

By Social Network Analysis Natural Leaders and Their Qualities¹

²Mehmet Ali YARIM

³Sabri ÇELİK

This study aims to determine the natural leader and his qualifications with 495 participants in the Erzurum sample, which was designed in mixed method mixed method and with social network analysis in schools. According to the research, not every school principal is seen as a natural leader in his school. Schools where principals are seen as natural leaders have high social network characteristics and these leaders have different and special qualities. These qualities are important to effective and successful school leaders.

Keywords: *Social Network; Social Network Analysis; Natural Leaders, Centrality; Structural Gap; Star Actor.*

¹This study is based on Mehmet Ali YARIM's "Social network analysis and It is derived from his doctoral thesis titled "Examination of organizational moral values and natural leadership profiles".

²Mehmet Ali YARIM, Ph. D. Ministry of National Education, Erzurum, Turkey
Email: karazeybekli@hotmail.com

³Sabri ÇELİK, Professor, Gazi University, Gazi Faculty of Education, Ankara, Turkey
Email: sabric@gazi.edu.tr

Recommended Citation: *Yarım, M. A. & Çelik, S. (2022). By social network analysis natural leaders and their qualities, Journal of Educational Leadership and Policy Studies, 6(1)*

By Social Network Analysis Natural Leaders and Their Qualities

Introduction

All individuals in organizations are included in networks of social relations and interactions in their environment. In today's organizations, the interaction and relations between individuals have started to diversify and become more complex. Research on understanding these relationships between individuals and their effects on organizations is also increasing (Öztaş & Acar, 2004). It is seen that the essence of the human being, which is the main source of human meaning and practices in working life and which is in an extremely hidden and complex state, cannot be revealed only by ordinary quantitative analysis. In particular, the number of studies examining teacher networks and cooperation relations with social network analysis in research on teachers' professional development processes is increasing (Baker-Doyle & Yoon, 2018; Er, 2017; Hangül, 2018; Yarım, 2021), and according to these studies, informal social networks among teacher's behaviors in teacher practices (attitude towards change, use of new teaching practices, information sharing, new ideas and openness to applications etc.). Social network analysis is an effective method to explain relationship patterns in social networks (Baker-Doyle & Yoon, 2018).

The analysis of social networks in schools has a great capacity to provide important information to educational research and policies regarding teacher behavior. According to Elgendy and Elragal (2014), examining schools with social network analysis has important parameters. In this context, it is extremely important to examine the organizational morale (spirituality) levels in schools, especially in primary schools, which includes the years in which a large part of human personality is formed, and to determine the factors that are related to social network analysis in the context of effectiveness and organizational life in schools.

Social network analysis in organizations is the patterns and appearances of such relationships, as well as the relationships that connect and divide individuals (Elgendy & Elragal, 2014; Freeman, 2004). These relationships and interactions are not easily defined, and formal organizational charts are far from explaining these relationships. Therefore, social network analysis is an organizational x-ray that can identify the real relationships and work of the individuals of an organization (Serrat, 2017). Relationships between nodes in a network are called links (Borgatti et al., 2013). Similarities such as being in the same department or work team; Social relations and interactions such as emotional or perceptual relations can be divided into types such as norms, attitudes, and flows such as information exchange (Borgatti & Li, 2009).

The nature of schools, their collective structure, the structure and importance of groups, interdependencies and relationships in schools are more important than individual characteristics in schools.. In this context, the social network approach is very important in terms of educational research, as it develops a perspective to understand the relations and organizational structure in educational organizations and provides an opportunity to analyze the dynamics in educational organizations (Carolan, 2014). Education researchers often turn to social capital theory to understand how social relationships among educators support school improvement and to explore ways to channel and increase the potential strength of these relationships. Social capital theory refers to the relationships embedded in social networks and aims to reveal how these embedded

relationships affect the achievement of goals in the context of individuals and organizations (Moolenaar & Slegers, 2018). It can be said that the relationships that teachers establish with their colleagues and the organizational structure of the school have a significant impact on revealing their leadership skills (Er, 2017). Social network theory and methods provide useful conceptual and methodological tools for examining the fundamental components of advice and knowledge development and how it flows. In addition, social network analysis makes it possible to examine the influence of the actors in the role of formal leaders on the instructional leadership of the school, rather than relying only on official documents in organizational advice networks. In addition, network analysis allows for the identification of informal leaders in schools (Spillane et al., 2018).

As organizational scientists have long recognized, efforts to understand organizational leadership and management need to be combined with formal and informal aspects of the organization. Social network analysis examines the effect of school principals in the role of formal leaders on instructional leadership and identifies natural leaders in schools, rather than relying only on official documents in organizational advice networks. Thus, social network analysis helps to examine the role of formal leaders in informal leadership and examine the relationship between formal and informal aspects of schools (Baker-Doyle & Yoon, 2018). Studies conducted with the spread of social network research in the field of business have shown that informal relations (natural and real interaction and relations) in an organization can be much different and more effective than formal relations (formal organization) (Cross & Parker, 2004 as cited in Gençer, 2017).

When we look at the literature, a limited number of studies in the field of educational sciences (Er, 2017; Hangül, 2018) with the social network analysis approach have focused on the outputs of social networks. For example, the attitudes of the relations between school administrators, teachers and students towards change, the level of trust towards the principal, or the variables in the studies on the innovative climate can be given as examples. However, studies on how social network structures are in educational organizations, which variables affect this network structure, and how school principals affect these networks are quite insufficient. In this context, it is extremely important to examine how social networks emerge and the variables that affect schools at the individual, group, organizational and educational system levels. The cornerstone of the network structures of organizations is individuals. Determining the organizational spirituality levels of individuals, which affect all their life practices and relationships, and determining how this variable relates to the social networks of schools will provide important parameters for the health and effectiveness of the organization. Identifying natural leaders who are in the center of schools in the context of professional expertise and friendship bonds with social network analysis and determining which characteristics of these leaders affect their positions will guide leadership and especially instructional leadership approaches in organizations. In this way, important data will be provided both for the evaluation and development of the characteristics of formal leaders of schools that cause their positions in social networks, and for the support and empowerment of teachers in the context of teacher leadership.

The children of the past industrial generation leave their place in business life to the Y and Z generations. How this generation of employees, who love freedom, value the human spirit, are creative, inquisitive and technological individuals, have social networking features and their

perspectives on natural leaders in schools is an important issue worth examining. In addition, identifying the characteristics of the school principals, who are the natural leaders of the social networks in their schools, will provide important parameters to the leaders and managerial minds in working life. In this context, the aim of this study is to examine the natural leaders in schools. For this purpose, answers to the following questions were sought.

1. Who are the actors who are natural leaders in schools' social networks?
2. What are the qualities of actors who are natural leaders in schools?

Method

Research Design

This study was designed with a nested (embedded) pattern, one of the mixed pattern models. In a nested (embedded) pattern the use of one of the qualitative and quantitative methods is higher than the use of the other. The method with a low rate is used to support, generalize or explain the data obtained with many methods (Karagöz, 2017). In this type of research, quantitative methods create the basic design, but the addition of a qualitative dimension makes the research an embedded design (Yıldırım & Şimşek, 2016). In the first part of this research, data on social networks were collected and quantitative analyses were made, then qualitative data were collected from the participants through interviews and quantitative data were supported by content analysis. In this context, this study is in the embedded mixed pattern model.

Research Sample

The population of the research consists of 2204 teachers and school administrators (1934 teachers, 270 administrators) working in public primary schools in the central districts of Erzurum (Yakutiye, Palandöken, Aziziye). In the research, stratified sampling was used to represent all the schools in the central districts of Erzurum. The sample of the study consists of 495 participants from 29 schools selected by the stratified sampling method. In the central district centers of Erzurum province, there are 22 (17.8) primary schools in the Aziziye settlement area, 46 (37.5) primary schools in the Palandöken settlement area and 55 (44.7) primary schools in the Yakutiye settlement area. Accordingly, the ratios of the schools selected with the tanned sample are as follows.

Table 1. *Number and Ratio of Schools in the Sample*

	Number of School	%
Aziziye	5	17,8
Palandöken	10	35,8
Yakutiye	14	46,4
Total	29	100

Table 6 shows the type, number and proportions of schools in the residential area in the center of Erzurum, which is within the scope of the research sample. The research sample consisted of 5 primary schools in Aziziye settlement, 10 primary schools in Palandöken settlement, and 13 primary schools in Yakutiye settlement.

The majority of participants in the sample were primary school teachers ($n=392$, $\%=79.2\%$). Of the participants in the sample, 227 (45.9%) were male and 268 (54.1%) were female. The majority of the participants ($n=441$, 89.1%) were married. Also, 57.7% of the participants are over 41 years old and 55.3% have more than 16 years of seniority. According to the length of service at the current school, approximately half of the teachers (47.7%) have a service period of 5 years or less.

The data in the qualitative part of the research were obtained from the participants selected by the purposive sampling method. Purposeful sampling is preferred when it is desired to work in one or more special cases that meet certain criteria or have certain characteristics (Büyüköztürk et al., 2013). For this purpose, it was obtained from a total of 24 participants, including 6 school principals who are seen as natural leaders in their schools and 18 teachers working in the schools of these principals.

Research Instrument and Procedures

Social networking questions were asked to the participants to examine the relationship and interaction patterns in schools. In social network analysis studies conducted in the field of educational sciences, two social network questions proposed by Ibarra (1993) and accepted in the literature are generally used to determine interpersonal professional networks and friendship networks (İletilen Er, 2017). In this context, Ibarra's suggestion in this study is "Who do you consult more to exchange ideas on professional issues?" is in the form, and "Who do you consult more on personal matters?" Two social networking questions were used. These data were collected during the first semester of the 2020-2021 academic year. For this, a staff list was obtained from the schools and a code was given to each employee (school principals were given the "a" code). Due to the pandemic, a meeting was held over the internet (zoom program) and necessary information was given to the participants. Social network questions were sent and received by e-mail. Interviews were conducted and a semi-structured interview form was used to determine the common and different profile features of the personal, professional, managerial, communicative and impressive qualities of the actors (natural leaders) located at the center of the social network of the schools. These interviews were held in March 2021 with some participants face-to-face and with some participants through the zoom program. Information and conversations were held before the interviews. The interviews lasted between 25-30 minutes.

Data Analysis and Process

With the help of the UCINET 6th program, the natural leaders of the schools were determined by analyzing the social network maps, centrality, structural gap and effect size. Then, the qualitative part of the research was conducted through the identified natural leaders and their colleagues, and the obtained data were analyzed by content analysis methods. Within the scope of content analysis, the data obtained in the first phase were coded, and in the second phase, the codes were thematically related to each other and the codes were arranged according to the themes. The

teachers involved in the research were coded as T1, T2, T3...., and the leaders as L1, L2, L3... and analyzed.

In order to ensure validity and reliability in qualitative research, techniques such as the researcher's long-term interaction with the participants in the field, obtaining the consent of the participants including participant citations, explaining the research process in detail and expert opinion methods about the study, direct citation, and detailed explanation of research processes can be used (Holloway & Wheeler, 1996; Aydın, 2014; Yıldırım and Şimşek, 2016). In this study, expert opinion was taken for the analysis of the data. Long-term interactions and confirmations were obtained with the participants, and the statements of the participants were written as direct quotations, avoiding interpretation of the findings. Each process of the research was explained in detail, and the data were recorded in writing. Afterwards, the data were discussed in the light of the literature .. In this context, the validity and reliability of the study were tried to be ensured. In this study, data were obtained only through observation. This situation can be seen as a limitation of the research on data diversification.

Findings

Findings Concerning the Positions of School Administrators and Teachers in Schools' Professional Networks and Friendship Networks

Below are the network maps of some of the schools where social network analysis was made within the scope of the study. In the Social Network maps, red colored boxes represent women and blue colored boxes represent men. Red arrows represent reciprocal relationships, black arrows represent one-way relationships, and also school principals in each school's network are coded with the letter "a".

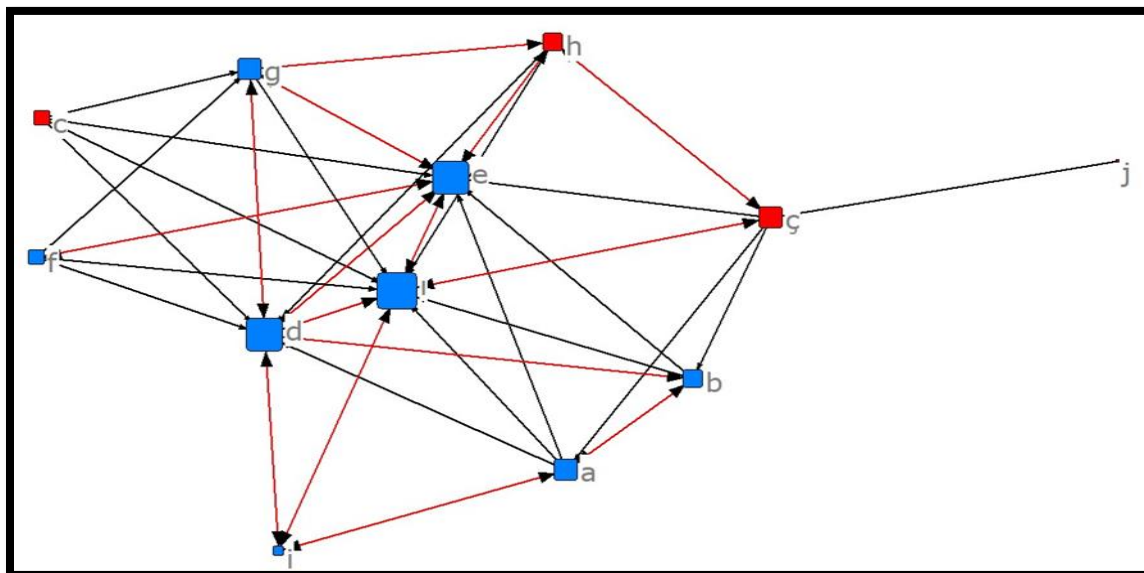


Figure 1. A school specialty social network

When the specialization social network belonging to primary school A is examined, it is seen that it is a homogeneous network in which the relations are mostly mutual. It is seen that the (e) and (1) coded actors are in the central position in the A primary school specialty network. It is seen that the school principal (a) is somewhat outside of the network and actor (j) remains isolated outside the network. It is seen that the gender variable does not have any effect on the network.

Table 2. *A School Expertise Network Analysis Data*

Intensity	Total bond	S	\bar{X}	Reciprocity
0,89	49	0,48	4,08	0,87

When Table 2 is examined, it can be said that the density of the network is 0.89 ($s = 0.483$) and 89%, although it is a small school, it has a very high density. According to the analysis, the total number of connections in the Network is 49. The network has a reciprocity rate of 87% and the average number of connections is 4.08. These results show that the network of the school is very dense and the relations between the actors are close and mutual.

Table 3. *Analysis Data of Actors in the Network (5 Highest Ranking Actors)*

Actor's Code	Degree Centrality	of The degree proximity	of Eigenvector Degree.	Structural Space Degree
1	10,00	,91	,42	6,21
e	9,00	,85	,40	5,57
d	9,00	,78	,38	5,50
g	5,00	,61	,29	2,72
h	3,00	,57	,26	2,31

When the degrees of centrality in the specialty network of school A are examined, it is seen that actor (1) has the most central degree with 10 points, the highest degree of closeness with 91%, and the highest degree of importance with 42%. According to the same table, it is seen that the actor (I) has the most impact with 6.21 points in terms of the structural gap size of the school. It is seen that the degrees of actor (e) in primary school A are close to the degrees of actor (1).

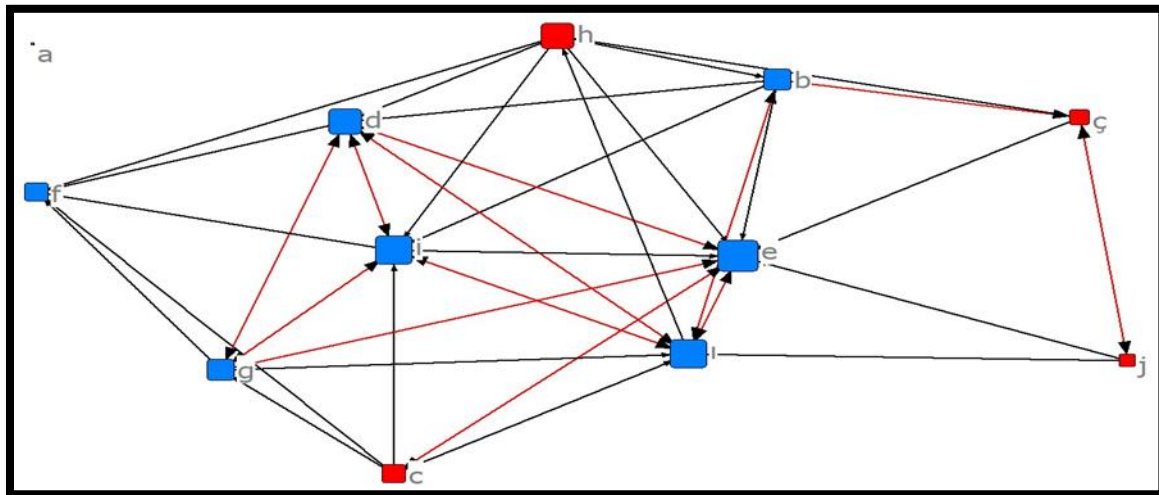


Figure 2. *A school friendship network*

When the friendship network of primary school A is examined, it is seen that the gender variable does not have a significant effect on the network. According to the analysis of A primary school friendship network, it is seen that actor (e) is in the most central position, and actors (i), (i) and (d) are close to the center of the network. It is seen that the school principal (a) is in an isolated position outside the network.

It can be said that the actors (e) and (i) in primary school A are at the center of the network both in the expertise network and in the friendship network, and with their high centrality and influence levels, primary school A are natural leaders and star actors of the network.

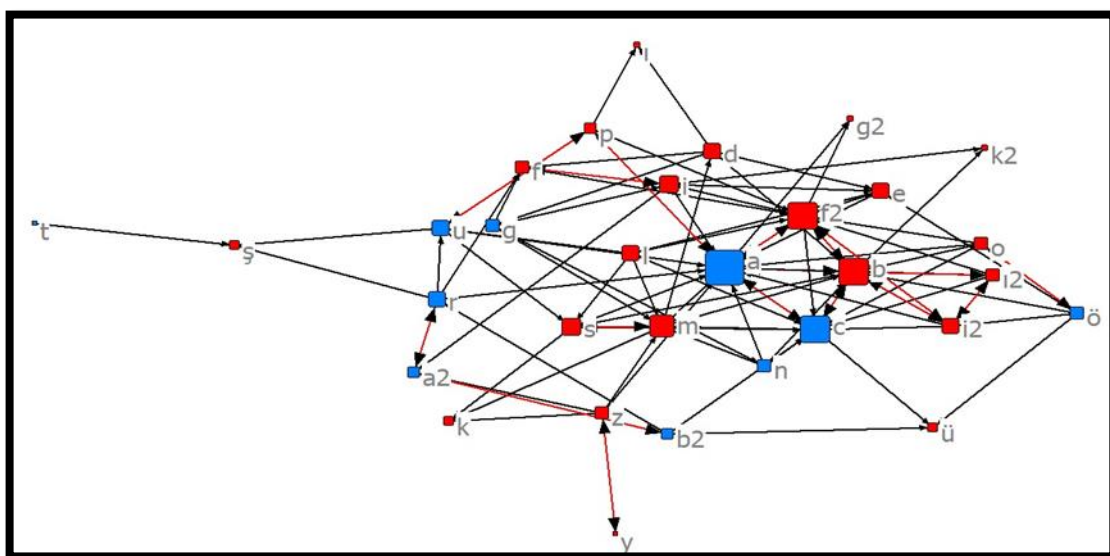


Figure 3. *C school specialty social network*

When the specialization social network of primary school C in Figure 3 is examined, it is seen that the school principal (a) is effective and has a place in the center of the network. It can be said that the school principal's relations are generally bidirectional. According to the C primary school specialization network image, it is seen that the actors (b), (f2) and (c) have achieved a central position in the network. It is seen that actors (y), (t) and (i) stay on the edge of the network of expertise and gender has no effect on the network of expertise.

Table 4. *C School Expertise Network Analysis Data*

Intensity	Total bond	S	\bar{X}	Reciprocity
0,77	105	0,46	3,94	0,42

When the table is examined, it is seen that the density of the mesh has a high density of 0.77 (ss = 0.46) with a density of 77%. According to the analysis, the total number of connections in the network is 105. The average number of links in the network is ($\bar{X} = 3.94$) and the reciprocity rate is 42%. According to these findings, relations at school are intense, but their reciprocity levels are moderate.

Table 5. *Analysis Data of Actors in the Network (5 Highest Ranking Actors)*

Actor's Code	Degree of Centrality	The degree of proximity	Eigenvector Degree	Structural Degree	Space
a	19,00	,23	,40	12,70	
b	11,00	,22	,34	8,94	
c	10,00	,22	,34	8,32	
f2	10,00	,22	,31	8,73	
m	6,0	,21	,26	7,27	

When the degrees of centrality in the specialization network of the C school are examined, it is seen that the actor (a) has the most central degree with 19 points. According to the same table, it is seen that the actor (a) has the most influence with 23% closeness, 40% importance, and the school's structural gap level with 12.70 points. With these results, it can be said that actor (a) in primary school C is the star actor in the network as both the formal leader and the natural leader of the school.

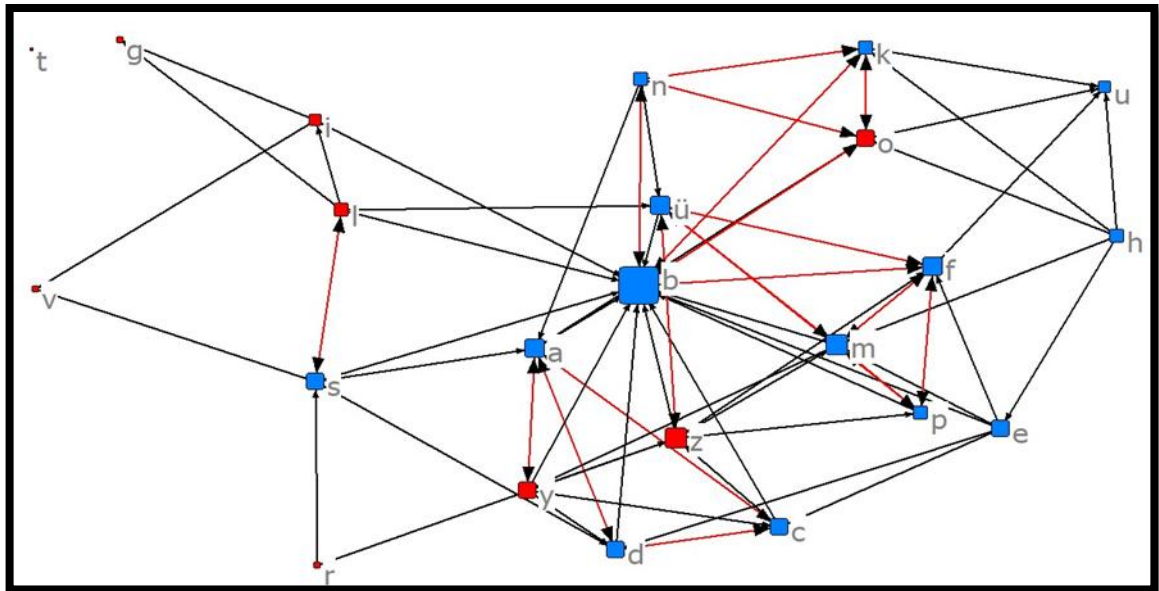


Figure 4. *J school specialty social network*

When the specialization social network belonging to the J primary school is examined, it is seen that the actor (b) is at the center of the network and his relations are intensely bidirectional. Although the school principal (a) is close to the center, it seems that he could not be located in the center. It is seen that the relations are mostly one-way. The school principal (a) is at the edge of the network, and actor (h) is in the most central position. The (t) actor is in an isolated location outside the network. Although it is a small school, it is seen that the density of relationships in the network is sparse.

Table 6. *Analysis Data on J School Expertise Network*

Intensity	Total bond	S	\bar{X}	Reciprocity
0,57	83	0,37	3,60	0,29

According to Table 6, it is seen that the density of the mesh has a moderate density with a degree of 0.57 (ss= 0.37) to 57%. According to the same table, the total number of connections in the specialty network of the school is 83, and the average number of connections ($\bar{X} = 3.60$). It can be said that the network reciprocity rate of the school is mediocre, and its level is moderate.

Table 7. *Analysis Data on Actors in the Network (5 Top Actors)*

Actor's Code	Degree Centrality	of The degree of proximity	of Eigenvector Degree.	Structural Degree	Space
b	20,00	,55	,51	12,82	
f	11,00	,44	,24	4,22	
m	11,00	,39	,28	4,99	

ü	11,00	,41	,25	4,36
a	10,00	,38	,23	4,75

According to the data in the J primary school specialty network, actor (b) is the actor with the highest degrees in the network, with 20 degrees of centrality, 55% closeness, 51% importance, and 12 structural gaps. These findings show that actor (b) is very influential in school. The fact that the school principal (a) has low levels of analysis can be seen as ineffective in the network.

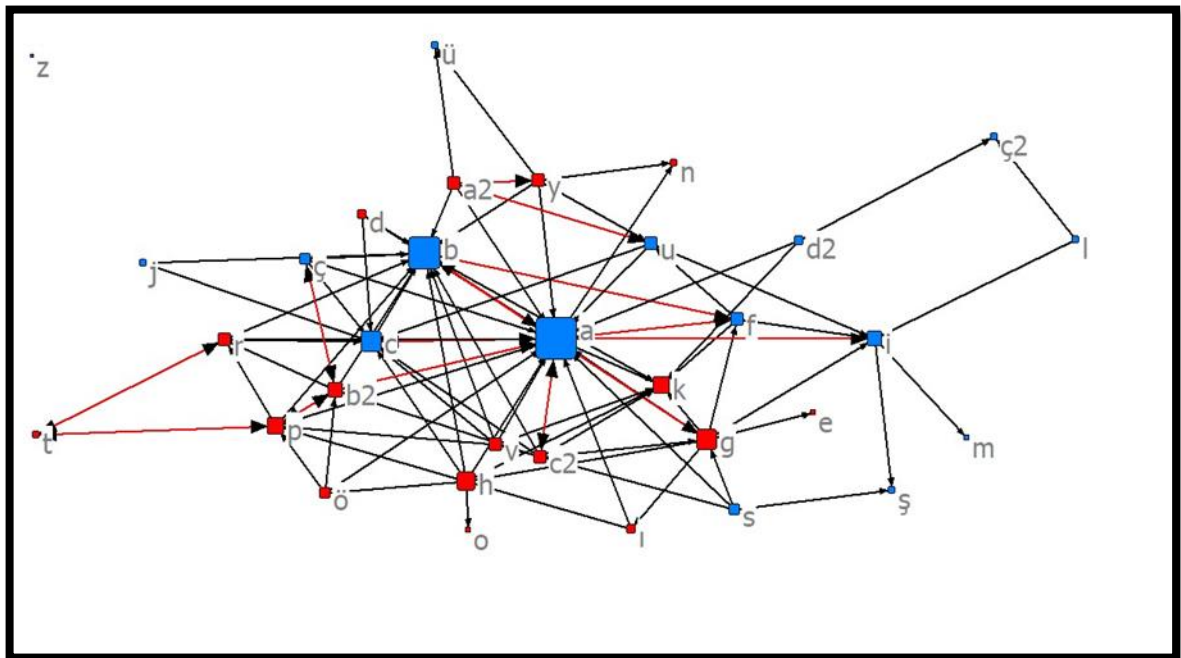


Figure 5. School Z specialty social network

When the specialization social network belonging to Z primary school is examined, it is seen that the school principal (a) is at the center, the relations are bidirectional, and the school's network develops around the school principal. The gender variable in the network is not very effective. It can be said that only the (z) actor is isolated outside the network and the network structure is homogeneous and there is no division in the context of the mutual relations of other actors.

Table 8. Analysis Data on Z School Expertise Network

Intensity	Total bond	S	\bar{X}	Reciprocity
0,82	131	0,30	3,96	0,47

As seen in Table 8, the density of the network is 0.815 (ss= 0.295) with 82%, and the reciprocity rate of the network is 47%. There are a total of 131 connections in the Z school specialty network, and the average number of connections in the network is seen as ($\bar{X} = 3.96$). In the context

of these findings, it can be interpreted that the relationships in the Z School specialty network are high-density, tight and bidirectional.

Table 9. Analysis Data on Actors in the Network (5 Top Actors)

Actor's Code	Degree of Centrality	The degree of proximity	Eigenvector Degree.	Structural Degree	Space
a	20,00	,34	,45	18,26	
b	14,00	,32	,38	12,18	
c	8,00	,29	,25	7,18	
k	8,00	,31	,23	5,12	
b2	5,00	,29	,20	4,45	

When the degrees of centrality in the specialty network of primary school Z are examined, it is seen that there is a very strong leader in the school. The school principal (a) has the highest degrees of centrality (20), and structural emptiness (18). The importance of the school principal, who has 34% closeness with other actors in the network, is 45%. According to these results, it can be said that another effective actor in the School is actor (b).

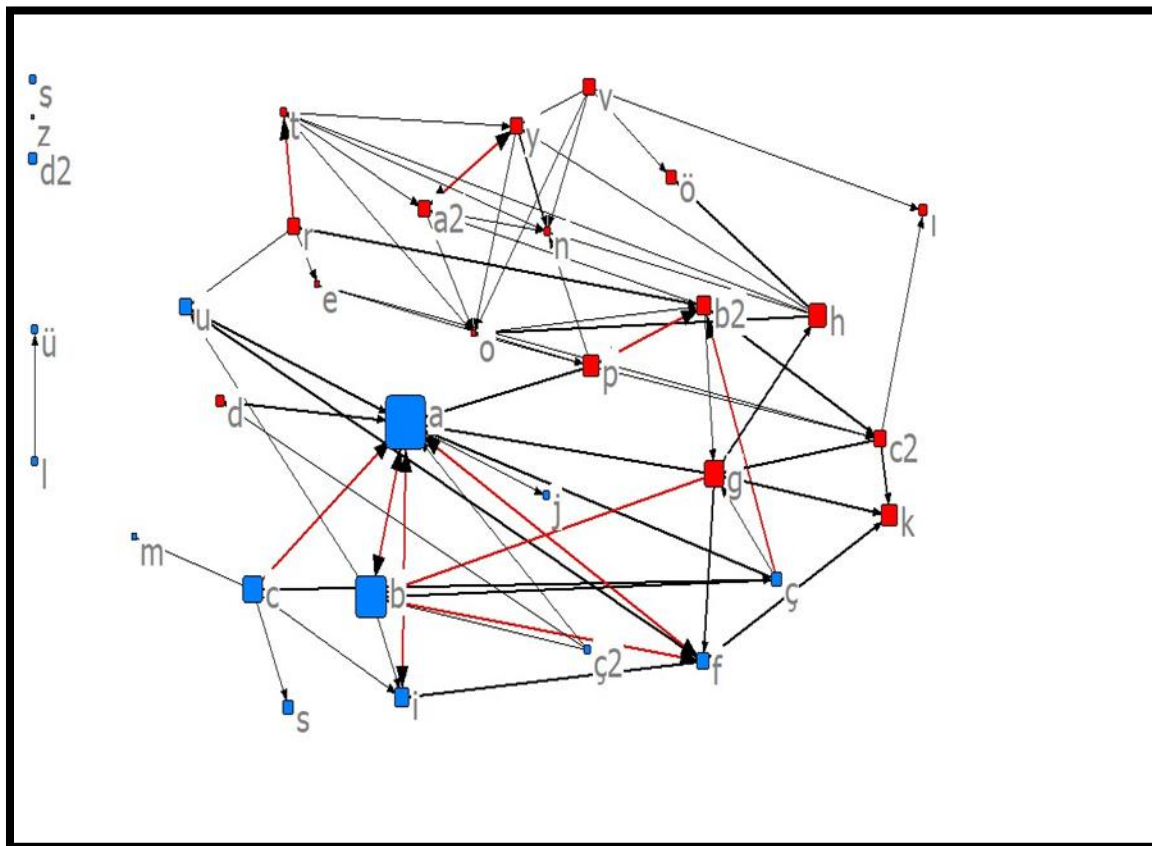


Figure 6. Z school friendship network

When the friendship network of primary school Z is examined, it is seen that the gender variable has a significant effect on the network. The school principal is the most central in the network and acts as a bridge between female and male employees. In the network, the (s), (z) and (d2) actors are isolated, and the (ü) and (l) actors are in communication only with each other.

In line with the analysis of the Z school, it can be said that the school principal is both the natural leader and the star actor of the school, as he is in an effective position in both expertise and friendship network with his high degrees of analysis.

Findings Concerning the Identification of Natural Leaders According to the Social Network Analysis of Schools

Table 10. *Data on Detection of Natural Leaders of Schools*

School	N	Social Network Density	Natural Leader	Leader's Degree Centrality	N/ Degree Of Centrality
		\bar{X}			
Ğ	24	0,80	a	22	,91
A	11	0,89	ı	10	,90
P	9	0,64	a	7	,77
C	26	0,77	a	19	,73
Z	24	0,81	a	20	,83
N	16	0,61	a	12	,75
O	15	0,74	a	12	,80
E	22	0,51	a	17	,77
B	23	0,58	c	15	,65
T	25	0,82	o	14	,56
M	7	0,43	g	6	,85
S	16	0,66	a	11	,68
G	13	0,81	j	11	,83
Ü	15	0,83	b	12	,80
H	16	0,42	b	11	,68
Ş	28	0,67	a	14	,50
D	13	0,56	a	9	,69
R	30	0,50	b	16	,53
V	12	0,64	h	6	,50
I	15	0,58	b	11	,73
İ	11	0,32	ı	5	,45
U	24	0,48	b	14	,58
J	20	0,57	b	16	,80
K	10	0,55	b	7	,70
Ö	11	0,38	b	8	,72
F	25	0,36	b	17	,68

C	12	0,36	b	9	,75
Y	11	0,27	b	7	,63
L	11	0,50	e	5	,45

According to Table 10, one of the most important findings is that 61% of the principals of the schools participating in the research are not seen as natural leaders in their schools. In 10 of the schools within the scope of the research (C school, E school, D school, Ğ school, N school, O school, P school, S school, S school, Z school), school principals are seen as natural leaders in addition to their formal leadership in their schools.

According to the same table, it is seen that the natural leaders of 7 of the 10 schools with the highest social network density (C school, E school, Ğ school, N school, O school, P school, Z school) are school principals. According to this finding, it can be said that if school principals as formal leaders in schools exhibit strong natural leadership, they will have very positive effects on the social network densities of the school.

In order to find an answer to the next question of the research, examining the natural leadership profiles in schools, the data in table 12 was used. With the purposive sampling method, 6 natural leaders with the highest degree of centralization (Ğ school, A school, Z school, O school, E school, P school) were selected among the 10 schools with the highest organizational spirituality levels and social network densities in Table 10. From these leaders, data was collected from 3 teachers who volunteered to participate in the research. Each teacher was selected by the purposeful sampling method from their schools to examine the natural leadership profiles in schools. Findings from these data are presented below.

Findings Concerning the Identification of Natural Leaders According to the Social Network Analysis of Schools

The most striking of the findings obtained in the participant data is that 5 of the 6 natural leaders have a very rich experience in other sectors and fields other than the education sector, and these experiences have contributed greatly to their profession and leadership and added depth. Some of the participants opinions are presented below.

“I run the grocery store inherited from our father with my brothers. You've been in business since I was little, from apprenticeship to business. I encountered all kinds of people and problems. So, I know what people need and what job they're better at. I also served in a non-governmental organization, so helping people is my character” (L2)

All of the participants stated that they have a field of occupation that they are passionately attached to. Five of the six participants stated that reading a book is indispensable for them. Two of the participants stated that writing poetry is their passion. Other passions of the participating natural leaders are playing baglama, guitar, ney, playing bar, listening to music and taking nature walks.

“During my university years, I was intrigued by spirituality. I learned how to blow the flute. I try to blow the ney whenever I can. I forget all my tiredness and troubles during the day. I also love to read books” (L6)

The data obtained from the participants with whom the natural leaders worked were organized into three themes. These themes and their codes are as follows.

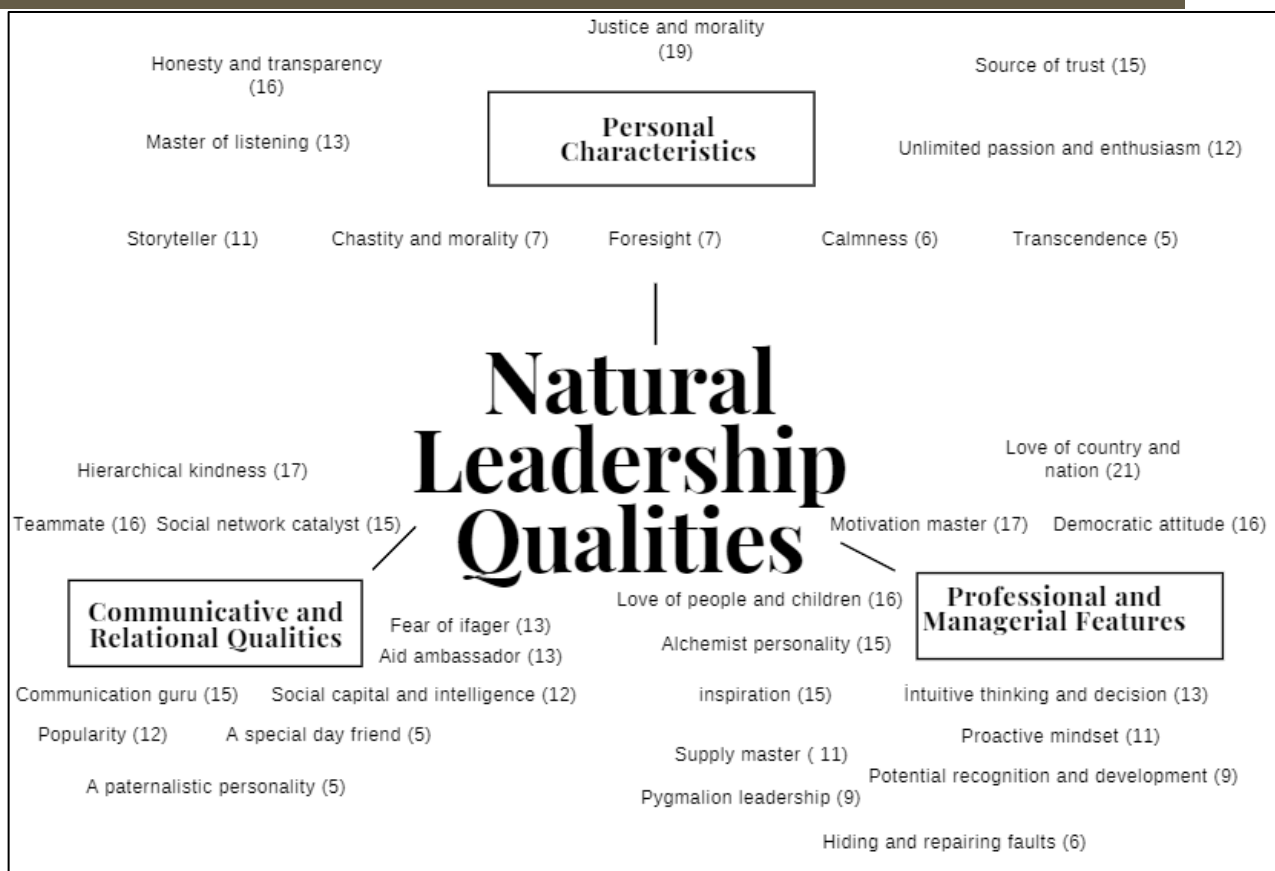


Figure 7. Qualities of natural leaders

As can be seen in figure 7, the qualities of justice, honesty and trust come to the fore in the personal qualities of natural leaders. In addition to these, qualities such as being a master of listening, passion and enthusiasm, storyteller, chastity and morality, calmness, and transcendence are among the qualities of natural leaders at work. Some of the participant statements regarding this theme are below.

“Our principal sees things that no one else can. He thinks everything scientifically and technically, down to the smallest detail. He has vast knowledge of almost everything. He knows both Islamic philosophy and western philosophy well. It helps to develop teachers with this information. He patiently listens to all of their problems and sincerely tells them about their mistakes. Every subject has a memory or a story to tell.” (T14)

“I think I am very compassionate. I am respectful to people. I always look on the bright side of things. I do not depart from justice and truth. My other traits are courage, discipline, perseverance and I am not afraid of difficulties. I am not very angry and nervous.” (L5)

“Our principal is an honest, self-confident, faithful person. He is calm and smiling. He is understanding towards everyone. He has a high energy. When it comes to education,

it is the most exciting among us. He knows very well how to appeal to emotions. His speech is always human. He does not break his promise.”(T3)

In the theme organized as professional and managerial characteristics, patriotism is the most frequently repeated feature. In this theme, being a master of motivation, democratic attitude, love of people and children, alchemist personality, inspiration, intuitive thinking and decision, proactive mindset, pygmalion, leadership are other features. Some of the participant statements regarding this theme are below.

“My mission is to serve my country and contribute to the development of the country, ensuring the happiness and success of people. I am dedicated to children. It is my vision to see the children of my country at the highest level.” (L3)

“Our principal is a true leader. Difficulties do not hinder him. According to what he told, he worked hard in the villages and suburbs and succeeded in spite of everything. He now works in one of the most central schools, but the difficulties here do not intimidate him. For him, the goal is endless. One ends, one begins. Organizes things perfectly. Whatever we need comes right away. Other features are democratic, solution-oriented, always open, finding solutions to everything, taking risks. He is right in most of his guesses.”(T2)

“The school principal always motivates teachers. He always tries to make suggestions and make people believe, even on the issues they are lacking. It even sees demoralized teachers and motivates them and sheds light on them. He always praises the positive aspects.” (T15)

In the theme of relational and communicative characteristics, which is the last theme of the qualitative part of the study, the prominent qualities are courtesy towards superiors (17), being a teammate, being a social network catalyst, and being a communication guru. Also under this theme, fearless expressive, charity ambassador, social capital and intelligence, popularity, special day companion, and paternalistic personality are other expressed qualities. Some of the views received from the participants are as follows:

“I am always respectful to my superiors, but if it is for the benefit of my school and my students, I insist on everything without hesitation. I do not back out from the point that I am right. We have a family and team atmosphere with teachers. I don't look down on them. I have a relationship with everyone according to the communication channel. Our door is open to every parent who comes. I try to help with all their problems. I help some people financially and others morally. I made a book day, they come every month and buy a book from me and bring it back.” (L1)

“Our manager is very fatherly towards us. He doesn't give orders, he says let's do it together. He is a person sought in every environment, not disturbed by his presence. We get together at every opportunity, we have such a close relationship that we play the baglama and sing a song. His communication with everyone is strong. He even has close communication with his spouses and families. He goes to condolences, births, weddings. He celebrates everyone's birthday with a message. Even those who are not parents come to the school all the time to chat with the principal and get information. Our principal both knows how to talk to his superiors and speaks to the villagers according to his level.(T3)

“He is a sincere, sincere, understanding team captain. He has strong communication with everyone. He makes family visits whenever he can. A compassionate guide to the younger ones is respectful to the elders. He is level with his superiors, but he usually gets whatever he wants from national education. Its surroundings are very wide. He is known to many from all walks of society. He is the father of help against the parent. He tries to help them in every way and has good communication with them. (T15)

Discussion, Conclusion, and Recommendations

In the social network analysis of the expertise conducted within the scope of the research, the network densities of 8 schools out of 29 schools are high, 16 schools are medium, and 5 schools are very low. In terms of reciprocity, 10 schools have a medium and higher bidirectional relationship, and 19 schools have a low level of bidirectional relations. Specialization social networks of schools are denser and tighter than friendship networks. While the gender factor does not have any effect in the expertise network, it is quite effective in friendship networks. In their study, Moolenaar and Slegers (2018) concluded that there is a difference in favor of women in social networks based on trust. The density of specialization social networks in schools is quite high compared to the density of friendship social networks. According to these findings, it can be interpreted that the relations in schools are based on professional issues, and the rate of transformation of work friendships at schools into casual friendships is low. Similarly, Moolenaar and Slegers concluded in their study that occupational network density is higher than friendship network density. In the analysis conducted to determine the natural leaders of the specialty social networks of the schools, in 10 of the 29 schools, school principals are seen as natural leaders, while in 19 are not seen as natural leaders. In his study, Er (2017) also concluded that school principals are not effective enough in the social networks of schools, while some teachers are in more centralized positions with leadership potential. Karaman (2015) concluded that the appointed leaders and natural leaders are different people in his practice at a public university. Caceres (2019) also concluded that most of the participating school principals do not have natural leadership characteristics. Spillane et al., (2018) concluded in their study that only 51% of 57 managers in their sample are seen as leaders in the field of expertise in the network. Considering that the formal leadership of effective school principals in schools should be informal leaders and they should have enriched leadership styles (instructional, visionary, servant, transformational, spiritual leadership, etc.) is the problem.

Important and striking results have also been obtained regarding the qualities of natural leaders in schools. According to the results of the research, natural leaders are original leaders who act according to classical, stereotyped theories rather than copy leaders and have their own characteristics and practices. According to the research findings, natural leaders in today's schools have a number of different characteristics that are both common and distinguish them from other individuals. When these features are evaluated; They are natural leaders who usually embody the past and future, spirituality and modernity, are balanced in personality, consistent, fair, passionate, knowledgeable, do not give up on difficulties, and inspire and motivate their followers. Natural leaders are individuals who are authentic and popular, based on trust and sincerity with their subordinates, have respectful but demanding relationships with their superiors, committed to the benefit and development of society. In addition, the fact that these leaders have experience in the

sectors and have artistic interests makes significant contributions to their profession. When engaged natural leaders deal with their passion for the arts and crafts, they relax, get rid of their troubles, and experience a kind of flow. Flow theory was put forward by the American social psychologist Mihaly Csikszentmihalyi in 1975 and is based on the suggestion that while doing his job with passion and love, he forgets time and space and just integrates with his work. According to the results of the research, natural leaders are people who can easily cope with difficulties and impossibilities, touch emotions, have a deep inner world, deeply affect the social networks of the school, are trusted, can easily affect individuals, and cover up the faults of employees. With these aspects, it can be said that these leaders are relationship-oriented. Relationship-oriented leaders establish and manage strong, emotional, loyalty-based relationships with people. It knows the values of its employees and shows sensitivity, communicates with them face to face and based on trust. By providing comprehensive support to employees, it gives employees a sense of trust and provides freedom of initiative (Goleman et al., 2002:73; Groves, 2006:567).

According to the results of the research, other characteristics of natural leaders can be listed as follows;

- ✓ Multisectoral experience (experience in other fields)
- ✓ Artistic interest and depth
- ✓ Justice and ethics
- ✓ Source of trust
- ✓ Homeland, nation, holy love
- ✓ Honesty and transparency
- ✓ Listening Master
- ✓ Unlimited passion and enthusiasm
- ✓ Motivation master
- ✓ Democratic attitude
- ✓ Love of people and children
- ✓ Alchemist
- ✓ Inspiration
- ✓ Intuitive thinking and attitude
- ✓ Proactive mindset
- ✓ Teammate
- ✓ Social network catalyst
- ✓ Communication guru
- ✓ Social capital and intelligence
- ✓ Storyteller
- ✓ Chastity and morality
- ✓ Calmness
- ✓ Transcendence (Flow experience)
- ✓ Pygmalion effect
- ✓ Special day friendly
- ✓ Paternalistic personality

Warfield, in his study in 2009, concluded that the distinctive features of teachers who are central in social networks and perceived as leaders are features such as openness, reliability, being

pro-student and being experienced. In addition, these leaders emphasized that they were more confident in terms of self-efficacy. Fisher (1974), on the other hand, emphasized in his study (as cited in Northouse, 2010) that communication ability, verbal ability, knowledge, being open to ideas, openness to innovation, flexibility and determination are factors in seeing individuals as natural leaders. Emery, Calvard and Pierce, in their 2013 study titled “Leadership as an emergent group process: A social network study of personality and leadership”, emphasized that extroversion, openness to innovation, commitment to the task and the importance given to relationships are natural leadership indicators. Stincelli and Baghurst (2014) in their study titled “A grounded theory exploration of informal leadership qualities as perceived by employees and managers in small organizations” for their work on identifying the qualities of natural leaders in small organizations, focused on natural leadership, including individual competencies, organizational culture and situational requirements, grouped the qualifications under three themes. The characteristics they identified in natural leaders under these three themes were a strong desire for performance, social ability, effective communication skills, not shying away from responsibility, having a certain vision, encouraging, sharing information, and superior knowledge and skills.

In the context of research results, the way to create balanced, peaceful, functional and happy schools through social network texture variables is through strong natural leaders. Effective, efficient schools that can achieve their goals can only achieve this if they are balanced, peaceful, functional and happy schools. Considering today's rapidly changing conditions and parameters, on the one hand, we are on the verge of the era of singularity, when half-human, half-robot individuals will emerge, under the control of technology, machines and the internet and will remind the essence of human being, despite all superhuman technologies. There is a need for a new paradigm that recognizes, exalts values, and will hold the hand of the spiritual world. Especially when it comes to schools, this situation gains a vital dimension. Now, in a world where robots will teach, humanity needs leaders more than ever to love, dream, help, think, believe, question and inspire. When considered in this context, the leadership qualities of the classical period, which are indexed to raising a single type of person, are far from meeting the needs. As Mevlana said, "Everything about yesterday is in the past, now it is necessary to say new things". The new world requires new leaders and new leadership qualities. For this reason, the fact that the brain cortex of the principals to be assigned to the schools, which includes academic skills, is also developed, will provide them with important advantages, as well as the development of their personality, emotions, experiences and spirituality. Passing on an evaluation system that will determine the moral, personal and spiritual qualities of individuals as well as exams that will test their cognitive abilities will enable reliable and effective leaders to work in the field. New school leaders, who will be appointed by considering the qualities of effective and strong natural leaders, which are fixed with the results of the research, will allow education to achieve its intended mission and vision.

References

- Aydın, S. (2014). Phenomenology research. Metin, M. (Edt.), *Scientific research methods in education from theory to practice* (pp. 300-301). Pegem.

- Baker-Doyle, K J., & Yoon, S A., (2018). Making expertise visible. A. Daly (Ed.). *Social Network theory and in education* (pp. 123-136). Pegem.
- Borgatti, S. P., Everett, M. G., & Johnson, J. C. (2013). *Analyzing social networks*. Sage.
- Borgatti, S.P., & Li, X. (2009). On social network analysis in a supply chain context. *Journal Of Supply Chain Management*, 45(2), 5-21.
- Büyüköztürk, Ş., Çakmak, E., Akgün, Ö., Karadeniz, Ş., & Demirel, F. (2013). *Bilimsel araştırma yöntemleri* [Scientific research methods]. Pegem.
- Cáceres, M. G. (2019). Social factors related to leadership skills and educational achievement of primary school principals. *Revista Dinnavacio Recerca i Educacico* 12 (1), 1-16.
- Carolan, B. V. (2014). *Social network analysis and education: theory, methods and applications*. Thousand Oaks, Ca: Sage.
- Csikszentmihalyi, M. (1975). *Beyond boredom and anxiety*. JosseyBass.
- Elgendy, N., & Elragal, A. (2014). Big data analytics: a literature review paper. M. Chen, & P. Yu (Ed.). *In industrial conference on data mining* (pp. 214–227). Switzerland: Springer.
- Emery, C., Calvard, T. S., & Pierce, M. E. (2013). Leadership as an emergent group process: a social network study of personality and leadership. *Group Processes and Intergroup Relations*, 16(1), 28-45.
- Er, E. (2017). *İlköğretim kurumlarında yönetici ve öğretmen ilişkilerinin sosyal ağ analizi* [Social network analysis of administrator and teacher relations in primary education institutions]. Doctoral Thesis, Gazi University Institute of Educational Sciences, Ankara
- Freeman, L.C. (2004). The development of social network analysis: a study in the sociology of science. *Social Network*, 1(27), 377-384.
- Gençer, M . (2017). Sosyal ağ analizi yöntemlerine bir bakış [An overview of social network analysis methods]. *Yıldız Social Science Review*, 3(2) , 19-34.
- Goleman, D., Boyatzis, R. ve Mckee, A. (2002). *Realizing the power of emotional intelligence*. Harvard Business School Pres, Boston, Massachusetts.
- Groves, K.S. (2006). Leader emmotional expressivity visionary leadership and organisational change. *Leadership & Organization Development Journal*, 27(7), 566- 583.
- Hangül, Ş. (2018). *Okullardaki sosyal yapı ve doğal liderlik süreçlerinin sosyal ağ teorisi perspektifinden incelenmesi: bir durum çalışması* [Examination of social structure and natural leadership processes in schools from the perspective of social network theory: a case study]. Doctoral Thesis. Osmangazi University, Eskişehir
- Holloway, I., & Wheeler, S. (1996). *Qualitative research for nurses*. Oxford: Blackwell Science Ltd.
- Karagöz, Y. (2017). *Spss ve amos uygulamalı nicel-nitel-karma, bilimsel araştırma yöntemleri ve yayın etiği* [Spss and amos applied quantitative-qualitative-mixed, scientific research methods and publication ethics]. Pegem.
- Karaman, Ş. (2015). *Ağ bağda biçimsel ve doğal lider: bir kamu üniversitesinde uygulama* [Formal and natural leader in the network: practice at a public university]. Master Thesis, Turkish Military Academy Defense Sciences Institute, Ankara..
- Moolenaar, N. & Slegers, P. (2018). Social networks, trust and innovation. A. Daly (Ed.) *Social network theory and change in education* (pp. 103-120). Ankara: Pegem.
- Northouse, P. G. (2010). *Leadership: theory and practice*. New York CA: Sage.

- Öztaş, N., & Acar, M. (2004). Ağbağ analizine giriş: kavramlar ve yöntemler. M. Acar & H. Özgür (Ed.), *Çağdaş kamu yönetimi içinde* [Introduction to network analysis: concepts and methods. M. Acar & H. Özgür (Ed.), In contemporary public administration] (pp. 289–320). Ankara: Nobel.
- Serrat, O. (2017). Social network analysis. *Knowledge solutions* (pp. 39–43). Singapore: Springer Open.
- Spillane, J P., Healey, K., & Chong, M K. (2018). Managing teaching. A. Daly (Ed.) Social network theory and change in educations (pp.137-169). Pegem.
- Stincelli, E., & Baghurst, T. (2014). A grounded theory exploration of informal leadership qualities as perceived by employees and managers in small organizations. *International Journal of Business Management and Economic Research (IJBMER)*, 5(1), 1- 8.
- Yarım, M. A. (2021). *Sosyal ağ analizi ile okullarda, örgütsel moral değerleri ve doğal liderlik profillerinin incelenmesi* [Investigation of organizational moral values and natural leadership profiles in schools with social network analysis]. Doctoral Thesis. Gazi University, Institute of Educational Sciences, Ankara
- Yıldırım, A., & Şimşek, H. (2016). *Sosyal bilimlerde nitel araştırma yöntemleri* [Qualitative research methods in the social sciences]. Seçkin.