

The Effects of Teachers' Educational Technology Skills on Their Classroom Management Skills.

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Because technology integrations require changes in instructional processes it may require different approaches for classroom management. The purpose of this study was to investigate whether teachers' educational technology skills, besides their gender and years of experiences, significantly explain their classroom management skills. The data was gathered from 300 elementary school teachers in a mid-western city of Turkey. It was found that teachers' educational technology skills and their years of experiences were significantly associated with their course management skills, behavior arrangement skills and activity management skills. The finding of non-significant effects of teachers' gender on their subordinate classroom management skills are supported by previous research. The finding that experience may be expected to be an important predicting factor for occupational proficiency may be explained by the opportunities teachers may have to develop themselves in occupational skills during their career. Teachers with high perceptions of educational technology self-skills have high perceptions of classroom management skills. This result may be attributed to the experience in the use of educational technology.

Introduction

Significance of using technology in classroom has been well investigated in numerous research studies (Lemke, Coughlin, & Reifsneider, 2009). Results of those studies have led large scale technology integration projects at schools in different countries. However, because the technology integrations require changes in instructional processes (i.e. from teacher-centered instruction to student-centered one) (Mucherah, 2003), it may also require different approaches for classroom management.

Classroom management has different dimensions, which may be affected by or may affect technology integration in instruction, such as arrangement of physical environments, arrangement of program activities and behavior management. Arrangement of physical environments deals with organizing and controlling factors in classroom environments including illumination, heating, cleanness, noise, aesthetic, instructional materials and seating

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arrangements. Physical arrangements of a classroom are made for students' comfort to facilitate learning. Arrangement of program activities is effectively planning and implementing instructional processes including determining goals of instruction, selecting an appropriate content and conducting student evaluation. Program activities should correspond to students' needs and interests. Behavioral arrangements are related to creating positive classroom climates supporting and reinforcing desired students behaviors and changing the undesired ones. Also, teachers with behavioral arrangements skills direct students to follow classroom rules and prevent undesired behaviors by figuring out potential problems earlier (Gürsel, Sarı and Dilmaç, 2004; Başar, 1997, 1999; Erçetin and Özdemir, 2004).

Teacher authority and control are major factors that affect classroom atmosphere when educational technology is used. Reviewing the literature on technology integrations in instruction and factors preventing the integrations, Wang and Reeves (2003) contended that teachers have concerns of losing their authority in the classroom, besides other concerns such as inadequate number of computers available in the classroom and difficulty of using software programs. For instance, it is observed that if teachers conduct their courses with teacher-centered methods instead of student-centered ones discipline problems occur in technology-integrated classrooms where teachers are expected to exhibit different roles and classroom control approaches (Mucherah, 2003).

Classroom management approaches may change according to types and ways of using technology. For instance, if educational game software is used in classroom, students may play the game only for entertainment. Moreover, teachers should strictly oversee students playing multiuser games because they may show undesirable behaviors towards each other, which affect classroom management (Green and McNeese, 2007).

Utilizing technology in education may contribute to classroom management by motivating students and helping them gain necessary educational goals targeted. Specifically, multimedia provides a significant support for teachers to motivate students towards courses (Özan and Özdemir, 2010). Instructional materials facilitate students' perceptions, arouse their interests in instruction, reduce teacher-centered instructional time and stimulate their desires to explore (Aslan and Doğdu, 1993). In another study where a different technology was used, the effects of an electronic meeting system, as an instructional medium in a high school, were investigated. The purpose to use the system was to create an active and collaborative learning environment. It was found that less discipline problems occurred in the classrooms where the system was used compared to the ones where the system was not used (Brandt and Lonsdale, 1996).

Importance of in-service teacher training programs in this context is emphasized. Developing an effective expertise in classroom management is essential for effective technology integration. Therefore, teacher technology training programs should provide knowledge and skills to successfully manage classrooms (Sandholtz, Ringstaff and Dwyer, 1990). Vannetta and O'Bannon (2002) developed a technology dissemination model. According to this model, training teachers for classroom management is necessary besides other requirements, such as creating a common vision, creating team works among teachers to support each other in technology integrations and articulating long term expectations about technology integrations. As Muir-Herzig (2004) pointed out that such models must include modules for in-service training programs where teachers will be able to gain classroom management skills specifically for technology-integrated classrooms. Also, teachers should be provided with appropriate models that help them better perform environmental arrangements, a dimension of classroom management (Bayram, 2006).

If teachers assume students can complete their classroom work by themselves and do not change their classroom management approaches in technology-integrated classrooms, problems may occur (Ertmer, 1999) because bad classroom management is a factor that prevents teachers from using computers as an instructional tool besides other factors such as curriculum, insufficient technology infrastructure and students' test results (Mucherah, 2003).

The purpose of this study was to investigate whether teachers' educational technology skills significantly explain their classroom management skills particularly in the Turkish context. More specifically, the following research question was investigated in this study: Do teachers' gender, years of experiences, and educational technology skills significantly explain their classroom management skills?

Method

Participants

The study was conducted with public school teachers in a mid-western city of Turkey. First, the researchers contacted school principals of 34 elementary schools, which made of all the public elementary schools in the city. With their assistance, a total of 450 elementary school teachers in the 34 elementary schools were invited to participate in the study. Surveys were left to the principals and later collected from them. Among the 450 elementary school teachers, 300 completed and returned the surveys.

Table 1: Distributions of teachers by gender.

Gender	N	%
Male	147	49.0
Female	153	51.0
Total	300	100.0

As seen in Table 1, 147 (49%) of the participants were males and 153 (51%) were females. Table 2 shows the frequencies and percentages for years of experiences. Approximately, one-fourth of the teachers had 1-6 years of experiences, one-fourth had 7-12 years of experiences, one-fourth had 13-18 years of experiences and the remaining had 19 or more years of experiences.

Table 2: Distributions of teachers by years of experiences.

Y. of Experience	N	%
1-6	74	24.6
7-12	75	25.0
13-18	72	24.0
19-24	39	13.0
25-30	17	5.7
More than 30	23	7.7

Instruments

A short questionnaire and two surveys were used to gather data for the study. The short questionnaire included questions about socio-demographic characteristics of the teachers including gender, and years of experiences. The surveys were Application-Based

Educational Technology and Material Development Skills Survey and Classroom Management Skills Survey.

Application-Based Educational Technology and Material Development Skills (AETMDS) Survey. This survey was developed by Varank and Ergün (2008) and has been used in various studies (Akgül, 2008; Varank, 2011). The survey has a total of 45 items measuring teachers' perceptions of their application-based educational technology and material development skills. Some of the items in the survey are: Being able to prepare simple learning materials that are original and economical, using readily available resources and environmental conditions in instruction, being able to properly use flipcharts in lessons, being able to properly use overhead projectors in instruction, and being able to teach a lesson using instructional techniques appropriate for the skill/subject taught. Using a 4-point Likert scale, teachers respond to each item to indicate to what extent they perceive that they have the skills given in the item, with 1= strongly disagree and 4= strongly agree. Possible scores teachers receive on AETMDS Survey ranged between 45 and 180. Higher score on the survey indicates higher level of perception about their skills. Its alpha reliability coefficient was found to be .94 in a previous study by Varank (2011).

Classroom Management Skills Survey. A new survey was developed to measure teachers' perceived classroom management skills. Initially, using the existing literature, three subordinate classroom management skills were determined: course management skills, behavior arrangement skills, and activity management skills. Then, a total of 50 items, 5 of which measuring the course management skills, 19 measuring the behavior management skills, and 26 measuring the activity management skills, were gathered. Some items of the survey were: I can engage all students in instructional activities (activity management), I can plan activity times well (activity management), I can reward positive behaviors appropriately (behavior arrangement), I can prevent noise that disrupts the class (behavior arrangement), I can complete my courses on time (course management) and I can use all of the classroom time for instruction (course management).

Teachers rate to what extent they agree with the statements given in the items on a 5-point Likert scale. Scores for the three subordinate classroom management skills were computed. Possible scores on the survey of course management skills range between 5 and 25, behavior arrangement skills range between 19 and 95, and activity management skills range between 26 and 130. Higher scores show higher perceptions in the related subordinate classroom management skills.

Prior to administering the survey to all the teachers participating in the study, it was administered to 45 elementary school teachers and factor analyses were run in order to determine whether each item measures the construct of the survey of the each subordinate classroom management skill. The factor analysis yielded the three constructs with the expected items. Then, reliability analysis was conducted separately for the survey of the each subordinate classroom management skill. No items were subtracted from the surveys based on the analysis results. The calculated alpha reliability coefficients were .87, .92 and .90 for the surveys of course management skills, behavior arrangement skills and activity management skills, respectively. Although the 50 items were given to the teachers on a single survey sheet, the items were grouped under three different titles representing the three different constructs of the subordinate classroom management skills: course management skills, behavior arrangement skills and activity management skills.

Data Analysis

The analysis began with describing the means and standard deviations for the AETMDS Survey and the surveys of the subordinate classroom management skills by gender and years of experiences. Then, to examine to what extent teachers' perceived application-based educational technology and material development skills, gender and years of experiences explain their subordinate classroom management skills, multiple regression analysis was used. Three separate analyses were run for each of the survey of the three subordinate classroom management skills.

Results

In this study, the calculated alpha reliability coefficient of the AETMDS Survey was found to be .97. The alpha reliability coefficients of the surveys of the subordinate skills (course management, behavior arrangement and activity management) were .87, .92 and .90, respectively.

Table 3 shows the means and standard deviations for the survey results. The average scores male teachers received on the AETMDS Survey and the surveys of the subordinate skills were higher than the average scores female teachers received.

The teachers with more than 30 and 25-30 years of experiences received higher average scores on all the surveys than the teachers with less experiences did. The other results for years of experiences were mixed. For instance, the average scores the teachers with 1-6 years of experiences received on the AETMDS Survey and the survey of the activity management skills were higher than the average scores the teachers with 7-12 years of experiences received. However, the results with the same group of teachers were reverse for the average scores received on the surveys of the course management skills and behavior arrangement skills.

Table 3: Distributions of the mean scores and standard deviations of the AETMDS survey results and the surveys' results of the subordinate classroom management skills by gender and years of experience.

Gender	N	AETMDS M (SD)	Activity Management M (SD)	Behavior Arrangement M (SD)	Course Management M (SD)
Male	147	139.38 (22.14)	112.72 (11.39)	83.05 (8.42)	21.70 (2.88)
Female	153	137.07 (19.83)	112.50 (12.19)	81.67 (9.12)	21.47 (3.10)
Years of Teaching					
1-6 years	74	136.35 (21.27)	111.28 (12.51)	80.68 (9.90)	20.73 (3.18)
7-12 years	75	135.73 (18.56)	110.65 (10.92)	81.47 (7.06)	21.75 (2.54)
13-18 years	72	140.43 (19.36)	112.00 (11.13)	82.12 (8.12)	21.72 (2.96)
19-24 years	39	137.64 (27.33)	114.33 (11.24)	83.03 (9.53)	21.59 (3.18)
25-30 years	17	142.06 (22.49)	116.41 (12.43)	86.12 (8.01)	22.29 (2.82)
More than 30 years	23	143.35 (19.29)	119.43 (12.32)	87.30 (9.58)	22.83 (3.20)
Total	100	138.20 (20.99)	112.61 (11.79)	82.34 (8.79)	21.58 (2.99)

Table 4 shows the regression analysis results for the relationship between teachers' subordinate classroom management skills scores and their AETMDS scores, gender and years of experiences. Three different regression models were established for the activity

management skills scores, the behavior arrangement skills scores and the course management skills scores. All of these models were significant ($p < .05$). The models explained 27% of the variance in the average score of the teachers' activity management skills ($R^2 = 0.27$, $p < .05$), 27% of the variance in the average score of the teachers' behavior arrangement skills ($R^2 = 0.27$, $p < .05$) and 16% of the variance in the average score of the teachers' course management skills ($R^2 = 0.16$, $p < .05$).

The teachers' years of experiences and AETMDS scores were significantly associated with their activity management skills scores, behavior arrangement skills scores and course management skills scores ($p < .05$) in all of the models. However, gender was not significantly associated with the three subordinate classroom management skills in any of the model ($p > .05$). The teachers with more years of experiences and higher AETMDS scores had higher scores on the surveys of the subordinate classroom management skills.

Table 4: regression analysis table for the effect of the AETMDS, gender and years of experiences on their subordinate classroom management skills.

	Variable	B	SE	β	t	p
Activity Management	Constant	72.16	3.96		18.20	.00
	AETMDS*	.27	.028	.47	9.74	.00
	Gender	-1.39	1.21	-.06	-1.15	.25
	Years of Experience	1.26	.41	.16	3.10	.00
	$R^2 = 0.27$		$F(3, 296) = 56.88 p < .05$			
Behavior Arrangement	Constant	52.22	2.96		17.62	.00
	AETMDS*	.20	.02	.48	9.49	.00
	Gender	.21	.91	.01	.23	.82
	Years of Experience	.93	.31	.16	3.03	.00
	$R^2 = 0.27$		$F(3, 296) = 35.87 p < .05$			
Course Management	Constant	13.60	1.08		12.65	.00
	AETMDS*	.05	.01	.37	6.93	.00
	Gender	-.10	.33	-.02	-.31	.76
	Years of Experience	.27	.11	.14	2.47	.01
	$R^2 = 0.16$		$F(3, 296) = 19.34 p < .05$			

Discussion and Conclusions

This research study examined whether elementary school teachers' classroom management skills were explained by their gender, years of experiences and application-based educational technology and material development skills.

Finding of non-significant effects of teachers' gender on their subordinate classroom management skills are supported by previous research (Akın and Koçak, 2006; Burç, 2006; Çubukçu and Girmen, 2008; Denkdemir, 2007). Particularly, there are research results that in some subordinate classroom management skills, comparable to the ones in this study, such as program activities-physical arrangement skills, student-teacher relations skills, in-class interactions skills and behavior arrangements skills, male and female teachers exhibit similar features (Korkut, 2009). Though, while there are findings indicating significant differences between male and female teachers' classroom management skills in favor of both genders (Ayar and Arslan, 2008; İlgar, 2007; Özgan, Yiğit, Aydın, and Küllük, 2011), this may be attributed to the different subordinate skills used in the related studies.

Experience may be expected to be an important predicting factor for occupational proficiency. In agreement with this expectation and the previous findings (Çubukçu and Girmen, 2008; Erol, 2006; Korkut, 2009; Yeşilyurt and Çankaya, 2008), this research showed that teachers

who have more years of experiences have better classroom management skills than those who have fewer years of experiences. This finding may be explained by the opportunities teachers may have to develop themselves in occupational skills during their career. Teachers in their advanced career stages, compared to the ones in the early stages, have more opportunities to develop their own classroom management skills, such as having more classroom management experiences, attending in-service training programs, reading books and sharing experiences with their colleagues (Ayar and Arslan, 2008; İlgar, 2007).

Finally, the findings of this study showed that teachers with high perceptions of educational technology self-skills had also perceived that they had better classroom management skills. Teachers that have educational technology skills may use the technology to better manage classroom, reduce discipline problems and improve students' motivations and attentions (Sandholtz, Ringstaff and Dwyer, 1990; Muir-Herzig, 2004). Teachers who are not experienced in the use of technology in education are anxious and hesitant about the technology. However, as they get experienced they adopt the technology to support their instructions in classroom. In such classrooms, it was observed that classes became student-centered in which students' self-efficacy, motivations, participations and student-teacher relations were improved, and discipline problems were reduced (Adams, 1992; Cohen, 1997).

There is an important implication of this research study for practitioners, which is, to prevent discipline problems in the technology-integrated classroom where student-centered instruction is conducted, teachers' educational technology skills and perceptions must be improved.

This study was conducted in a specific region (city) of Turkey representing a distinctive urban and semi-rural culture. Although the findings were partially supported by the literature, studies similar to this one should be conducted or replicated with similar variables to fine more generalizable results. Especially the role of gender in the classroom management in the context where this study was conducted needs further investigations.

Another limitation of the study is that the data collected on the teachers' classroom management skills and educational technology skills was perceptual. Further case studies are needed in which teachers are directly observed in the actual classroom settings to better determine their behaviors related to their classroom management and educational technology skills, and the relationship between those skills.

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