**				
EECI1	.474**	.262	.351*	.469**	.455**	.351*	.279	.536**			
EECI2	.289	.408*	.452**	-.024	.089	.455**	.528**	.231	.642**		
ECPSC2	.148	.460**	.492**	-.022	.168	.293	.536**	.230	.371*	.665**	
ECPSC1	.536**	.327	.398*	.584**	.610**	.035	.297	.706**	.745**	.354*	.397*

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION

The results of the current research study indicate a positive moderate relationship between teachers' professional development and teachers' self efficacy for the graduates of the two year Masters in Education program at this particular university. This finding reinforces the established link indentified by number of research studies cited earlier. Given the limitations of the small sample size and convenient sampling technique, no attempt is made to generalize the results beyond the present sample; however, the policy implications of the study can be discussed with reference to teachers' education which is one of the key focuses of the current National Education Policy in Pakistan (GoP, 2009). One of the basic premises of the policy is that "improving education quality depends on the teachers' quality" (Mushtaq and Kayani, 2013:154) and self efficacy as a "personal resource factor" (Schwarzer and Hallum, 2008:152) can be considered one dimension of teachers' quality (Lee, Patterson and Vega, 2011).

The existence of positive relationship between teacher-education and teachers' self-efficacy suggests that teacher education can play an important role in building teachers' beliefs in their own capabilities to be change agents. Bandura (1997) suggests four experiential sources that shape such beliefs; these are (i) performance or mastery experiences, (ii) vicarious experiences, (iii) verbal or social persuasion, and (iv) physiological and emotional states (Oh, 2012). These are "the sources teachers tap when making judgments about their capability" (Tschannen-Moran and Hoy, 2007: p. 953). The findings of research studies of these sources are mixed; Mahajna (2014), Oh (2012) and Poulou (2007) report positive relationship between the sources and teachers' self efficacy; O'Neill and Stephenson (2012) find partial whereas Moulding, Stewart and Dunmeyer (2014) report no support for the relationship respectively. The research for the present study did not test the relationship between teachers' self efficacy and its sources but the pedagogy for the in-service teacher education program was based on constructivist philosophy of scaffolding (Wang and Hannafin, 2009). Using experiential learning, the program extended participant's *performance or mastery experiences*; therefore, one can associate the change between Time 1and Time 2 to the teaching practicum and microteaching opportunities which were part of the program. Similarly, participants also performed other tasks like writing research based reviews and papers along-with writing a field research-based dissertation on real life issues related to teaching and learning. For *vicarious or social experiences*, participants had ample opportunities for observational learning as they watched their educators modeling teaching practices, assessment methodologies and handling of critical incidents over an extended period of two years. They also observed their own peers and were able to compare themselves with each other. Their *verbal or social persuasion* came from various sources; they got feedback from their educators during lesson planning, school visits, coursework and related assignments and practical experimentation during classroom teaching. During school based teaching they received feedback from their students, colleagues and supervisors. For their dissertations they received feedback from their supervisors and internal and external examiners as well as their peers at their

thesis defense. As far as the contribution of *psychological state* of participants is concerned, participants self doubts regarding their ability to perform research related tasks and overcome language and communication barriers are documented elsewhere (Qureshi, 2014; Qureshi and Vazir, 2013; Vazir and Qureshi, 2011). The joint contribution of all these sources is reflected in levels of efficacy overtime; low self efficacy teachers were 10% of the group at time 2 vs. 25% at Time 1 whereas teachers with high self-efficacy were 40% of the group at time 2 vs. 25% before. Despite the limitations of sample size and convenient sampling technique, these changes and associations remain significant and highlight the importance of pedagogical tools and contents of curriculum for teachers and teacher educators; therefore, understanding the nature and sources of teachers' self efficacy has theoretical and practical relevance for both practitioners and policy makers related to teacher education in Pakistan.

CONCLUSION

Self-efficacy is an important attribute of human agency. It gains even more prominence in the context of teachers because how they perceive, interpret and act while performing their daily tasks, inside and outside their classrooms, can enhance or restrict life chances of not only their own but of their students too. The findings of this study confirm that teacher education and teachers' beliefs in their own abilities to opt for paths of action that they believe will help attain their desired goal (s) are related. Although the overall correlation displayed is moderate the policy implications are strong against the backdrop of a large body of knowledge providing empirical evidence of the relationship. The study at this point makes an important addition to the body of knowledge on Pakistan for two reasons; (i) few research studies have been conducted on Pakistan teachers' self efficacy (Shaukat, and Iqbal, 2012; Sarwar, Muhammad and Muhammad, 2010; Hanif, 2011; Rizvi and Elliot, 2007; 2005; Rizvi, 2010), whereas on sources of its development none, to the best of researcher's knowledge, is available; and (ii) Pakistan government is making concerted efforts for improving the quality of education for learners in general and for teachers and teacher educators in particular. In view of the centrality of teacher education for preparation (pre-service) and continuation of life-long professional development (in-service) of teachers, the National Education Policy of Pakistan has created National Standards of competencies for teachers. Some of these competencies are reflected in sub-categories of the Teacher Efficacy Scale, used for the study, e.g., do Pakistani teachers think they 'can' forge home-school partnership? Thus boosting teachers self efficacy into thinking they 'can' involve communities and parents into creating conducive environments for student learning becomes crucial for teacher education's pedagogies and curriculum.

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