Meta-analysis of school leadership effects on student achievement in USA and Turkey

Sengul Uysal*, Kiliccoglu Anadolu Lisesi, Eskisehir 26040, Turkey
Yilmaz Sarier, Gazi Anadolu Meslek Lisesi, Eskisehir 26020, Turkey

Abstract

This research study aims to investigate the effects of school leadership on student achievement in USA and Turkey. The method of meta-analysis is used to calculate the effect size of school leadership on student achievement. Thirty-nine research studies were included in this study. However, several publications included in the research have examined more than one leadership approach. Due to this reason, the dataset used in 39 publications was determined as 68 in total. The results of the analyses performed with a random-effects model revealed that school leadership has a small but positive effect on student achievement in general. However, in Turkey, the effect size is at a modest level, while it is small in the USA. Considering the findings of the study, it can be proposed that professional development opportunities should be supported for the best practice of instructional leadership behaviours.

Keywords: Achievement, meta-analysis, school leadership, Turkey, USA

* ADDRESS FOR CORRESPONDENCE: **Sengul Uysal,** Kiliccoglu Anadolu Lisesi, Eskisehir 26040, Turkey.
E-mail address: sengultokgoz70@gmail.com / Tel.: +0 505 715 5453

1. Introduction

Leaders are important because they serve as anchors, provide guidance in times of change and are responsible for effective organisations. Leadership in a school is a complex process. School leaders are at least partially responsible for school outcomes. Particularly, they have a strong influence on student achievement as they create a positive and strong learning environment in the school supporting teachers and implementing effective organisational processes (Davis, Darling-Hammond, LaPointe & Meyerson, 2005; Nichols, 2011; Leithwood, Seashor-Louis, Anderson & Wahlstrom, 2004; Waters, Marzano & McNulty, 2003). Therefore, it is vital to answer the question of how leadership contributes to effective school and student learning (Hallinger & Heck, 2017).

In recent years, the role of school principal has shifted from the traditional management to leadership practices including student learning and continual school improvement. It is obvious that school leaders are critical components in effective schools (Cawelti, 1999; Hallinger & Heck, 1996). Heck, Larson and Marcoulides (1990) demonstrated that principals can directly influence student achievement through their leadership practices. Furthermore, Sergiovanni (1996) believes that school leaders are not business owners and states that 'The roots of school leadership reach not only into the moral voice of community and the ministerial role of the principal but reach as well to our own personal commitments as parents, teachers and principals to do the right thing for our children; to accept as part of our role responsibilities the necessity to practice leadership as a form of pedagogy'. (p. 96).

Similarly, Lewis (1993) states that leaders in schools must have the ability to assess the strengths and weaknesses of the followers for effective institutions. Leaders must recognise the importance of teaching and learning atmosphere with trust and collaboration in order to reach the organisational goals (Anfara, 2001). The research on effective schools indicates that having high expectations for student learning and teacher accountability results in high student achievement (Carter & Klotz, 1990). In addition, Bjork (1993) states that effective school teachers make a contribution to the instructional effectiveness of schools.

It is clear that principals are unable to directly affect student achievement, as they are not in the classroom (Harris, 2005; Sergiovanni, 2005). However, they can change teachers' efficacy, commitment, and expectations for students (Printy & Marks, 2006; Ross & Gra, 2006). The only way to achieve all is to rely on strong school leadership. This work was designed to reveal how student achievement was affected by the leadership behaviour of principals. Reviewing the literature related to the effect of school leadership on student achievement, it can be seen that there are numerous independent studies partially conflicting and partially supporting each other. The method of meta-analysis enables to reassess all these findings and see the big picture.

1.1. School leadership and student achievement

Leadership makes a difference in the capacity of a school, particularly the academic achievement. However, which leadership style can result in the greatest student achievement is needed to answer. Since the date of the 1960s when the effective student movement started, features of these institutions have been identified focusing on the effect of leaders on student achievement (Lezotte, 1992; Valentine & Prater, 2011). Particularly, in USA 'Coleman Report' and 'A nation at risk' report were the initial catalyst to the effective schools focusing upon achievement of students with school leadership (Gibbs, 1989).

School leadership has been identified as a crucial factor supporting effective schools. Researchers focus on leadership behaviours of principals for school effectiveness in terms of school outcomes. Scholars began to study school leadership in order to increase the teaching quality in the 1960s (Gross & Herriott, 1965). Following this, they included student achievement as a result of leadership styles at school (Hallinger & Hecks, 1996). The result of the powerful relationship between the leadership of

the principal and student outcomes is released by Brandth (1987, p. 15). Beach and Reinhartz (1989, p. 53) imply the impact of school leaders on teachers' perception of work environment which helps in student achievement. Furthermore, school leadership behaviours direct the organisational climate and instructional organisation of the school, which indirectly affects student learning (Bossert, Dwyer, Rowan & Lee, 1982; Dwyer, 1984).

Even Stronge, Richard and Catano (2008) insist that "Nothing in the principal's role is more important for ensuring successful student learning than effective instructional leadership" (p. 13). Researchers have been calling for school leaders to focus their time and energy on improving the instructional strategies of teachers and indirectly increasing student learning (Gibbs, 1989). Hallinger and Heck (1996) and Leithwood et al. (2004), concluded that the combined direct and indirect effects of school leadership on student outcomes are small but educationally significant. Shortly, principals have been viewed as they are able to indirectly affect student achievement through mediating variables such as teacher instruction, morale, climate and establishing a clear mission (Hallinger & Heck, 1998; Leithwood, Day, Sammons, Harris & Hopkins, 2006). It is obvious that school leadership as a part of effective schools is positively related to student achievement. However, overall effect size value is much stronger answer to the question of whether or not.

2. Purpose of the study

This research study aims to investigate the effects of school leadership on student achievement in USA and Turkey. The method of meta-analysis is used to calculate the effect size of school leadership on student achievement. Besides this, country, leadership style, publication type, the level of education and publication year were used as moderators in order to explain variation in effect sizes.

2.1. Research hypotheses

H1: School leadership has a positive effect on students' academic achievement

H2: The country (USA and Turkey) in which the research carried on is a moderation variable for the positive effect of school leadership on students' academic achievement.

H3: Leadership style is a moderation variable for the positive effect of school leadership on students' academic achievement.

H4: The publication type is a moderation variable for the positive effect of school leadership on students' academic achievement.

H5: The level of education is a moderation variable for the positive effect of school leadership on students' academic achievement.

H6: The publication year is a moderation variable for the positive effect of school leadership on students' academic achievement.

3. Method

Along with the increase in the number of researches produced, some difficulties are encountered in the processes of information access and evaluation of studies. Examination of sources, observation of findings and evaluation of results and proposals can take days or even months. For this reason, it is necessary to synthesise the extensive knowledge that is produced and to pass it through an analysis process again. In this context, the method of meta-analysis, which is described as the process of re-evaluation of the results of individual studies through statistical procedures, is now preferred in all scientific fields, and is frequently used, especially, in medicine and educational sciences (Saglam & Yuksel, 2007). Meta-analysis is a method of combining the results of multiple, independent studies on a specific subject and applying the statistical analysis of the research findings obtained. This method

provides quantitative data summarising the results of various studies to researchers with a common judgment (Chin, 2007; Lipsey & Wilson, 2001; Robinson, Lloyd & Rowe, 2008).

Meta-analysis aims to reach all published or unpublished data (dissertations, master thesis, articles, proposals and books) on the subject. However, in this study, only dissertations, master thesis and articles published in refereed journals are included. The literature review was made in *YOK (Council of Higher Education in Turkey), ULAKBIM (Turkish Academic Network and Information Center), ProQuest and EBSCO academic databases* containing abstracts and contents of quantitative studies on the topic of school leadership and student achievement. The keywords used in searching the studies were *'leader', 'leadership', 'school leader', 'educational leader', 'Transformative-supportive-imperative-transactional -visionary-collaborative-cultural-democratic-ethical leadership'* and *'student achievement'.*

A study should have the necessary statistical data in its limits in order to be included in the meta-analysis (Lipsey & Wilson, 2001). In this context, the criteria used in the selection of the studies included in the survey are:

The release date of research studies is between January 2000 and December 2017.

The effect of school leadership on student achievement

Statistical data of sample size, Pearson r for calculation of effect size.

The sample should be within USA and Turkey

A framework for developing a *coding* scheme for *meta-analysis* is needed to categorise publications. The studies examined were grouped by evaluating the leadership approaches identified in the survey. Coding book is formed in order to extract data from the research literature. The studies examined were grouped by evaluating the leadership approaches identified in the survey. However, *14* publications have been examined under the heading "unclassifiable", because they cannot be fully associated with any leadership approach. Following the expert opinions, moderator variables were identified and *39* research studies were included in the study. However, several publications included in the research have examined more than one leadership approach. Due to this reason, the dataset used in 39 publications was determined as *68* in total.

In the study, the analysis was done in two parts. First, a descriptive analysis of the studies involved in the research was conducted using percentage and frequency values. After all these operations, the meta-analysis technique was in the second part. Comprehensive meta-analysis 2.0 was used in the meta-analysis process. The main purpose of the meta-analysis in which correlation studies are used is to determine the average effect size value and homogeneity by combining the relevant data. The effect sizes obtained can be interpreted by comparing them with some criterion values. For Cohen, Manion and Morrison (2007, p. 221), the effect size values based on the correlation are interpreted as follows:

0 ≤ effect size <0, 10 small effect

0, 1≤0 effect size < 0, 30 modest effect

0, 30≤0 effect size < 0, 50 moderate effect

0, 50≤0 effect size < 0, 80 strong effect

effect size ≥0, 80 very strong effect

There are two basic models in meta-analysis: *fixed-effect model* and *random-effects model*. When deciding which model to use, it is necessary to look at which model prerequisites the features of the investigations involved in the meta-analysis (Borenstein, Hedges, Higgins & Rothsteini, 2009; Hedges & Olkin, 1985; Kulinskaya, Morgenthaler & Staudte 2008). Fixed effect—model is estimated using maximum likelihood (all studies included are functionally identical) and calculating the effect size for a

defined population only not to generalise to others. By contrast, it is unlikely that all the studies are functionally equivalent and generalisations are made to a larger population; the random-effects model is more easily justified than the fixed–effects model (Karadag, Bektas, Cogaltay & Yalcin, 2015). In the study, fixed effect model was used first. It was observed that homogeneity could not be achieved in the fixed- effect model and then the random -effects model was applied. A significance level of 0.05 was chosen for all statistical calculations in the study.

Moderator analysis is a method that allows testing the differences between the mean effect sizes of variables (moderators) and the direction of differences between subgroups. The statistical significance of the difference between the moderator variables is tested by the Q statistic method developed by Hedges and Olkin (1985). In this method, Q is divided into two, Q between *[Qb]* and Q within *[Qw]*, and the analyses are carried on over these two different Q's. *Qw* tests the homogeneity of the moderator variable in itself, while *Qb* tests the homogeneity between the groups (Borenstein, et al., 2009; Hedges & Olkin, 1985; Kulinskaya, et al., 2008). In this study, only the *Qb* values were used for the statistical significance of the differences between moderators.

4. Findings

In this section, descriptive analysis of the studies is performed, then the data obtained are combined using the meta-analysis. The data related to the studies are presented in the following tables using frequency and percentage values. Table 1 shows the descriptive analysis of the studies examined in the research.

Table 1. Descriptive analysis of the studies included in the meta-analysis (f and %)

		Frequency (f)	Percentage (%)
Publication country of the research	Turkey	8	11.8
	USA	60	88.2
Publication year of the research	2000–2008	24	35,3
	2009–2017	44	64,7
Publication type of research	Dissertation	47	69.1
	Article	21	30.9
The level of education	Primary education	53	77.9
	Secondary education	10	14.7
	Mixed	5	7.4
Leadership styles	Instructional	13	19.1
	Transformational	18	26.5
	Leadership practices	20	29.4
	Collaborative	3	4.4
	Others	14	20.6

Table 1 shows that 60 studies were produced in the USA, while only eight of them were in Turkey. When we look at the distribution of the studies included in the survey according to years, it is seen that most of the studies (64.71%) were made in 2009 and after. This shows that, in recent years, the relationship between the leadership of the schoolmaster and student academic achievement has been studied more by researchers. Approximately 70% of the studies are produced in the type of dissertation and more than 75% in primary education institutions. Besides this, the studies classified as to the leadership style are given in Table 1.

Table 2. Direction of the effect sizes

Country	Direction of the effect size	f	%
Turkey	+ (positive)	7	87.50
	− (negative)	1	12.50
USA	+ (positive)	26	43.33
	− (negative)	34	56.67
General	+ (positive)	33	48.53
	− (negative)	35	51.47

According to Table 2, It is possible to say that the studies included in the research are heterogeneous (In general, about half of the studies are positive).

Table 3. Correlation between school leadership and student achievement: the results of meta-analysis

Model	Concept	f	ES	95% confidence interval		Q	X^2	p
				Lower limit	Upper limit			
Fixed –effect model	Leadership	68	0.218	0.212	0.223	1582.778	87.108	0.000
Random – effects model	Leadership	68	0.054	0.009	0.099			

The effect size value (*mean r*) is calculated in order to determine the strength and direction of the relationship between school leadership and student achievement (Table 3). The correlation coefficient (*r*) is converted into the value stated in table *z* (Hedges & Olkin, 1985). Once the effect size is calculated, then it is interpreted using Cohen's. In Table 3, the meta-analysis of school leadership and student achievement is shown. First, fixed effects model is used. However, depending on the results of the heterogeneity test, the random effect model is applied in the meta-analytic procedure. The finding supports *H1* supposing that there is a positive relationship between school leadership and student achievement. The effect size value is calculated as 0.*054*. This value is interpreted as school leadership has a small and positive effect on student achievement (Cohen, Manion & Morrison, 2007, p. 221).

Table 4. Meta-analysis for country as a moderator

Country	f	ES	95% confidence interval		Heterogeneity test		
			Lower limit	Upper limit	Q_B	X^2	P
Turkey	8	0.199	0.071	0.327	6.09	3.84	0.014
USA	60	0.027	−0.021	0.075			

In the moderator analysis, *H2* was supported (Table 4). It was found that country as moderating variable explained the excess effect sizes variability and showed the significant result (*Qb = 6.09, p <05*). The effect size in Turkey (*0.199*) is significantly higher than the effect size in USA (*.027*).

Table 5. Meta-analysis for leadership style as a moderator

Country	Leadership style	f	ES	95% confidence interval		Heterogeneity test		
				Lower limit	Upper limit	Q_B	X^2	P
Turkey	Instructional	4	0.251	0.083	0.419	2.543	3.84	0.111
	Collaborative	2	0.107	0.051	0.163			
USA	Instructional	9	0.163	0.093	0.232	32.011	5.99	0.000

Transformational	17	0.013	-0.106	0.133
Leadership practices	20	-0.069	-0.109	-0.128

Table 5 shows that *H3*, based on the perspective that leadership style functioned as a moderator was supported (*Qb = 2.543/32.011, p <.05*). From the leadership styles reached from the studies included in meta-analysis, it was found that instructional leadership (*r = 0.25*) and collaborative leadership (*r = 0.107*) have a moderate and positive effect on student achievement in Turkey, while instructional leadership (*r = 0.163*) has a medium and positive, transformational leadership (*r = 0.013*) has a small and positive and leadership practices (r = − 0.069) have a negative and small effect on student achievement for the USA.

Table 6. Meta-analysis for publication type as a moderator

Country	Publication type of the research	f	ES	95% confidence interval		Heterogeneity test		
				Lower limit	Lower limit	Q_B	X^2	p
Turkey	Dissertation	5	0.230	0.077	0.384	0.832	3.84	0.362
	Article	3	0.150	0.069	0.230			
USA	Dissertation	42	0.009	− 0.086	0.104	0.490	3.84	0.484
	Article	18	0.053	− 0.027	0.133			

H4, which proposed that the publication type of the research was the moderating variable regarding the effect of school leadership on student achievement, was not supported. The effect sizes between the publication types were not statistically significant (*Qb = 0.832/.490, p>.05*).

Table 7. Meta-analysis for level of education as a moderator

Country	Level of education	f	ES	95% Confidence interval		Heterogeneity test		
				Lower limit	Upper limit	Q_B	X^2	p
Turkey	Primary education	7	0.210	0.075	0.345			
	Secondary	1	0.120	0.027	0.212			
USA	Primary education	46	0.030	− 0.024	0.084	1.124	3.84	0.289
	Secondary education	9	-0.071	− 0.250	0.108			

The findings didn't support *H5*, which proposed that the level of education was the moderating variable regarding the effect of school leadership on student achievement was not supported. The effect sizes between the publication types were not statistically significant. (*Qb = 1.124, p >0.05*).

Table 8. Meta-analysis for publication year as a moderator

Country	Year of the publication	f	ES	95% Confidence interval		Heterogeneity test		
				Lower limit	Lower limit	Q_B	X^2	p
Turkey	2000–2008	1	0.224	0.154	0.293			
	2009–2017	7	0.195	0.054	0.336			
USA	2000–2008	23	-0.046	−0.246	0.154	1.002	3.84	0.317
	2009–2017	37	0.059	0.012	0.105			

H6, which proposed that the year of the publication was the moderating variable regarding the effect of school leadership on student achievement, was not supported. The effect sizes between the publication types were not statistically significant. (*Qb = 1.002, p >0.05*).

4.1. Findings related to publication bias

It is really crucial to control the publication bias in meta-analysis studies. Publishing bias is basically based on the assumption that all of the research on a topic has not been published. Since it is not deemed worth, specifically, to publish investigations in which statistically significant relationships cannot be found or low levels of relations are identified, this affects the total effect size level negatively and increases the mean effect size prejudicially (Borenstein, et al., 2009; Hanrahan Field, Jones & Davey, 2013).

This publication bias effect, which can also be referred to as missing data, can negatively affect the total impact of meta-analysis. In this sense, the likelihood of publication bias is taken into account in meta-analysis studies. A number of calculation methods are used to give a statistically answer as to whether there is publication bias in meta-analyses. The funnel plot method is the first of these. The shape provided by this method reveals whether the studies obtained by the subjective evaluation are influenced by the publication bias. In this study, the funnel graph of the researches included in meta-analysis is shown in Fig 1.
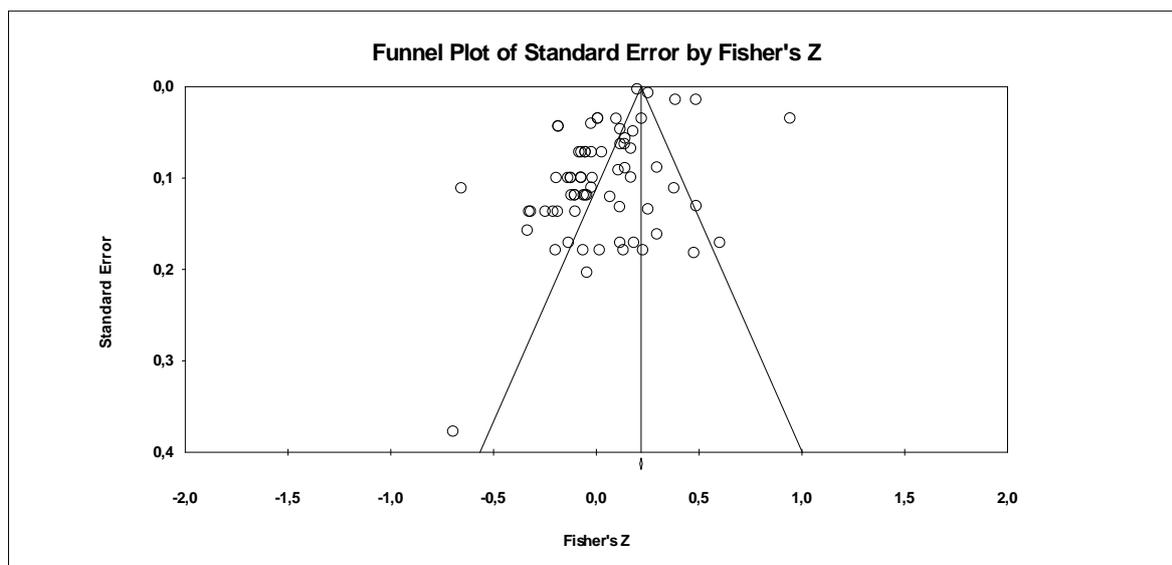

Figure 1. Effect size funnel on publication bias

In Figure 1 no evidence of publication bias was observed in the studies included in the meta-analysis. It is expected that the funnel graph will be significantly asymmetric in the bias of publication. Concentrations on the one side of the line showing the average effect size, especially in the lower parts of the funnel, indicate the possibility of publication bias. There is no evidence of bias in the publication of 68 studies involved in a meta-analysis of the research. Although there is no evidence of bias in the funnel graph, the results of the Trim and Fill test are presented in Table 10 to assess the effect size of the meta-analysis with random effects model in terms of publication bias.

Table 9. The results of Duval and Tweedie's trim and full test

	Excluding study	Point estimate	Confidence Interval		Q
			Lower limit	Upper limit	
Observed variable		0.053	0.008	0.098	1582.777
Adjustment values	0	0.053	0.008	0.098	

As shown in Table 9, there is no difference between the magnitude of the observed effect and that of the virtual effect. An analysis of the Classic False-Safe N was also used to analyse the publication bias in the study. The results of the analysis are shown in Table 10.

Table 10. The results of classic fale-safe N results.

The power of meta-analysis	
Z-value	22.54
p-value	0.00
Alfa value	0.05
Alfa value for Z	1.96
Number of observed studies	68
Number of missing studies that would bring p-value to > α	8930

According to the findings obtained, 8930 individual studies should be added to the analysis in order to override the result of the meta-analysis study (p <0.05). This information shows that there is no bias in this meta-analysis study.

5. Conclusion and discussion

In discussing the results of the study, the related literature is reviewed and the recommendations based on the findings are stated.

The meta-analysis of the results of the studies examining the relationship between school leadership and student achievement revealed that school principals are held responsible for student achievement. School leadership has a small but positive effect on student achievement in general. Reviewing the literature, it is seen that leadership is correlated with student achievement (Heck, Larson & Marcoulides, 1990; Hallinger & Heck, 1996; Leithwood & Mascall, 2008; Marzano, Waters & McNulty, 2005). Marcoulides (1990) states that school principal behavior has a significant influence on student achievement through a positive school climate. VanBeck (2011) adds that school principals and teachers' support, communication, trust and respect behaviors are more effective on student achievement. O'Donnell and White (2005) emphasise that school principals must be able to communicate strongly with their stakeholders, constantly support teachers and create environments where all learners can learn in order to capture excellence in student achievement.

However, whether the effect of school leadership on student achievement is direct or indirect is controversial. The related literature posits that school leadership either has a small impact on student achievement (Ross& Gray, 2006) or indirectly influences academic outcomes (Kruger, Witziers & Sleegers, 2007). Hallinger and Heck (1996) reviewed 40 quantitative studies examining the relationship between school leadership and student achievement and showed that they have both direct and indirect effects on student learning. On the other hand, the related-literature review states that school leaders, particularly, instructional leadership behaviors indirectly affect student achievement through the mediating variables such as teacher morale, curriculum, climate and instructional practices (Heck, et al., 1990; Leithwood et al. 2006). Since the movement of effective schools teachers have called the principal as the primary instructional leader (Bamburg & Andrews, 1990). According to Ross and Gray (2006), school leaders indirectly contribute student achievement through teacher commitment and collectivism. In addition, the study of Rautiola' (2009) demonstrates that school leaders have a more

indirect effect on students' learning in terms of school culture that supports student success and shares leadership responsibilities by teachers, parents and leaders in designing curriculum and instruction.

On the other hand, in Turkey, the effect size is at a modest level, while it is small in the USA. In other words, the difference between the countries indicates that school leadership matters less in the USA than in Turkey. The educational system is highly centralised and recently deregulations related to the school bureaucracy have been contributing to the higher average of effect size in Turkey. Turkish educational system is unstable and turbulent; therefore, the positive effect of school leaders on school outcomes is considered high in the realisation instructional objectives.

In this research study, except leadership styles, the other moderators chosen for the research are not a powerful determinant of the relationship between school leadership and student achievement. When the leadership style is used as a moderator in the relationship between school leadership and student achievement, it is found that instructional leadership has a more significant effect on student achievement than others do. Similarly, Robinson, Lloyd and Rowe (2008) performed a meta-analysis and found that instructional leadership on student achievement is three or four times that of transformational leadership. It should be noted that transformational leadership is primarily related to social outcomes, while instructional leadership is dealing with school academics. In addition, instructional leaders take care of more student academic success than organisational change. Ross and Gray (2006) discovered that transformational school leaders indirectly contribute student achievement through motivation, commitment and collectivism of teachers. Leadership styles, one of the moderator variables, can be the reason for heterogeneity of USA group (according to the random effects model; the heterogeneity between the groups calculated as 32.011 is higher than the value of the ki-square table (5.99)) and it is understood that the studies examined are heterogeneous. This seems crucial that school principals should take the role of instructional leadership to improve the academic success of students.

The common feature of effective leadership approaches is that the school principal needs to demonstrate behaviour focusing on humans. Greenfield's thoughts, one of the forerunners of the Subjective Theory in educational administration, support this interpretation. According to Greenfield (1980), the most important element that constitutes the organisational dynamic is the human being, so values, emotions and subjectivity should not be ignored in education management. In this context, the most essential task expected of today's school principals in this regard is to create a strong learning vision that is shared and supported by the school community.

This research shows that school leaders have the opportunity to positively affect student achievement. There has been a great emphasis on student learning measured by standardised tests today. The significant increase in competitive context among schools has caused pressure on principals; hence, they are encouraged to facilitate student learning. In the need of higher student achievement, principals are expected to improve instructional strategies including well-defined school vision, instructional programme and positive school climate. It can be proposed that professional development opportunities should be supported for the best practice of instructional leadership behaviours. These findings can be used to enhance the principal training programmes for better schools, particularly transforming institutions into learning organisations. It may be of additional value to implement a leadership development program for principals and teachers. School principals should provide individual support to teachers and students in order to create a school climate that is inspirational. In addition, studies in the field of educational administration meta-analysis with little preference should be disseminated and researchers should be supported.

Uysal, S. & Sarier, Y. (2018). Meta-analysis of school leadership effects on student achievement in USA and Turkey. *Cypriot Journal of Educational Science*. *13*(4), 590-603.

References

Anfara, V. (Ed.). (2001). *The handbook of research in middle level education*. Greenwich, CT: Information Age Publishing.

Aydin, A. & Senturk, I. (2007). Application of total quality management in education. *Manas University Journal of Social Sciences Institute, 17,* 1–19.

Bamburg, J. & Andrews, R. (1990). School goals, principals and achievement. *School Effectiveness and School Improvement, 2*, 175–191. https://doi.org/10.1080/0924345910020302

Beach, D. M. & Reinhartz, J. (1989). *Supervision: Focus on instruction*. NY, USA: Harper & Row.

Bjork, L. (1993). Effective schools-effective superintendents: the emerging instructional leadership role. *Journal of School Leadership*, *3*, 246–59.

Borenstein, M., Hedges, L. V., Higgins, J. P. T. & Rothstein, H. R. (2009). *Introduction to Meta-Analysis*. UK: John Wiley & Sons.

Bossert, S. Dwyer, D., Rowan, B. & Lee, G. (1982). The instructional management role of the principal. *Educational Administration Quarterly, 37*, 34–64. doi:10.1177/2F0013161X82018003004

Bostic, R. E. (2014). *Texas principals' data use: its relationship to leadership style and student achievement* (Unpublished doctoral dissertation). Denton, Texas: University of Northern Texas.

Brandt, R. S. (1987). On leadership and student achievement: A conversation with Richard Andrews. *Educational Leadership, 44*(6), 9–16.

Brent, M. F. (2007). *Perceived superintendents' leadership and student Performance in region v education service center: a cohort study* (Unpublished doctoral dissertation). TX, USA: Texas A&M University.

Bulduklu, E. (2014). *An examination of the relationship between instructional leadership, teacher self-efficacy and student achievement of school principals* (Unpublished doctotal dissertation). Konya, Turkey: Mevlana University.

Butz, R. (2010). *The relationship between teacher perceptions of principal leadership style and student achievement during a time of leadership change* (Unpublished Doctoral dissertation). MN, USA: Walden University.

Can, B. (2014). *The relationship between leadership styles of middle school principles and student achievement* (Unpublished master thesis). Izmir, Turkey: Dokuz Eylul University.

Carmichael, C. (2006). *Collaborative leadership in public elementary schools and its' impact on teacher attendance, teacher efficacy, and student achievement* (Unpublished doctoral dissertation). FL, USA: The University of North Florida.

Carter, C. J. & Klotz, J. (1990). What principals must know before assuming the role of instructional leader. *NASSP Bulletin, 74,* 36–41.

Cawelti, G. (1999). *Portraits of six benchmark schools: diverse approaches to improving student achievement*. Arlington, VA: Educational Research Service.

Chin, J. M. C. (2007). Meta-analysis of transformational school leadership effects on school outcomes in Taiwan and the USA. *Asia Pacific Education Review, 8*(2), 166–177. doi: 10.1007/BF03029253

Cohen, L., Manion, L. & Morrison, K. (2007). *Research methods in education.* London, UK: Routledge-Falmer.

Crabtree, C. T. S. (2014). *The relationship between servant leadership and student achievement in Southwest Virginia schools* (Unpublished doctoral dissertation). VA, USA: Liberty University.

Crosthwaite, G. R. (2015). *The correlation between elementary school leadership behaviors and student achievement* (Unpublished doctoral dissertation). CA, USA: Claremont Graduate University.

Davis, S., Darling-Hammond, L., LaPointe, M. & Meyerson, D. (2005). *Review of research. School leadership study: developing successful principals* (Unpublished literature review). CA , USA: Stanford Educational Leadership Institute.

Demirtas, Z. (2010a). The relationship between school culture and student achievement. *Education and Science, 35*(158), 3–13.

Demirtas, Z. (2010b). The relationship between school culture in high school and student achievement. *Mustafa Kemal University the Journal of Social Sciences Institute, 7*(13), 208–223.

Uysal, S. & Sarier, Y. (2018). Meta-analysis of school leadership effects on student achievement in USA and Turkey. *Cypriot Journal of Educational Science*. *13*(4), 590-603.

Dimke, D. K. (2011). *The relationship between principal leadership practices and student achievement in Illinois urban secondary schools* (Unpublished doctoral dissertation). Macomb, Illinois: Western Illinois University.

Doucef, D. M. (2017). *The relationship between the leadership styles of principals, school climate, and student achievement in Urban elementary schools* (Unpublished doctoral dissertation). TX, USA: Texas Southern University.

Dwyer, D. C. (1984). The search for instructional leadership: Routines and subtleties in the principal's role. *Educational Leadership, 41*(5), 32–39.

Ewing, T. M. (2001). *Accountable leadership: the relationship of principal leadership style and student achievement in Urban elementary schools* (Unpublished doctoral dissertation). IL, USA: Northern Illionois University.

Gibbs, G. K. (1989). *Effective schools research: the principal as instructional leader. With annotated bibliography*. (Retrieved from ERIC database. ED308587).

Gross, N. & Herriot, R. (1965). *Staff leadership in schools*. NY, USA: Wiley.

Givens, K. L. (2013). *A new look at distributive leadership in title I and non-title I schools: does distributive leadership impact student achievement and school culture?* (Unpublished doctoral dissertation), Boca Raton, Florida: Florida Atlantic University.

Greenfield, T. B. (1980). The man who comes back through the door in the wall: discovering truth, discovering self, discoveing organizations. *Educational Admininstration Quarterly, 16*(3), 26-59.

Gunal, Y. (2014). *Relevance of effective school variables to student achievement and school accountability* (Unpublished master thesis), Istanbul, Turkey: Marmara University.

Hallinger, P. 2003. Leading educational change: Reflections on the practice of instructional and transformational leadership. *Cambridge Journal of Education, 33*(3), 329–351.

Hallinger, P. & Heck, R. H. (1998). Exploring the principal's contribution to school effectiveness: 1980–1995. *School Effectiveness and School Improvement, 9*(2), 157–191. doi: 10.1080/0924345980090203

Hallinger, P. & Heck, R. H. (1996). Reassessing the principal's role in school effectiveness: A review of empirical research, 1980–1995. *Educational Administration Quarterly, 32*(1), 5–44. doi: 10.1177/0013161X96032001002

Harris, A. (2005). Leading or misleading? Distributed leadership and school improvement. *Journal of Curriculum Studies, 37*(3), 255–265.

Heck, R., Larson, T., & Marcoulides, G. (1990). Instructional leadership and school achievement: Validation of a causal model. *Educational Administration Quarterly,* 26 (2), 94–125. doi: 10.1177/2F0013161X90026002002

Hedges, L. V. & Olkin, I. (1985). *Statistical method for meta-analysis*. UK: Academic Press.

Jones, J. M. (2013). *The relationship between principal leadership and student performance: an analysis of the leadership for learning framework and student performance on Indiana's ıstep* (Unpublished doctoral dissertation) In, USA: Indiana University.

Karadag, E., Bektas, F., Cogaltay, N. & Yalcin, M. (2015). Theeffect of educational leadership on students' achievement: a meta-analysis study. *Asia Pasific Education Review, 16*(1), 79–93. doi: 10.1007/s12564-015-9357-x

Kelly, R. & Williamson, R. (2006). *The relationship between servant leadership behavior of high school principals, school climate, and student achievement* (Unpublished doctoral dissertation). Grandforks, ND, USA: University of North Dakota.

Korkmaz, M. (2005). The relationship between organizational health and student achievement in primary schools. *Educational Administration: Theory and Practice, 44*, 529–548.

Kruger, M., Witziers, B. & Sleegers, P. (2007). The impact of school leadership on school level factors: Validation of casual model. *School Effectiveness and school improvement, 18*(1), 1–20. doi: 10.1080/09243450600797638

Kulinskaya, E., Morgenthaler, S. & Staudte, R. G. (2008). *Meta-analysis: a guide to calibrating and combining statistical evidence.* London, UK: John Wiley & Son.

Uysal, S. & Sarier, Y. (2018). Meta-analysis of school leadership effects on student achievement in USA and Turkey. *Cypriot Journal of Educational Science*. *13*(4), 590-603.

Ladner, M. D. (2014). *The relationship between teacher perception of principals' leadership behaviors and student achievement* (Unpublished doctoral dissertation), MS, USA: The University of Mississippi.

Lamasters, L. K. (2010). *The relationship of the dimensions of distributed leadership in elementary schools of Urban districts and student achievement* (Unpublished Doctoral dissertation), WA, USA: The George Washington University.

Leithwood, K., Day, C., Sammons, P., Harris, A. & Hopkins, D. (2006). *Seven strong claims about successful school leadership*, Nottingham, UK: National College for School Leadership.

Leithwood, K., & Mascall, B. (2008). Collective leadership effects on student achievement. *Educational Administration Quarterly, 44*(4), 529–561. doi: 10.1177/2F0013161X08321221

Leithwood, K. A., Seashor-Louis, K., Anderson, S. & Wahlstrom, K. (2004). *How leadership influences student learning*. NY, USA: Wallace Foundation.

Lewis, A. (1993). *Leadership styles*. Arlington, VA: American Association of School Administrators.

Lezotte, L. (1992). 'Principal' insights from effective schools. *Education Digest, 58*(3), 14–17.

Lipkind, E. R. (2009). *Teacher, leadership, and curriculum factors predictive of Student achievement in Indian education for all* (Unpublished doctoral dissertation). Missoula, MT: The University of Montana.

Lipsey, M. W. & Wilson, D. B. (2001). *Practical meta-analysis.* Thousand Oaks, CA: Sage.

Loden, H. G. (2001). *Mississippi elementary assistant principals' instructional leadership duties and their relationship with student achievement and years of employment experience* (Unpublished doctoral dissertation). MS, USA: University of Southern Mississippi.

Mackey, K. H. (2016). *The relationships among instructional leadership, School culture, and student achievement in Kentucky elementary schools* (Unpublished doctoral dissertation). KY. USA: Western Kentucky University.

Marzano, R. J., Waters, T. & McNulty, B. A. (2005). *School leadership that works: from research to results*. Alexandria, Va: Association for Supervision and Curriculum Development.

McComis, M. S. (2006). *Does leadership matter? the relationship between leadership characteristics and student achievement in private career colleges* (Unpublished doctoral dissertation). VA, USA: University of Virginia.

Mobley, A. F. V. (2009). *The relatıonshıp between principal leadershıp and student performance: an analysıs of the leadershıp for learnıng framework and student performance on Indiana's istep* (Unpublished doctoral dissertation). IN, USA: Indiana University.

Mose, A. M. (2017). *An exploration of the relationship between principal leadership, Emotional intelligence, and student achievement* (Unpublished doctoral dissertation). Bowling Green, USA: Bowling Green State University.

Murphy, M. F. (2012). *The self-perception of leadership efficacy of alternative school principals and its relationship to student achievement In the era of reform and accountability* (Unpublished doctoral dissertation), NC, USA: The University of North Carolina.

Nichols, J. D. (2011). *Teacher as servant leaders*. London, UK: Rowman & Littlefield.

Odegaard, L. C. (2008). *The relationship between teacher-identified principal leadership behavior and effectiveness and student achievement in South Dakota secondary schools* (Unpublished doctoral dissertation). SD, USA: The University of South Dakota.

O'Donnell, R. J. & White G. P. (2005). Within the accountability era: principals' instructional leadership behaviors and student achievement. *NASSP Bulletin, 89*(645), 56–71.

*Pauli, D. (2007). *The relationship between Principals' leadership behaviors concerning professional learning communities and student achievement* (Unpublished doctoral dissertation). IL, USA: Roosevelt University.

Printy, S. & Marks, H. (2006). Shared leadership for teacher and student learning. *Theory into Practice, 45*(2), 125–132.

Rautiola, J. D. (2009). *Effects of leadership styles and student academic achievement* (Unpublished master thesis), MI, USA: Northern Michigan University.

Robinson, M. J. V., Lloyd, C. A. & Rowe, K. J. (2008). The impact of leadership on student outcomes: An analysis of the differential effects of leadership types. *Educational Administration Quarterly, 44*(5), 635–674. doi: 10.1177/2F0013161X08321509

Uysal, S. & Sarier, Y. (2018). Meta-analysis of school leadership effects on student achievement in USA and Turkey. *Cypriot Journal of Educational Science*. *13*(4), 590-603.

Rodriguez, S. (2008). *A study of the relationships among leadership, culture, and student achievement in catholic schools* (Unpublished doctoral dissertation), FL, USA: Florida Atlantic University.

Ross, J. & Gray, P. (2006). School leadership and student achievement: The mediating effects of teacher beliefs. *Canadian Journal of Education, 29*(3), 798–822.

*Rowley, S. P. (2012). *Questioning leadership: a study of leadership style, teacher perceptions, and student achievement* (Unpublished doctoral dissertation). MN, USA: Capella University.

Saglam, M. & Yuksel, I. (2007). Meta-analysis and meta evaluation in programme evaluation. *Dumlupınar University, Journal of Social Sciences, 18,* 175–187.

Schindler, K. A. (2012). *An analysis of the relationship of perceived principal instructional leadership behaviors and student academic achievement* (Unpublished doctoral dissertation). TX, USA: Tarleton State Univesity.

Seashore, K., Dretzke, L. B. & Wahlstrom, K. (2010) How does leadership affect student achievement? Results from a national US survey. *School Effectiveness and School Improvement, 21*(3), 315–336. doi: 10.1080/09243453.2010.486586

Sebastian, J., Huang, H. & Allensworth, E. (2017). Examining integrated leadership systems in high schools: connecting principal and teacher leadership to organizational processes and student outcomes. *School Effectiveness and School Improvement, 28*(3), 463–488. doi: 10.1080/09243453.2017.1319392

Sergiovanni, T. (2005). *Strengthening the heartbeat.* San Francisco, CA: Jossey-Bass Inc.

Sergiovanni, T. (1996). *Leadership for the schoolhouse: how is it different? why is it important?* San Francisco, CA: Jossey-Bass**.**

Sheldon, G. H. (2009). *The relationship between the leadership responsibilities of title I school principals and student Achievement* (Unpublished doctorate dissertation). TX, USA: Texas A& M University.

Sheppard, L. S. (2007). *The relatıonshıp between student performance and leadershıp practıces as perceıved by prıncıpals and Selected sıte-based decision making (sbdm) committee members of mıddle schools ın regıon 5 educatıon servıceNCenter (esc), Texas: a cohort study* (Unpublished doctoral dissertation). TX, USA: Texas A&M University.

Stronge, J. H., Richard, H. B. & Catano, N. (2008). *Qualities of effective principals*. Alexandria, VA: Association of Supervision and Curriculum Development.

Troutman, L. D. (2012). *The impact of principal leadership on school culture and student achievement* (Unpublished doctoral dissertation). NC, USA: Wingate University.

Turner, E. A. (2013). *What effective principals do to improve instruction and increase student achievement* (Unpublished doctoral dissertation). IN, USA: Indiana State University.

Valentine, J. W. & Prater, M. (2011). Instructional, transformational, and managerial leadership and student achievement: high school principals make a difference. *NASSP Bulletin, 95*(1), 5–30.

VanBeck, S. A. (2011). *The importance of the relationships between teachers and school principals* (Unpublished doctoral thesis). Houston, TX: University of Houston.

Waters, T., Marzano, R. J. & McNulty, B. (2003). *Balanced leadership: what 30 years of research tells us about the effect of leadership on student achievement.* Retrieved from: http://www.mcrel.org

Williams, M. D. (2009). *The relatıonshıp of prıncıpal leadershıp behavıors wıth School clımate, teacher job satısfactıon, and student achievement* (Unpublished dotoral dissertation). MS, USA: University of Southern Mississippi.