

Pre-service secondary science and mathematics teachers' classroom management styles in Turkey

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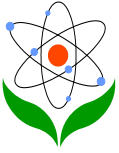
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Abstract

The aim of this study is to determine Pre-service secondary science and mathematics teachers' classroom management styles in Turkey. In addition, differences in pre-service secondary science and mathematics teachers' classroom management styles by gender, and field of study were examined. In the study, the survey model was employed. The research data was gathered using the Attitudes



and Beliefs on Classroom Control (ABCC) Inventory (Martin et al., 1998). The ABCC Inventory was adapted into Turkish by Savran (2002). The research group consisted of 204 pre-service secondary science and mathematics teachers. Data was analyzed by utilizing descriptive statistics, t-tests and ANOVA. Results revealed that pre-service secondary science and mathematics teachers had non-interventionist styles on the People Management subscale, whereas they had interventionist styles on the Instructional Management subscale.

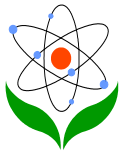
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Introduction

Major teaching functions include instruction, classroom management, student socialization and disciplinary intervention (Brophy, 1987). In this sense, classroom management skill is *sine qua non* (an essential condition) for teachers, as they have to be efficient classroom managers, as well as efficient educators in classroom. In this setting, teachers are responsible for creating and maintaining an effective learning environment to achieve instructional goals (Savran and Çakıroğlu, 2004). Researches have shown that an efficient classroom management style has an influence on creating an efficient learning environment (Brophy, 1987; Savran and Çakıroğlu, 2004; Savran et al., 2006; Walters and Frei, 2007; Turan, 2008).

Classroom management refers to actions taken to create and maintain a learning environment conducive to attainment of the goals of instruction (Brophy, 1987). According to Doyle (1986), classroom management activities are closely associated with, and should be designed to support, the basic instructional activities for which schools were established. Classroom management is the process of efficiently organizing and continuing classroom activities as learning centered and guiding student behaviors (Turan, 2008).

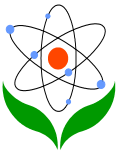
According to Kellough and Kellough (1999) effective classroom management is the process of organizing and conducting a classroom so that it maximizes student learning. Many researchers do agree that good classroom management involves student motivation; minimizing behavioral disruption; having access to materials that are linked to learning; clarity in the minds of the learners as to what they are about, which means the teacher's lesson is fairly concrete; good interpersonal rapport between all parties; and a lively tempo of teaching (Pankake, 2006).



Beliefs regarding classroom management vary among teachers and play an important role in effective instruction (Martin et al., 1998, 3). Martin et al. (1998) conceptualized classroom management style as two poles, non-interventionist and interventionist. The non-interventionist “presupposes the child has an inner drive that needs to find its expression in the real world”. At the opposite end of the continuum are interventionists who emphasize “what the order environment does to the human organism to cause it to develop in its particular way” (Martin et al., 1998, 4). The noninterventionist is the least directive and controlling, while the interventionist is most controlling (Savran et al., 2006, 217).

Accordingly, Willover et al. (1967) conceptualized teacher approaches towards classroom management or student control under two heading, supervisor control ideology and humanistic control ideology. In supervisor control ideology, organizations provide high level control to watch rules. Students are perceived as ordinary, irresponsible, undisciplined individuals who need to be controlled by limitations based on scolding because of their clothes, physical appearance, behaviors and social status of their families. Teachers do not tend to understand student behaviors. They emphasize moral conditions instead. Wrong behaviors are taken personally and relationships with students are private as much as possible (Willover et al., 1967; Hoy and Forsyth, 1986; Lunenburg and Mankowsky, 2000; Hoy, 2001; Hoy and Miskel, 2001). Students and teachers are responsible for their own actions to the extent that they fulfill directives (Lunenburg, 1983). In supervising schools, there is an autocratic organization in student activities and strictness in the distinction between teacher-student statuses (Kottkamp and Mulhern, 1987).

In humanistic control ideology, student learning and behaviors are handled psychologically and sociologically, rather than morally. In the humanistic view, socio-psychological (relating to social psychology) senses, developed by Fromm, are used (Hoy, 1969). In this view, shy children are considered equal to active and problematic children. Humanistic teachers are optimistic (seeing the good), and they fulfill positive expectations of respect and friendship by establishing close personal relationships with students. Teachers guide self-discipline, instead of imposing discipline (Willover et al., 1967; Hoy and Forsyth, 1986; Lunenburg and Mankowsky, 2000; Hoy, 2001; Hoy and Miskel, 2001). This style enables teachers to create a democratic classroom environment. Mutual communication and establishing a style to provide flexibility in rules and status are again possible. Thus, teachers and students are willing to act according to their own alternatives and to



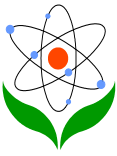
become responsible for their own actions. Humanistic ideology considers schools as education communities where students participate in the learning process with collaborative interactions and experiences (Lunenburg and Schmidt, 1989).

As it is clear from definitions and explanations, classroom management includes activities to largely organize classroom activity in an efficient way and remove obstacles to learning. In this context, classroom management is the action of creating a positive learning environment in the classroom. Teachers need to display efficient classroom management behaviors in order to create a positive learning environment. To this end, they must believe that they have sufficient content knowledge, professional knowledge and related competencies, as most of pre-service teachers and new teachers have certain troubles in classroom management (Walters and Frei, 2007). In this context, classroom management beliefs of pre-service teachers are crucial, and it is necessary to determine classroom management styles of pre-service teachers. Within this study, classroom management styles are defined as two dimensions (instructional management and people management).

The instructional management dimension includes aspects such as monitoring busy work, structuring daily routines, and allocating materials (Martin et al., 1998). The manner in which these tasks are managed contributes to the general classroom atmosphere and classroom management style (McNeely and Mertz, 1990; Martin et al., 1998). In this respect, for example, these teachers believe strongly that students need direction in how to work together, monitoring their learning behavior continuously, allocating classroom materials, assigning seats, and the structure of a daily routine that is organized by the teacher (Savran and Çakıroğlu, 2004). The people management dimension pertains to what teachers believe about students as persons and what teachers do to develop the teacher-student relationship (Martin et al., 1998). They give students opportunities to create their own daily routines, to judge the quality of their own work, to pursue their own interests and to select their own seats (Savran and Çakıroğlu, 2004).

Training secondary science and mathematics teachers in Turkey

In Turkey, secondary science and mathematics teachers are trained in two different ways. The first is teachers from departments of faculties of education. These people are trained to be teachers during their 5-year education (10-semester education). During the first three and a half years, pre-service teachers take theoretical lessons in the related field of study, and for the remaining one and a half years, they take



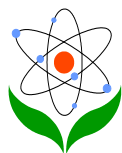
courses on pedagogy for teacher training. Pre-service secondary science and mathematics teachers take approximately 185-credit courses during their education. They have a training program at schools, as well as theoretical and practical courses. The second way of training secondary science and mathematics teachers is a one-year-master's program in which graduates participate after their four-year-undergraduate studies. Those who would like to enroll in these programs need to be graduated from related departments of faculties of science and letters and pass the graduate study admission examination. These people take approximately 130-credit theoretical and practical lessons during their four-year education. Those who pass the graduate study admission examination take pedagogy lessons for teacher training for one year. The following lessons are included in this curriculum: Introduction to Educational Sciences, Developmental Psychology, Program Development and Teaching, Special Education Methods, School Experience, Measuring and Evaluation, Classroom Management, Teaching Technologies and Material Design, Practice Teaching, Guidance, Learning and Teaching Theories and Approaches to Learning and Teaching and a Field Education Research Project.

The purpose of the present study is to determine classroom management styles of pre-service secondary science and mathematics teachers enrolled in the secondary school sciences master's program (without thesis). The study attempted to answer the following questions:

- Q1. What are pre-service secondary science and mathematics teachers' classroom management styles?
- Q2. Are there any differences between pre-service secondary science and mathematics teachers' classroom management styles according to gender and field of study?

Method

This research was conducted using a survey model. A common goal of survey research is to collect data representative of a population. Survey research is a non-experimental, descriptive research method. Surveys can be useful when a researcher wants to collect data on phenomena that cannot be directly observed. Surveys are used extensively to assess attitudes and characteristics of a wide range of subjects. This research aimed at describing the pre-service secondary science and mathematics teachers' classroom management styles.



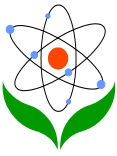
Participants

The research group consisted of 204 pre-service secondary science and mathematics teachers studying in the department of science and mathematics teaching, in the Dumlupınar University Faculty of Education and Pamukkale University Faculty of Education. Their age ranges from 20 to 30. 60.8% were female, and 39.2 % were male. 17.2% were biology teachers, 19.1% were chemistry teachers, 30.4% were physics teachers and 33.3% were mathematics teachers.

Instrument

The Attitudes and Beliefs on Classroom Control (ABCC) Inventory were used as the data collecting instrument in the study. The ABCC Inventory was developed by Martin et al. (1998) with the purpose of measuring teachers' perceptions of their classroom management beliefs and practices. In the scale there are 26 Likert-type items. Within this inventory, classroom management was defined as a multi-faceted construct that included three broad dimensions: instructional management (14 items), people management (8 items), and behavior management (4 items). Each scale was derived to assess a continuum of control ranging over three approaches to classroom interaction: non-interventionist, interventionist and interactionalist. A four-point Likert scale was used. After reverse scoring of some items, high subscale scores indicate a more controlling, interventionist approach, while lower scores are indicative of a less controlling belief in that dimension of classroom management style (Savran and Çakıroğlu, 2004).

The ABCC Inventory was adapted into Turkish by Savran (2002) and includes a two-factor structure. In two-factor structure, three items (items 6, 7, and 24) were omitted using a factor load of .30 as the cut-off point and one item (item 17) on the wrong factor. After deleting the four items, subsequent factor analysis for the refinement of the two-factor structure retained items weighted highly on their own scale. Three remaining items (items 23, 25, and 26) in the behavioral management scale were retained on the people management scale with high factor load. These two factors corresponded to the instructional and people management scales of the ABCC Inventory. The instructional management scale includes 12-items factor loads ranging from .33 to .64 and the people management scale includes 10-items factor loads ranging from .46 to .58. Reliability analysis of the instructional management scale produced an alpha of .71. Corrected item-total correlation of all items was .23 and above. The people management scale produced an alpha of .73. All items had corrected item-total correlations of .31 and above (Savran, 2002;



Savran and Çakıroğlu, 2004). Inventory is answered as 1-Strongly disagree, 2-Disagree, 3-Agree and 4-Strongly agree.

Data Analysis

In the analysis of the first questions of the study, descriptive statistics were used to determine the pre-service secondary science and mathematics teachers' classroom management styles. Increasing the scores indicate a more controlling, interventionist approach while decreasing the scores are indicative of a less controlling belief in that dimension of classroom management style (Savran and Çakıroğlu, 2004). T-tests were used to determine whether the pre-service secondary science and mathematics teachers' classroom management styles differed according to gender. ANOVA was used to determine whether they differed according to field of study.

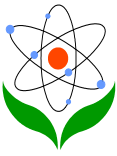
Results

Table 1 presents descriptive statistics on pre-service secondary science and mathematics teachers' classroom management style.

Table 1: *Descriptive Statistics on Classroom Management Styles of the Pre-service Secondary Science and Mathematics Teachers*

Sub-scale	n	K	Minimum Score	Maximum Score	\bar{x}	SD	\bar{x} / K	SD
<i>Instructional Management</i>	204	12	22.00	48.00	36.58	4.12	3.04	0.34
<i>People Management</i>	204	10	10.00	36.00	20.72	3.71	2.07	0.37

As it is clear from Table 1, pre-service secondary science and mathematics teachers have an interventionist style in the instructional management dimension ($\bar{x}=3.04$), as an increase in the scale score means more control style. The items the pre-service secondary science and mathematics teachers agreed with most reflect this. In the instructional management dimension, pre-service secondary science and mathematics teachers agreed most with the following items: “I believe classroom rules are important, as they shape student behaviors and improvement ($\bar{x}=3.36$)”, “I believe teachers should ask for students to respect and obey rules ($\bar{x}=3.33$)” and



“I believe teachers should guide students while passing to another learning activity ($\bar{x}=3.28$)”.

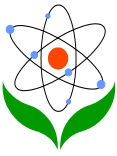
The items that pre-service secondary science and mathematics teachers agreed upon least in the instructional management dimension are as follows: “I believe teachers should decide what things students are taught and what activities they will use ($\bar{x}=2.78$)”, “In the first week when lessons start, I announce classroom rules and inform my students that those who do not obey rules will be punished ($\bar{x}=2.79$)” and “I believe students will be successful at school if they listen to adults who know what is best for them ($\bar{x}=2.79$)”.

Pre-service secondary science and mathematics teachers have a style which is a non-interventionist in the people management dimension ($\bar{x}=2.07$), as an increase in the scale score means more control, whereas a decrease shows less control. In the people management dimension, pre-service secondary science and mathematics teachers agreed most with the following items: “I let my students choose their desks ($\bar{x}=2.46$)”, “I believe students should assess their own work themselves, rather than what relying heavily on what their teachers say about their work ($\bar{x}=2.41$)” and “I believe students should choose what to learn and their assignments ($\bar{x}=2.41$)”.

The items that pre-service secondary science and mathematics teachers agreed upon least in the people management dimension are as follows: “I believe students' establishing their own daily activities will improve their sense of responsibility ($\bar{x}=1.71$)”, “I believe students will be successful if they are given a chance to study topics they are interested in ($\bar{x}=1.72$)” and “In the first week when lessons start, I let my students say their suggestions about classroom rules ($\bar{x}=1.77$)”. Table 2 presents the results of t-test analysis related to the comparison of classroom management styles of pre-service secondary science and mathematics teachers according to gender.

Table 2. Comparison of classroom management styles of pre-service secondary science and mathematics teachers according to gender

Sub-scale	Gender	n	\bar{x}	S	df	t	p
Instructional Management	1. Female	124	36.82	4.12	202	1.03	.30
	2. Male	80	36.21	4.13			
People Management	1. Female	124	20.70	3.78	202	0.11	.90
	2. Male	80	20.76	3.61			



As it is clear from Table 2, there is no significant difference between the styles of pre-service secondary science and mathematics teachers in the dimensions of instructional management [$t_{(202)}=1.03$; $p>0.05$] and people management [$t_{(202)}=0.11$; $p>0.05$] according to gender. Accordingly, it might be suggested that classroom management styles of pre-service secondary science and mathematics teachers are not influenced by gender. Table 3 presents the results of ANOVA related to the comparison of classroom management beliefs of pre-service secondary science and mathematics teachers according to field of study.

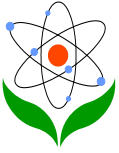
Table 3. Comparison of classroom management styles of pre-service secondary science and mathematics teachers according to field of study

Sub-scale	Field of Study	n	\bar{x}	S	df	F	p
Instructional Management	1. Biology	35	37.31	4.29	3-200	0.76	.51
	2. Psychology	62	36.43	4.48			
	3. Chemistry	39	36.94	3.77			
	4. Mathematics	68	36.13	3.90			
People Management	1. Biology	35	20.62	3.40	3-200	1.25	.29
	2. Psychology	62	20.37	4.12			
	3. Chemistry	39	20.17	3.61			
	4. Mathematics	68	21.41	3.49			

As it is clear from Table 3, there is no significant difference between the styles of pre-service secondary science and mathematics teachers in the dimensions of instructional management [$F_{(3-200)}=0.76$; $p>0.05$] and people management [$F_{(3-200)}=1.25$; $p>0.05$], according to field of study. Accordingly, it might be suggested that classroom management styles of pre-service secondary science and mathematics teachers are not influenced by their field of study.

Conclusion and Discussion

The purpose of the present study is to determine classroom management styles of pre-service secondary science and mathematics teachers. In this research pre-service secondary science and mathematics teachers who are studying in a one-year master's program. Findings were evaluated accordingly. According to the findings obtained from the study, pre-service secondary science and mathematics teachers have an interventionist style on dimension of instructional management. On the other hand, pre-service secondary science and mathematics teachers were found to be scored non-interventionist on dimension of people management. In similar studies (Savran et al. 2006; Savran and Çakıroğlu, 2003, 2004, 2007), the

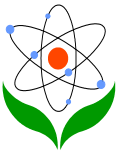


same results were recorded. The instructional management dimension includes such aspects as monitoring seatwork, structuring daily routines and allocating materials. The extent in which these tasks are managed contributes to the general classroom atmosphere and management style (Martin et al., 1998; Savran and Çakıroğlu, 2004).

Teachers who support high-level control consider students as ordinary, irresponsible, undisciplined individuals who need to be controlled by limitations based on scolding because of their clothes, physical appearance, behaviors and social status of their families. Teachers with this orientation do not tend to understand student behaviors. They emphasize moral conditions instead. Wrong behaviors are taken personally and relationships with students are private as much as possible (Willover et al., 1967; Hoy and Forsyth, 1986; Lunenburg and Mankowsky, 2000; Hoy, 2001; Hoy and Miskel, 2001). It can be said that Theory X from McGregor (1960) forms the basis of such a classroom management style. According to Theory X, humans do not like work by nature and refrain work as much as possible. It is necessary to motivate, reward, control or punish (when needed) one's work, since human does not like work by nature. Generally, people tend to refrain from responsibilities and would like to be oriented and directed instead of directing. Individuals particularly seek job security (English, 1992; Sergiovanni and Starratt, 1993; Lunenburg and Ornstein, 2000; Hanson, 2003; Ponticell, 2006; Skidmore, 2006). When Theory X is interpreted in terms of classroom management, it reflects a pessimistic point of view about student nature. Accordingly, students need external control.

On the other hand, pre-service secondary science and mathematics teachers have a non-interventionist style in the people management dimension. The people management dimension includes teacher-student relationships and what teachers believe about students as persons and what teachers do to develop the teacher-student relationship. They give students opportunities to create their own daily routines, to judge the quality of their own work, to pursue their own interests and to select their own seats (Martin et al., 1998; Savran and Çakıroğlu, 2004).

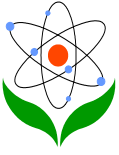
Non-interventionist classroom management style calls the humanistic approach to mind. In the humanistic approach, student learning and behaviors are handled psychologically and sociologically, rather than morally. In the humanistic view, socio-psychological senses developed by Fromm are used (Hoy, 1969). In this view, shy children are considered equal to active and problematic children. Humanistic teachers are optimistic, and they fulfill positive expectations of respect and



friendship by establishing close personal relationships with students. Teachers guide self-discipline, instead of imposing discipline (Willover et al., 1967; Hoy and Forsyth, 1986; Lunenburg and Mankowsky, 2000; Hoy, 2001; Hoy and Miskel, 2001). This approach enables teachers to create a democratic classroom environment and a warm climate. In such an environment, students express themselves more easily and creative and critical thinking flourish. As a result of the classroom management approach, student needs are considered and met more often.

It can be said that Theory Y from McGregor (1960) forms the basis of such a classroom management style. According to Theory Y, for every human being, working is a desire which is as natural as relaxing and having fun. Working itself could be a source of satisfaction for an individual. External control and punishment alone might not cause an individual to achieve his organizational goals. A person could achieve his goals through self-management and self-control. Delegating responsibilities and giving authorities to individuals creates a chance for them to show their personalities and personal abilities. Therefore, such satisfaction eventually enables them to achieve their organizational goals. People can learn not only to take, but also to seek, responsibility under favorable conditions. Refraining from responsibility is not a constant quality in human nature (English, 1992; Sergiovanni and Starratt, 1993; Lunenburg and Ornstein, 2000; Hanson, 2003; Ponticell, 2006; Skidmore, 2006). When Theory Y is interpreted in terms of classroom management, it reflects optimistic point of view about student nature. This approach attaches importance to internal control. According to Theory Y, teachers should make students have self-control, instead of controlling them. Today, if teachers are expected to teach students how to learn, then classroom management style must be in a non-interventionist, humanistic style. Critical and creative thinking power which is expected from modern individuals is only possible in a democratic classroom environment.

It is contradicting that pre-service secondary science and mathematics teachers have an interventionist style in the instructional management dimension, whereas they have a non-interventionist style in the people management dimension. Observing classroom management style holistically, they should have the same style in each dimension. The reason for pre-service secondary science and mathematics teachers having an interventionist style in the instructional management dimension could be due to the fact that they did not start teaching, as most of pre-service teachers and new teachers have certain troubles in classroom



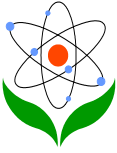
management (Walters and Frei, 2007). Pre-service teachers or new teachers generally believe they can provide efficient teaching by over-controlling. In case of failure in classroom management, pre-service teachers generally prefer an interventionist style, thinking they will be unsuccessful in other educational activities.

The items that pre-service secondary science and mathematics teachers agreed upon most and least among the items included in the scale enlighten the styles in these two dimensions. The items with which pre-service secondary science and mathematics teachers agreed upon most and least in the instructional management dimension are those that highlighted control and rules. The items that pre-service secondary science and mathematics teachers agreed upon most and least in the people management dimension are those that provided students with emancipation attached importance to internal control mechanisms and concerned with student interests and abilities.

It was determined that classroom management styles of pre-service secondary science and mathematics teachers did not differ according to gender. In other research, it was determined that classroom management styles of pre-service secondary science and mathematics teachers did not differ according to gender (Savran and Çakıroğlu, 2003, 2004, 2007). There have been further studies showing that classroom management styles of pre-service teachers from various fields did not differ according to gender (Yalçınkaya and Tonbul, 2002; Yılmaz and Huyugüzel-Çavaş, 2008).

However, according to the literature, male teachers are more controlling, authoritarian, compelling and aggressive, when compared to female teachers (Savran and Çakıroğlu, 2004). Research consistently reveals that males are more likely to take control of conversation by choosing the topic, interrupting more and speaking for longer duration (Zaremba and Fluck, 1995). On the other hand, women are more likely to use helplessness as a way of influencing others (Martin and Yin, 1997).

There have been studies that show differences in classroom management styles according to gender (Matin and Yin, 1997; Terzi, 2001; Yalçınkaya and Tonbul, 2002; Altay, 2003; Kuşuoğlu, 2004; Özata, 2004; Yeşilyurt and Çankaya, 2008), as well as others that find no differences (Doğan-Burç, 2006; Akın, 2007). Accordingly, it might be suggested that classroom management styles of teachers are influenced by variables other than gender. These variables include school size,

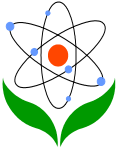


classroom size, teacher perception of self-efficacy and the quality of teacher-student interaction.

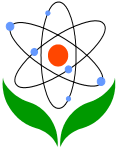
Classroom management styles of pre-service secondary science and mathematics teachers do not differ according to department. In both dimensions, department means of secondary education pre-service science teachers are very similar. The fact that pre-service secondary science and mathematics teachers taught the classroom management lesson in the same fashion could be influential in this instance.

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