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Research Article

Causative Factors behind an Efficacious Teacher: Evaluating Teacher Efficacy

Sadia Batool [1*], Syed Mubarak Abbas Shah [2]

[1] Faculty of Education, Preston University Islamabad, Pakistan

[2] Applied Technologies and Services Institute, Bhara Kahu, Islamabad

*** Correspondence:** Sadia Batool, Faculty of Education, Preston University Islamabad, Pakistan

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Abstract

In the third world school dropout rates are the highest, which is largely attributable to a dearth of efficacious teachers. The present research is an analysis of the teacher efficacy based on the teaching milieu. The Ohio State Teacher Efficacy Scale was used for data collection. Probability sampling design was used to select 171 secondary school teachers. As per the results, subject specialization affects teacher efficacy the most whereas institution type influences teacher efficacy the least. The less experienced teachers have a greater self-efficacy than the experienced teachers; teachers teaching uncrowded classes are more efficacious than those teaching crowded classes.

Keywords:

Academic achievement; affective connections; efficacious teachers; sources of self-efficacy; teacher self-efficacy beliefs

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Introduction

Life's decisions are predominantly based on the beliefs that individuals hold and value. Teachers' beliefs pertaining to their instructional capabilities determine how they comport, take decisions and manage their classroom environment on a daily basis ([Pajares, 1992)]. These are the ideas, attitudes or notions that impact how teachers visualize teaching. This conception actually determines their efficacy in classroom teachi[ng (Ng, Nicholas & Alan, 2010)].

Teacher efficacy is a complex of beliefs that teachers hold about their own usefulness and efficiency based on their classroom management skills ([Romi & Leyser, 2006)]. Teacher efficacy can also be viewed as a teacher's assessment of his or her own capabilities in terms of engaging students (even those with learning difficulties and/or having a low motivation for learning) and gaining their cooperation towards learning ((Trust of Knowledge Generation [TKG], 2008; [Tschannen-Moran & Woolfolk-Hoy, 2001)]. It also relates to teacher-student perceived relationships and students' emotional and behavioral complexities (Poulou, 2016). Teacher efficacy is a teacher's belief or conviction in his or her personal or self-efficacy with regard to his or her teaching competence originating from a strong sense of self-adequacy and personal insight. These invariably impact the performance of a teacher as well as that of his or her students (Batool, Arif & Parveen, 2012).

[Dibapile (2012)] found that teachers who had a degree and Post-Graduate Diploma had a higher efficacy in student engagement than teachers with other degrees. [Tschannen–Moran et al., (1998)] and [Bandura (2006)] asserts that self-efficacious teachers are proactive and enterprising who are able to rejuvenate the classroom with new approaches to teaching and learning. According to [Elliot (2000)], there are significant differences between teachers with high efficacy and those with low efficacy. Furthermore, several researchers ([Cheung, 2008]; [Rich, Lev, & Fisher, 1996)] reported that the ability to secure productive "interpersonal relationships" or affective connections with students was common among teachers having high personal teaching efficacy. Teachers with a strong sense of personal teaching efficacy are more apt at promoting positive results in their classrooms ([Morris-Rothschild & Brassard, 2006)] by connecting with their students on several different levels. Affective connections, thus, add a whole new dimension to teacher efficacy.

Research revealed that teachers' self-efficacy beliefs influence their teaching behaviors in terms of increased self-confidence as well as students' attitude towards learning and their academic achievement ([Graham, Harris, Fink, & McArthur, 2001]; [Cakiroglu, Cakiroglu, & Boone, 2005]; [Huang, Liu, & Shiomi, 2007]; [Mojavezi & Tamiz, 2012)]. [Monks and Schmidt (2010)] found that both class size and work load had a negative effect on student evaluations of courses and instructors in school.

[Aktus, Kurt, Aksu and Ekisi (2013)] found that teacher efficacy and educational process varies with respect to teachers' gender. The studies conducted by [Ahmad and Rehman (2015)] and [Veisi, Azizifar and Gowhary (2015)] suggested that female teachers have better self-efficacy than male teachers. Similarly a study conducted by Mackay and Parkinson(2008) found that male teacher have better theoretical understanding of circuitry than females as students themselves think the better suitability of males than females for technical careers. [Myrberg and Rosen (2003)] found that students in private schools in Sweden performed significantly better on the reading test than did students in public schools since their teachers are more efficacious. With regard to teachers' scholastic qualifications, no significant difference of efficacy was found between teachers with undergraduate and postgraduate academic degrees in mainstream education ([Pas et al., 2012)]. Class size is another influential factor in the sense that teachers feel more efficacious while teaching larger groups of students ([Lee, Dedrick, & Smith, 1991]; [Raudenbush et al., 1992)]. However, care must be taken in making overgeneralizations since there seems to be an upper limit for the impact of class size on TSE, an issue that the studies have failed to demarcate to date. In view of the above, self-efficacy enables teachers to create both personal and professional presence to achieve diverse behavioural objectives in the three domains of learning through

heightened self-awareness, inner strength, a self-assured stance, a positive outlook on life and an empathetic nature. Most importantly, self-efficacy promotes the development of affective connections with students, which is instrumental for learning to occur. The main objective of the research was to find out the effect of institution type, teaching experience, subject specialization, teacher gender and number of students in a classroom on teacher efficacy.

Participants

The population of the study included all secondary school teachers of the Islamabad district. Probability sampling design was used to randomly select 171 teachers from the secondary schools in the Islamabad district. The characteristics of the sample are given as under:

Table 1. Characteristics of the sample n=171

Characteristic	n	Percentage
		%
Teacher age (Years)		
31-35	46	26.9
36-39	43	25.1
41-45	42	24.5
46-59	40	23.4
Teacher gender		
Male	92	53.8
Female	79	46.2
Institution type		
Public	96	56.2
Private	75	43.8
Experience (years)		
1-5	62	36.3
6-10	34	19.9
11-15	14	8.2
16-20	17	9.9
21-25	17	9.9
Number of students in a class		
30-39	22	12.87
40-49	39	22.81
50-59	42	24.56
60-69	40	23.39
70-79	28	16.37

Table 2. Effect of independent variables on teacher efficacy

Variable	Between groups		Within groups		F
	Sum of squares	Sum of means	Sum of squares	Sum of means	
Institution type	33.92	3.81	107.79	0.190	19.68
Teaching experience	82.81	11.83	91.72	0.101	127.91
Subject specialization	121.73	16.24	73.91	0.131	291.73
Teacher gender	98.86	15.72	93.64	0.035	152.73
Number of students	99.74	14.31	91.63	0.121	144.73
	df=169		α=.05		F_{cal}= 3.84

Research Instrument

Ohio State Teacher Efficacy Scale (long form) developed by Moran & Woolfolk (2001) was used for data collection. The 9-point scale in the original version was however adapted to a five point Likert scale, i.e., 1 (Not at all), 2 (Very little), 3 (Some influence), 4 (Quite a bit) and 5 (A great deal). Higher scores on this scale equated with greater efficacy beliefs. The alpha (α) reliability coefficient of the test amounted to 0.85. The data was collected by personally visiting the schools.

Results

The data was analyzed through mean, F-test and t-test based on a 0.05 level of significance.

As shown in Table 2, all the means are not equal and for all the characteristics of the sample they are either lower than 3.20 or greater than 3.24.

Furthermore, Table 2 shows that all the characteristics of the sample affect teacher efficacy, as all the values of F calculated lie in the critical region. The more the distance of the independent variable from the value of Fcal (3.84), the more it affects the dependent variable, i.e., teacher efficacy. From the F values in Table 2, the independent variable, subject specialization, affects teacher efficacy the most (F = 291.73) followed by teacher gender (F = 152.27), number of students (F = 144.72) and teaching experience (F = 127.92). The independent variable, institution type, has the least effect on teacher efficacy (F = 19.88). Thus, there is a significant effect of the institution type, teaching experience, subject specialization, teacher gender and number of students in a classroom on teacher efficacy scores.

As per Table 3, there is a significant difference between the mean score of public schools (M=54.45, SD=2.78) and the mean score of private schools (M=44.23, SD= 1.86), i.e., t (169) = 10.26, p = 0.001. This signifies that the calculated value of t (10.26) is statistically significant ($p < 0.05$), as it is greater than the table value of t (1.976) at 0.05 level. So, there is a significant difference between the efficacy of public and private school teachers.

It also shows that there is a significant difference between the mean score of experienced teachers (M=11.24, SD=2.93) and the mean score of less experienced teachers (M=31.75, SD=1.61), i.e., t (169) = -20.51, p = 0.001. This shows that the calculated value of t (-20.51) is statistically significant ($p < 0.05$), as it is greater than the table value of t (1.976) at 0.05 level. So, there is a significant difference between the efficacy of experienced and less experienced teachers.

According to Table 3, there is a significant difference between the mean score of male teachers (M=14.25, SD=3.81) and the mean score of female teachers (M=40.53, SD=2.31), i.e., t (169) = -25.92, p = 0.001. This means that the calculated value of t (-25.92) is statistically significant ($p < 0.05$), as it is greater than the table value of t (1.976) at 0.05 level. So, there is a significant difference between the efficacy of male and female teachers.

Table 3 also shows that there is a significant difference between the mean score of teachers of crowded classes (M=39.45, SD=3.16) and the mean score of teachers of uncrowded classes (M=24.36, SD=3.02),

Table 3. Comparison of teacher efficacy with study variables

Variable	n	Mean	SD	t	p
Institution type					
Public Schools	96	54.45	2.78	10.26	0.001
Private Schools	75	44.23	1.86		
Teacher experience					
Experienced teachers	62	11.24	2.93	-20.51	0.001
Less experienced teachers	72	31.75	1.61		
Teacher gender					
Male	92	14.25	3.81	-25.92	0.001
Female	79	40.53	2.31		
No. of students in a class					
Crowded classes	61	24.36	3.02	14.56	0.001
Uncrowded classes	111	39.45	3.16		

i.e., t (169) = 14.56, p = 0.001. This signifies that the calculated value of t (14.56) is statistically significant ($p < 0.05$), as it is greater than the table value of t (1.976) at 0.05 level. So, there is a significant difference between the efficacy of teachers teaching crowded classes and those teaching uncrowded classes.

Discussion

The aforementioned results of the study are consistent with those of different studies using various statistics in terms of determining the effect of various independent variables on the different dimensions or subscales of teacher efficacy. For example, the linear regression analysis used in a study by [Aktus, Kurt, Aksu and Ekisi (2013)] reveals that both gender and experience variables positively and significantly contribute towards the educational process and self-efficacy. Also, a study by [Cheung (2008)] showed that teaching experience contributed towards teacher efficacy. Furthermore, results of a study by [Odanga, Raburu and Aloka (2015)] show no statistically significant influence of gender on teachers' self-efficacy, but the qualitative results of the study revealed that gender had an influence on the self-efficacy of teachers in co-education and boys' schools. Findings of the present study with regard to the independent variable, teacher gender are thus consistent with the qualitative and not the quantitative results.

Teachers teaching uncrowded classes had greater teacher efficacy than those teaching crowded classes. There could be several reasons for this result. In crowded classes, teachers are unable to develop appropriate affective connections with all their students. They are also unable to manage the class well in terms of personal management, time management, planning, organizing, communicating, leading and nurturing, housekeeping and record keeping, etc. In crowded classes, it is also an arduous task to effectively manage disruptive behaviours as well as keep students occupied in meaning learning activities. The results of the study are different than the studies of [Lee, Dedrick, & Smith (1991)] and [Raudenbush et al. (1992)] teachers feel more efficacious while teaching larger groups of students.

A research conducted by [Ahmad and Rehman (2015)] suggested that female teachers have better self-efficacy than male teachers. A study by [Veisi, Azizifar and Gowhary (2015)] also revealed the same for EFL teachers. Results of the present study match with these results.

A study by [Brandon (2000)] discovered that female pre-service teachers had lower self-efficacy in "specific teaching competences" than males prior to going into the field. These results are inconsistent with the results of the present study. Furthermore, [Azar (2010)] identified that there was no significant difference between the self-efficacy of: in-service and pre-service secondary science teachers; male and female teachers; and teaching experience. These results do not support the findings of the present study.

In addition, [Monks and Schmidt (2010)] found that crowded classes had a negative effect on student assessments of courses and instructors in a business school (studies on this aspect are limited at the tertiary level). Findings revealed that overcrowded classes made teachers to teach courses in ways detrimental to students implying that such conditions decrease teacher efficacy. These findings are consistent with those of the present study. With respect to institution type, no studies could be identified to support or contradict the results of the present study. Hence, this aspect adds to the existing body of knowledge.

Many other studies show the results of various independent variables on students' academic achievement rather than on teacher efficacy. For instance, the use of ANOVA and t-tests in a study by [Alufohai and Ibhafidon (2015)] demonstrated that students' academic achievement was significantly affected by teachers' age, marital status, whereas, teachers' gender had a significant effect on students' academic achievement. Additionally, [Koc and Celik (2014)] found that there was a moderate negative correlation between the student teacher ratio and achievement in cities with greater number of students per teacher, which suggests a low achievement on Turkey's Transition to Higher Education Exam.

The results of the present study partially verify the results of study conducted by [Myrberg and Rosen (2003)] who found that teachers' gender, teaching experience, in-service training and co-operation with colleagues had no significant effect on third grade student's reading achievement. The present study result contradict with the study by [Zhang (2008)] who indicated that appropriate teaching behaviors also promoted students' science achievement in science directly. The study also showed that years of teaching experience in science did not directly influence students' achievement in science and teacher efficacy. However, the results of a study by Budding and Zamarro (2009) contradict Zhang's results, as they indicate that students' academic achievement was attributable to teachers' experience and not to whether the teachers had advanced degrees.

Conclusions and Recommendations

The teaching milieu has a wide-ranging influence on the independent variables affecting teacher efficacy. As per the results, subject specialization affects teacher efficacy more than the other variables of the study. Teacher gender is an important variable affecting teacher efficacy as revealed by the findings. Furthermore, the variables, number of students in a class and teaching experience also affect teacher efficacy to some extent. However, institution type influences teacher efficacy the least according to the study. Furthermore, from the t-tests, it can be stated that the public school teachers have a greater efficacy than those teaching in the private schools, the less experienced teachers have a greater self-efficacy than the experienced teachers, the female teachers have a significantly higher teacher efficacy than the male teachers, and the teachers teaching uncrowded classes have a greater teacher efficacy than those teaching crowded classes. However, further research needs to be conducted in these areas for more conclusive results, especially in the context of Pakistan. In this regard, comparisons need to be made between each independent variable type through a pre-test posttest design to solidify results. The present study has not taken into consideration the urban-rural and cultural differences on teacher efficacy, which may also be studied.

Instructional design specialists who develop teacher training programs need to focus on developing teaching mastery before teachers actually commence their careers. Furthermore, the educational institutions may promote teacher efficacy through action research to identify pertinent areas of performance improvement. Teachers may also be encouraged to have their lessons reviewed or critiqued from senior colleagues.

The effective use of social persuasion and social modeling may also promote teacher efficacy. Participatory experiential training initiatives organized on a regular basis may prove to be helpful in this regard. Also, videotaping teachers' performance for them to review it later with the help of a behaviour checklist

may enhance teacher efficacy. If taken positively, students' evaluation of teachers' performance may be particularly useful as well.

Ethical Considerations

Disclosure of Conflict of Interest

Authors neither have any actual, perceived or potential current conflict of interest nor any disclosure to report.

Ethical approval

The research protocol was submitted for consideration, comment, guidance and approval to the University's research ethics committee before the conduction of study. All procedures performed in the present study were found in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent

Each participant was adequately informed of the aims, methods, sources of funding, any possible conflicts of interest, institutional affiliations of the researcher, the anticipated benefits and potential risks of the study and the discomfort it may entail and post-study provisions. The subjects were informed of the right to refuse to participate in the study at any time without reprisal.

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