



7th World Conference on Educational Sciences, (WCES-2015), 05-07 February 2015, Novotel
Athens Convention Center, Athens, Greece

Preservice Physics Teachers' Beliefs Regarding Their Teacher Efficacy and Classroom Management

Deniz Gurcay^{a*}

^aAssoc. Prof. Dr., Hacettepe University, Faculty of Education, Department of SSME, Physics Education, Beytepe, Ankara, 06800, TURKEY

Abstract

The purpose of this study is to investigate the teacher self-efficacy and classroom management beliefs of preservice physics teachers and to examine the relation between those beliefs. This study was carried out with 115 preservice physics teachers. As instruments of this study, Teacher Sense of Efficacy Scale (TSES), Attitudes and Beliefs on Classroom Control-Revised (ABCC-R) Inventory were used. The results of this study showed that those preservice physics teachers' teacher self-efficacy beliefs were high and their classroom management attitudes and beliefs are interventionist on the instructional management- and non-interventionist on the people management. The relation between preservice physics teachers' self-efficacy and classroom management styles was discussed.

© 2015 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of Academic World Education and Research Center.

Keywords: preservice teacher education, physics education, teacher self-efficacy, classroom management styles,

1. Introduction

Bandura (1997) states that behaviors are based on two construct namely, outcome expectation and self-efficacy. Besides, he underlines the importance of individual's high level of outcome expectation. In other words, a person's belief in his or her ability to succeed in a specific task is important. However, he also mentions that self-efficacy is a more important concept than outcome expectation. Because if the expectation of a person to succeed is low, then he/she has weak commitment to the goals he/she chooses to pursue (Palmer, 2011). Many researches put forward

* Deniz Gurcay. Tel.: +90-312-297-8609; fax: +90-312-297-8600.

E-mail address: denizg@hacettepe.edu.tr

that self-efficacy has a large scope and has an influence on many fields such as education, sports, health and individual psychology (Bandura, 1997). Teachers' self-efficacy has recently been a subject of many researches (Palmer, 2011; Ross & Bruce, 2007, Tschannen-Moran & Woolfolk-Hoy, 2001).

Skaalvik (2007, p. 612) defines teacher's self-efficacy as "individual teachers' beliefs in their own abilities to plan, organize, and carry out activities required to attain given educational goals". Some research results show that teacher's self-efficacy is related with teachers' attitudes and beliefs regarding his/her teaching (Gencer & Cakiroglu, 2007; Tschannen-Moran & Woolfolk-Hoy, 2001). Moreover, teacher self-efficacy beliefs define the teacher's behaviors regarding teaching and affect the attitudes and achievements of the students (Huang, Liu & Shiomi, 2007). Those studies point out the importance of improving the self-efficacy of teachers to make the classes more productive.

One of the subjects associated with teacher self-efficacy is the teacher's classroom management (Emmer & Hickman, 1991). Erden, (2001) defines classroom management as the efforts of a teacher for managing students' behaviors, providing student interaction and carrying out class activities regarding teaching. Pajares (1996) indicates that teachers' personal self-efficacy beliefs affect their teaching activities and their approach towards teaching process and that teacher self-efficacy belief is related with the control of students belief in preservice teachers. Chong et al., (2010) state that this situation makes teachers more confident and as a result they perceive their self-efficacy higher.

The beliefs and attitudes of teachers regarding classroom management, discipline, control of behavior, effective learning environment and child development may vary and these differences have a significant role for the effective teaching (Martin & Sass, 2010; Rimm-Kaufman, et al. 2006). A teacher with a low sense of self-efficacy is more rigid in controlling the classroom and believes that extrinsic rewards are important to motivate students (Pajares, 1996). Besides, Pajares (1996) also believes that personal self-efficacy of teachers affect their teaching activities and teaching processes and that there is a relation between self-efficacy belief and beliefs regarding controlling students in preservice teachers.

Martin, Yin & Baldwin (1998) states that teacher behaviors towards classroom management are related with their attitudes and beliefs towards classroom management. According to this Glickman and Tamashiro (1980) there are three teacher-class interaction styles on a continuum of control: non-interventionist, interventionist, and interactionist (Martin et al., 2008, p. 11). The aim of this research is to determine the teacher self-efficacy and classroom management beliefs of preservice physics teachers and to examine the relation between those beliefs. Moreover, it is also aimed to determine the effect of gender on those beliefs.

2. Methodology

2.1. Participants

This research was carried out with 115 preservice physics teachers in a public university. 30% of the study group were males and 70% were females.

2.2. Instruments

As instruments of this study, adapted versions of two questionnaires were used; Teachers' Sense of Efficacy Scale (TSES) (Tschannen-Moran and Woolfolk-Hoy, 2001) and Revised Version of the ABCC Inventory (ABCC-R) (Martin et al., 2008).

2.2.1. TSES

In this research, TSES was used to measure preservice physics teachers' teacher efficacy beliefs. This scale was developed by Tschannen-Moran and Woolfolk-Hoy (2001) and adapted into Turkish by Capa, Cakiroglu, and Sarikaya (2005). The TSES consists of 24 items with three subscales which were efficacy for student engagement (SE), for instructional strategies (IS) and for classroom management (CM). All three subscales consist of eight items and each item is assessed along a nine-point continuum between nothing (1) and a great deal (9). The reliability coefficients of the original scale were $\alpha = .94$ for the whole scale and for the subscales SE, IS, CM, as .87, .91 and

.90 respectively (Tschannen-Moran & Woolfolk Hoy, 2001, s. 801). Reliability coefficients for the adapted version of the scale was reported as .93 and for the subscales SE, IS, and CM .82, .86, .84 respectively (Capa, Cakiroglu & Sarikaya, 2005). In this study, Cronbach Alpha reliability coefficient was calculated as .91 for the whole scale and for the subscales SE, IS, and CM .78, .84, .86 respectively.

2.2.2. ABCC-R Inventory

ABCC-R designed to measure beliefs of teachers regarding their classroom management styles on a continuum of control suggested by Glickman and Tamashiro (1980). It was adapted into Turkish by Gurcay (2014). Adapted version of the ABCC-R inventory is a four-point scale and has 19 items with two subscales: instructional management (10 items) and people management (9 items). Both of the subscales measures teachers' classroom management beliefs on a continuum of control ranging from non-interventionist, to interventionist to interactionalist. Cronbach α reliability coefficients for both subscales of the original scale were reported by Martin et al. (2008) between .70 and .80 in different samples. Cronbach α reliability coefficients for the adapted version of the subscales were found as .75 and .73 for the IM scale and the PM scale respectively (Gurcay, 2014). In this study, Cronbach Alpha reliability coefficient was calculated as .71 and .69 for the IM scale and the PM subscale respectively.

3. Results

To investigate the preservice physics teachers' self-efficacy levels and attitudes and beliefs of preservice physics teachers towards classroom management descriptive statistics was calculated. In Table 1 shows descriptive statistics results of the subscales of the TSES and the ABCC-R.

Table 1: Descriptive statistics of the Subscales of the TSES and the ABCC-R

	N	TSES			SE			ABCC-R		PM	
		M	SD	IS	M	SD	CM	M	SD	IM	SD
Female	81	56.2	7.7	54.9	8.2	55.2	6.7	27.4	4.8	20.9	4.4
Male	34	57.1	7.0	59.9	6.4	57.0	5.7	29.6	3.1	20.3	4.1
Total	115	56.5	7.5	56.4	7.9	55.8	6.4	28.1	4.5	20.7	4.3

Table 1 indicates that preservice physics teachers' beliefs regarding teacher efficacy and classroom control are high. When the subscale of the TSES is observed, it is seen that the self-efficacy of preservice physics teachers is considerably high at IS, CM and SE subscales. Preservice physics teachers high efficacy beliefs regarding IS, CM and SE subscales means, they believe that they are able to design instruction to meet student needs, and control student behavior with both preventive and reactive attempts, and motivate all students and support learning. Moreover, male preservice physics teachers perceive themselves more efficacious on all of the subscales of the TSES than females. When the subscales of the ABCC-R is observed, it is seen that preservice physics teachers have more interventionist at IM subscale and noninterventionist at PM subscale. Moreover, female preservice physics teachers have more interventionist beliefs at IM subscale than males. The preservice physics teachers' beliefs regarding IM subscale showed that they tended to have controlling attitude on the aspects organization of the daily class routines. However, the preservice physics teachers' beliefs regarding PM subscale showed that they tended to develop teacher-student relationship with non-interventionist attitude.

Pearson product moment correlations were conducted between the subscale scores of the ABCC-R and scores of the TSES subscales. Results showed that there was significant low and positive correlation between the IM subscale scores of the ABCC-R and CM subscale scores of the TSES as seen in Table 2. In other words, preservice physics teachers perceive themselves more efficacious on the classroom control but they had more interventionist attitude on the IM. Moreover, there was no significant correlations between IM subscale scores of the ABCC-R and IS and SE subscale scores of the TSES. However, there was significant negative and low relationships between PM subscale scores of the ABCC-R and the IS, CM and SE subscale scores of the TSES. In other words, preservice physics teachers had more non-interventionist attitude on the PM and they perceive themselves more efficacious on instructional strategies, on the classroom control, and on the student engagement.

Table 2: Correlations between the ABCC-R and the TSES Subscale Scores

	IM	PM
IS	.10	-.29**
CM	.21**	-.20**
SE	.14	-.22**

*p<.05

T-test results showed that there was a significant mean difference between male and female preservice physics teachers' regarding the classroom management beliefs on the IM subscale scores and teacher efficacy beliefs on the CM subscale scores (Table 3). Moreover, any significant correlation was found between male and female preservice physics teachers' classroom management styles on the PM subscale scores and teacher efficacy beliefs on the IS and SE subscale scores.

Table 3: Independent T-Test Results with respect to Gender on the TSES and ABCC-R Scores

	Gender	df	p
IS	Female	115	.53
	Male		
CM	Female	115	.00**
	Male		
SE	Female	115	.15
	Male		
IM	Female	115	.02**
	Male		
PM	Female	115	.43
	Male		

*p< .05

4. Discussion, Conclusion and Recommendations

In this research, the relations between the preservice physics teachers' self-efficacy beliefs and classroom management styles were examined. The results of this research indicated that preservice physics teachers' self-efficacy on the SE, IS and CM were high. Those results also indicated that preservice physics teachers' beliefs regarding managing the students behaviors in the classroom and affecting the students' achievement in a positive way are high. According to Tschannen-Moran & Woolfolk-Hoy (2001), there are differences in behaviors between the teachers with high self-efficacy and low-efficacy regarding using new teaching methods and providing the students with effective feedback and those differences affect the students' motivation and achievement. Taking into consideration the results of this study, it can be concluded that the high level of self-efficacy of preservice physics teachers can contribute to the motivation and achievement of the students. Moreover, Schmitz and Schwarzer 2000 pointed out that self-efficacy belief has a protective embankment for job stress and high efficacious teachers are more engaged to their job and more satisfied. It can be concluded that preservice physics teachers with high self-efficacy beliefs could endure the stress of their profession and can manage the class more easily. Results of this study also revealed that the preservice physics teachers are more interventionist on the IM and non-interventionist on the PM regarding their attitudes and beliefs on classroom management. Similarly, Gencer and Cakiroglu, (2007) reported that preservice primary science teachers are more interventionist on the IM while they are non-interventionist on the PM.

When the relation between classroom management beliefs and self-efficacy beliefs of preservice physics teachers were examined, a significant negative correlation was observed between all subscales of teacher self-efficacy belief and PM subscale scores. Those results indicate that when the teacher self-efficacy level is high in preservice physics

teachers; their attitudes tend to be more non-interventionist on PM. Some studies reveal that teachers who believe in the possibility of creating an effective teaching environment even with difficult students tend to behave in a non-interventionist manner whereas teachers with low self-efficacy are more interventionist on classroom management and believe in the necessity of rewarding to motivate students (Pajares, 1997; Woolfolk-Hoy 1990).

A positive significant correlation has been found between the subscale of CM scores of teacher self-efficacy belief scale and IM subscale scores. This result indicates that beliefs of preservice physics teachers with high self-efficacy on CM are more interventionist on IM. Preservice physics teachers with high self-efficacy in CM, that is, those who believe that they are able to manage the classroom and can smoothly sort the problems in the classroom are tend to be more interventionist. The results also indicated that there is not a correlation between the SE and IS subscales of teacher self-efficacy scale scores and classroom management styles. The result of this study is not consistent with the results of studies conducted by (Pajares, 1997; Woolfolk-Hoy 1990). As the impact of self-efficacy can vary from culture to culture (Lin, Gorrell and Taylor, 2002), this inconsistency could be explained by cultural differences. It may cause a dilemma for preservice physics teachers to live in a culture that directs them to an interventionist attitude and to adopt themselves to new approaches during preservice training regarding creating a classroom environment.

A significant difference was observed only at classroom management self-efficacy subscale in favor of male preservice teachers. However, no significant difference was observed on the other subscales of the teacher efficacy. Some studies indicated no significant difference between male and female teachers regarding their teacher self-efficacy (Gencer & Cakiroglu, 2007; Tschannen-Moran & Woolfolk-Hoy, 2001). This is mostly consistent with the results of this study. However, in this study, self-efficacy in CM is higher in male teachers when compared to female teachers. The reason for this might be the majority of female preservice teachers in the sampling group. Moreover, regarding the classroom management styles of preservice physics teachers a significant difference was observed only on the IM and there was no difference between male vs. female scores on PM. Martin et al. (2008) investigated that male teachers are more interventionist on the IM and there is no difference between male and female teachers' scores on the PM.

References

- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H Freeman and Company.
- Capa, Y., Cakiroglu, J., & Sarikaya, H. (2005). Development and Validation of Turkish Version of Teachers' Sense of Efficacy Scale. *Egitim ve Bilim*, 30 (137), 74–81.
- Chong, W. H., Klassen, R. M., Huan, V. S., Wong, I. & Kates, A. D. (2010). The Relationships Among School Types, Teacher Efficacy Beliefs, and Academic Climate: Perspective from Asian Middle Schools. *The Journal of Educational Research*, 103, 3, 183-190.
- Emmer, E. T., & Hickman, J. (1991). Teacher efficacy in classroom management and discipline. *Educational and Psychological Measurement*, 51, 755-765.
- Erden, M. (2001). *Smifyonetimi*. Istanbul: Alkım Yayinevi.
- Gencer, A.S. & Cakiroglu J., (2007). Turkish preservice science teachers' efficacy beliefs regarding science teaching and their beliefs about classroom management. *Teaching and Teacher Education*, 23 (5), 664–675.,
- Glickman, C. D., & Tamashiro, R. T. (1980). Clarifying teachers' beliefs about discipline. *Educational Leadership*, 37, 459–464.
- Gurcay, D. (2014). Preservice physics teachers' beliefs regarding classroom management. *Procedia-Social and Behavioral Sciences*, 174, 2430-2435.
- Huang, X., Liu, M., & Shiomi, K. (2007). An analysis of the relationships between teacher efficacy, teacher self-esteem and orientations to seeking help. *Social Behavior and Personality*, 35 (5), 707-716.
- Lin, H., Gorrell, J. & Taylor, J. (2002). Influence of culture and education on U.S. and Taiwan preservice teachers' efficacy beliefs. *The Journal of Educational Research*, 96, 37-46.
- Martin, N. K., Sass, D. A. (2010). Construct validation of the Behavior and Instructional Management Scale. *Teaching and Teacher Education*, 26, 1124-1135
- Martin, N. K., Yin, Z. & Mayall, H. (2008). The Attitudes & Beliefs on Classroom Control Inventory-Revised and Revisited: A Continuation of Construct Validation. *Journal of Classroom Interaction*, 42 (2), 11–20.
- Martin, N. K., Yin, Z., & Baldwin, B. (1998). *Classroom management training, class size and graduate study: Do these variables impact teachers' beliefs regarding classroom management style?* Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA. (ERIC Document Reproduction Service No. ED 420671).
- Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research*, 66, 533–578.
- Pajares, F. (1997). *Current directions in self-efficacy research*. In M. Maehr & P. R. Pintrich (Eds.), *Advances in motivation and achievement* (Vol. 10, pp. 1–49). Greenwich, CT: JAI Press.

- Palmer, D. (2011). Sources of efficacy information in an inservice program for elementary teachers. *Science Education*, 95 (4), 577–600.
- Rimm-Kaufman, S. E., Storm, M. D., Sawyer, B. E., Pianta, R. C., & LaParo, K. M. (2006). The teacher belief Q-sort: A measure of teachers' priorities in relation to disciplinary practices, teaching practices, and beliefs about children. *Journal of School Psychology*, 44, 141–165.
- Ross, J., & Bruce, C. (2007). Professional development effects on teacher efficacy: Results of a randomized field trial. *Journal of Educational Research*, 101, 50–60.
- Schmitz, G.S. & Schwarzer, R. (2000). Selbstwirksamkeitserwartung Von Lehrern: Langsschnitt Befunde Mit Einem Neuen Instrument, *Zeitschrift Fur Padagogische Psychologie*, 14 (1), 12-25
- Skaalvik, E. M., & Skaalvik, S. (2007). Dimensions of teacher self-efficacy and relations with strain factors, perceived collective teacher efficacy, and teacher burnout. *Journal of Educational Psychology*, 99 (3), 611–625.
- Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17(7), 783–805.
- Woolfolk, A. E., & Hoy, W. K. (1990). Prospective teachers' sense of efficacy and beliefs about control. *Journal of Educational Psychology*, 82 (1), 81–91.