In this issue our readers will find;

The opinions of school principals on decentralization in education
by Ahmet Şahin
Relationship between students' math engagement and math teachers' motivational support
by Neşe Özkal
Pre-service teachers' reflective judgment skills in the context of socio-scientific issues based inquiry laboratory course
by Dilek Karışan, Özgül Yılmaz-Tüzün and Dana Zeidler



*in wonderland* (Fahri Tarhan-2016)

The Turkish Journal of Education (TURJE) seeks to bridge and integrate the intellectual, methodological, and substantive diversity of educational scholarship, and to encourage a vigorous dialogue between educational scholars and practitioners.
TURJE publishes researches, theoretical statements, philosophical arguments, and critical syntheses.

First published in 2012

Turkish Journal of Education TURJE          Volume: 7, Issue: 2; April, 2018

## Table of Contents İçindekiler

## Editors Editörler

i

## Editorial Board Editörler Kurulu

### Field Editors

| | |
|---|---|
| Computer Education and Instructional Technology<br>Bilgisayar ve Öğretim Teknolojileri Eğitimi | Prof.Dr. Hakan Tüzün (Hacettepe University) |
| Curriculum Development in Education<br>Eğitimde Program Geliştirme | Assist.Prof.Dr. Cem Babadoğan (Ankara University) |
| Education Management<br>Eğitim Yönetimi | Assist.Prof.Dr. Ramazan Yirci (Kahramanmaraş Sütçüimam University) |
| Engineering Education<br>Mühendislik Eğitimi | Prof.Dr. Kurt Becker (Utah State University)<br>Assoc. Prof. Dr. Mehmet Tekerek (Kahramanmaraş Sütçüimam University) |
| Foreign Languages Education<br>Yabancı Diller Eğitimi | Assist.Prof.Dr. Ekaterina Arshavskaya (Utah State University)<br>Assist.Prof.Dr. Reyhan Ağçam (Kahramanmaraş Sütçüimam University) |
| Physical Education and Sport<br>Beden Eğitimi ve Spor | Prof.Dr. Ökkeş Alpaslan Gençay (Kahramanmaraş Sütçüimam University)<br>Assist.Prof.Dr. Ferman Konukman (Qatar University) |
| Mathematics Education<br>Matematik Eğitimi | Prof.Dr. Safure Bulut (Middle East Technical University)<br>Assist.Prof.Dr. Betül Tekerek (Kahramanmaraş Sütçüimam University) |
| Measurement and Evaluation in Education<br>Eğitimde Ölçme ve Değerlendirme | Assist. Prof.Dr. Erkan Hasan Atalmış (Kahramanmaraş Sütçüimam University) |
| Musical Education<br>Müzik Eğitimi | Assoc.Prof.Dr. Salim Sever (Ankara University) |
| Science Education<br>Fen Eğitimi | Prof.Dr. Mansoor Niaz (Universidad de Oriente)<br>Prof.Dr. Bayram Coştu (Yıldız Technical University) |
| Social Sciences Education<br>Sosyal Alanlar Eğitimi Eğitimi | Assoc.Prof.Dr. Ahmet Nalçacı (Kahramanmaraş Sütçüimam University) |
| Special Education<br>Özel Eğitim | Assist.Prof.Dr. Şule Güçyeter (Uşak University) |
| STEM Education<br>FeTeMM Eğitimi | Assoc.Prof.Dr. M.Sencer Corlu (Bahçeşehir University) |
| Teacher Training<br>Öğretmen Yetiştirme | Assoc.Prof.Dr. Kadir Bilen (Alanya Alaaddin Keykubat University) |
| Psychological Counseling and Guidance<br>Psikolojik Danışmanlık ve Rehberlik | Assist.Prof.Dr. Ramin Aliyev (Hasan Kalyoncu University) |
| Technology Education<br>Teknoloji Eğitimi | Prof.Dr. Edward Reeve (Utah State University)<br>Prof.Dr. Abdullah Togay (Gazi University) |
| Turkish Language Education<br>Türk Dili Eğitimi | Assoc.Prof.Dr. Kasım Yıldırım (Muğla Sıtkı Koçman University) |

### Proof Reading

| | |
|---|---|
| English Language<br>İngilizce | Mohammed Mubarique |
| Turkish Language<br>Türk Dili | Assist.Prof. Dr. İsmail Arıkoğlu |

| | |
|---|---|
| Graphic Design<br>Grafik Tasarım | Arif Gürler |

## Reviewers of Issue Sayı Hakemleri

Dr. Ayşe Yenilmez Türkoğlu
Dr. Beste Dinçer
Dr. Didem Koşar
Dr. Eda Kargı
Dr. Ersoy Karabay
Dr. Seval Koçak

To join our Editorial or Reviewer Team
please send your CV to us: turjeorg@gmail.com

## Indexing Dizinler

### EBSCO Education Source

Education Source is an International Field Index on Educational Sciences, combines high-quality databases from EBSCO and H.W. Wilson and includes hundreds of unique full-text journals not previously available in any databases.

### Emerging Sources Citation Index (ESCI), Web of Science™ Core Collection

The Emerging Sources Citation Index (ESCI) was launched in late 2015 as a new database within Clarivate Analytics' (formerly Thomson Reuters') Web of Science. Journals indexed in the ESCI will not receive Impact Factors; however, the citations from the ESCI will now be included in the citation counts for the Journal Citation Reports, therefore contributing to the Impact Factors of other journals. Articles in ESCI indexed journals will be included in an author's *H-Index* calculation, and also any analysis conducted on Web of Science data or related products such as InCites.

### ERIH PLUS European Reference Index for the Humanities (ERIH) to NSD

The European Science Foundation (ESF) signed in January 2014 a memorandum of understanding with the NSD - Norwegian Centre for Research Data to transfer the maintenance and operations of the European Reference Index for the Humanities (ERIH) to NSD. The ERIH database operated by NSD is called ERIH PLUS.

# The opinions of school principals on decentralization in education

Ahmet Şahin

Alanya Alaaddin Keykubat University, Faculty of Education, Alanya, Turkey,
ahmet.sahin@alanya.edu.tr, orcid.org/0000-0002-1254-393X

ABSTRACT    The study aims to determine the opinions of school principals on decentralization in education. Phenomenological research design was used in the study. The purposive sampling methods of convenience and criterion samplings were used together. The study group was composed of six volunteer principals. The data were collected through individual face-to-face interviews using a semi-structured form. Descriptive analysis and inductive content analysis were used. In conclusion, from a holistic perspective, most of the participants found the concept of decentralization to be close to full autonomy which is usually perceived as dangerous in terms of the unitary state structure. Therefore, they have more centralized attitudes towards educational processes other than financing and infrastructure support regarding decentralization in education. This is indeed an indication that concerns regarding decentralization in education are high. The participants think that decentralization will not harm our national identity and the national education structure is beneficial.

Keywords    *Decentralization in education, School principal, Deconcentration, Delegation, Devolution,*

# Eğitimde yerelleşmeye ilişkin okul müdürlerinin görüşleri

ÖZ    Çalışmanın amacı, okul müdürlerinin eğimde yerelleşmeye ilişkin görüşlerinin belirlenmesidir. Çalışmada olgu bilim deseni kullanmıştır. Çalışma grubunun belirlenmesinde amaçlı örnekleme yöntemlerinden ölçüt örnekleme ve kolay ulaşılabilir durum örneklemesi birlikte kullanılmış olup altı okul müdürü çalışma grubuna alınmıştır. Veriler yarı-yapılandırılmış görüşme formunun kullanıldığı bireysel yüz yüze görüşmelerle toplanmıştır. Analiz sürecinde betimsel analiz ve tümevarımsal içerik analizi yapılmıştır. Sonuç olarak yerelleşme kavramına ilişkin görüşlere bütünsel açıdan bakıldığında katılımcıların çoğunluğunun yerelleşmeyi tam özerkliğe yakın buldukları görülmektedir. Bu durum ise üniter devlet yapısı açısından tehlikeli görülmektedir. Bu nedenle, eğitimde yerelleşmeye ilişkin görüşleri sorulduğunda katılımcıların eğitim sisteminin yerelleşmesine ilişkin finansman ve altyapı desteği dışında daha merkeziyetçi tutum sergiledikleri görülmektedir. Bu durum aslında eğitimde yerelleşmeye ilişkin kaygıların yüksek olduğunun bir göstergesidir. Katılımcılarda ulus devlet kimliğimize ve eğitimin milli yapısına zarar vermeyecek bir yerelleşme anlayışının hâkim olduğu söylenebilir.

Anahtar Kelimeler    *Eğitimde yerelleşme, Okul müdürü, Görevlendirme, Yetki aktarma, Yetki devretme,*

## INTRODUCTION

Decentralization is defined as the delegation of existent authority over certain issues and situations to lower local units. At the same time, decentralization refers to the delegation of the authority to make decisions and the tasks themselves to those who actually do it. In other words, it is the delegation of the authority and responsibilities with regards to public activities of the centralized government to the provincial organizations, local governments, semi-autonomous public institutions or private sector (Atasayar, 2005; Balcı, 2010; Litvack & Seddon, 1999; Özmüş, 2005; Sağlam, 2010; Uz, 2009; Yuliani, 2004). Central government transfers its responsibility and authority to sub-national units in decentralization (The World Bank, 2013).

There are different decentralization models and styles due to the variety of perspectives regarding localization and the meanings they give it. Litvack and Seddon (1999) distinguished between decentralization as political, administrative, financial, and market decentralization. Based on the type of authority devolved, Falleti (2005) similarly, distinguished three types of decentralization: administrative, fiscal, and political decentralization. Administratively, decentralization is considered to be deconcentration, delegation and devolution. Similarly, a distinction is made between the forms of decentralization and the degree of decentralization. Accordingly, decentralization has been divided into three different styles, e.g., deconcentration, delegation and devolution (Arslan & Atasayar, 2008; Florestal & Cooper, 1997; Hanson, 1998; Koçak-Usluel, 1997; Ömür, 2017; Özdemir, 2008; Schneider, 2003; The World Bank, 2013; Yuliani, 2004). Some divide it into four different categories by adding privatization: (1) Deconcentration, (2) Delegation, (3) Devolution, and (4) Privatization (Balcı, 2010; Dubois & Fattore, 2009; Florestal & Cooper, 1997; Özmüş, 2005; Rondinelli, Nellis & Cheema, 1983; Sağlam, 2010; Sharma, 2006).

Deconcentration is a shifting of the workload to the offices outside the central government. Central government establishes field organizations and staff them with its own personnel. In doing so, centrally located officials hand over some of their administrative authority or responsibility to the lower levels within central government. That is, deconcentration is the carrying out of a number of bureaucratic tasks through the provincial organizations *(outlying field organizations of central government)*. Delegating political authority is not what is being talked about here. It is the transfer of administrative authority to the lower levels of administration. For this reason, the deconcentration is considered to be the lightest form of decentralization (Balcı, 2010; Duman, 1998; Koçak-Usluel, 1997; Mukundan & Bray, 2004; Özmüş, 2005; Rondinelli, Nellis & Cheema, 1983; Satria & Matsuda, 2004; Yolcu, 2010; Yuliani, 2004).

Delegation can be defined as the transfer of centralized administrative tasks to autonomous organizations. Because it is the process of delegating tasks, delegation is a higher-level form of decentralization. With delegation, centralized administrations will transfer decision-making and responsibility powers to semi-autonomous institutions. These institutions cannot be fully controlled, but rather indirectly supervised by the central government. In delegation model, all authorities and tasks are transferred to local organizations in order to fulfill their defined functions provided that ultimate responsibility remains with the central government (Balcı, 2010; Florestal & Cooper, 1997; Koçak-Usluel, 1997; Mukundan & Bray, 2004; Özmüş, 2005; Rondinelli, Nellis & Cheema, 1983; Satria & Matsuda, 2004).

Devolution refers to the vacating of authority by the central government and provincial organizations to the local governments. It is the establishment of sub-national units that are autonomous and independent through the transfer of authority, with the authority to collect and spend income. It is apparent that power has been transferred to local governments. In the transfer of authority, decision-making authority is shared between the central and local governments. It is a form of decentralization, which entails the transfer of authority from the provincial organizations to the local government. In other words, it creates an autonomous lower-level structure under the national structure. In this localized form, the local government is free in many ways. The geographical boundaries of the regions are well drawn, their legal status is clearly defined, and they are in a position to generate income and to spend it. The difference between devolution and delegation is that it is not just a delegation of the administrative function but rather at the same time is the transfer of authority and responsibility. However, even then, it does not provide a structure that is completely autonomous (Balcı, 2010; Barrera-Osorio, Fasih, Patrinos, & Santibáñez, 2009; Florestal & Cooper, 1997; Hanson, 1998; Koçak-Usluel, 1997; Özmüş, 2005;

56

Sharma, 2006; Yuliani, 2004). In summary, devolution is the creation or strengthening of subnational units of government that are autonomous and independent financially or legally (Rondinelli, Nellis & Cheema, 1983).

Privatization refers to the transfer of duties in various capacities of the central government to voluntary, for-profit or non-profit private organizations. Privatization is the ultimate form of decentralization and aims to give decision-making authority to companies in the public or the private sector (Balcı, 2010; Florestal & Cooper, 1997; Özmüş, 2005).

Turkish education system has a centralized model run by central government (Erdem, 2016; Kurt, 2006; Papadopoulou and Yirci, 2013). Ministry of National Education represents the central government and run the educational services on behalf of it. Central organization of the ministry has been organized within the framework of deconcentration in which centrally located officials hand over some of their administrative authority or responsibility to the lower levels (Erdem, 2016). As in most of the countries, there are different types of schools run by public and private sectors in Turkey. Although, both public and private schools are under the authority of the ministry, private schools are more autonomous on several tasks such as administration, planning, employment, student enrollment, and budgeting. However, private schools are also subject to the same rules as public schools in the areas of curriculum, examinations, certification, and inspection (Erdem, 2016; Milli Eğitim Bakanlığı, 2011; Memduhoğlu, 2013; Papadopoulou & Yirci, 2013).

As for the opinions regarding decentralization, there appears to be differences in the literature. Along with the ideas that decentralization in education is beneficial and effective as it can determine and fulfill local needs better, that it will provide a better way to use available resources (Özgen, 2011; Taşçı, 2008; Yolcu, 2010), that it will increase service quality, speed, and performance (Arslan & Atasayar, 2008; Balcı Bucak, 2000; Geçit, 2008; Özgen, 2011; Sağlam, 2010; World Development Report [WDR], 2017), that it will bring the government and the public closer together (Balcı Bucak, 2000; Faguet, Fox & Poeschl, 2014; Güran, 2001), that it will increase both participation and contribution of the community (Kurt, 2006), and that it can adapt to change quicker (WDR, 2017). There are also some negative opinions of decentralization. Özgen (2011) states that financial inequalities, together with decentralization will lead to differences in service quality between local governments. Likewise, Prud'homme (1995) argues that decentralization can increase disparities. Arslan and Atasayar (2008), Balcı Bucak (2000), and Taşçı (2008) argue that local political pressure upon public service production will increase, as well as inefficiency and favoritism due to bureaucracy and personnel recruiting. Hanson (1998), and Taşçı (2008) claim that decentralization of education can distance the curricula from the national structure. In this regard, it can be said that decentralization of education will not be able to provide equality and a standard of quality throughout the country (Balcı Bucak, 2000; Geçit, 2008; Sağlam, 2010; Taşar, 2009). Moreover, it will be difficult to follow a single policy and coordination between local governments will become more difficult (Balcı Bucak, 2000; Sağlam, 2010). It is also voiced that since the local governments have put the regions at the forefront, the national state structure may deteriorate (Taşçı, 2008). It is also claimed that since the local governments have put the regions at the forefront, the national state structure may deteriorate (Taşçı, 2008). Similarly, Ökmen and Canan (2009) hold the view that ethnic and cultural characteristics are emphasized for the purpose of decentralization in underdeveloped societies so that they can be disintegrated politically and dominated by global powers. In this way, global powers will be able to navigate underdeveloped societies more easily and thus international capital will be able to move freely.

When literature on decentralization in education is examined, it is seen that many studies have been made regarding the decentralization of the Turkish education system. The debates on the education system in Turkey are focused densely on excessive centralization and over-growth of the central organization (Kurt, 2006). Therefore, it is seen that many topics have already been discussed regarding decentralization in education such as the views of authorities in the education system regarding who should be found in the hierarchical structure (Arslan & Atasayar, 2008; Bozan, 2002; Koçak-Usluel, 1997), the provincial school administrators' views regarding the decentralization of education (Kıran, 2001; Yavuz, 2001), the opinions of teachers regarding the school-based management system (Kaya, 2008), the negative effects central government has upon schools, (Taşar, 2009), the historical timeline of decentralization in education (Özdemir, 2008), the role and effects of local governments on education expenditures (Uzun, 2015) and the autonomy of schools (Göksoy, 2016). These studies are actually

57

usually about who or which unit should be the authorities in the hierarchical structure. They try to determine the superficial views regarding decentralization of education.

As for this study, principals' attitudes towards decentralization in education both in the context of their expectations as well as their concerns have been examined and, in terms of educational processes, decentralization models projected to the end have been determined both separately and at a holistic level. Therefore, the study analyses the educational processes according to different decentralization models regarding the views of school principals, and suggests which level of decentralization model is best for various processes in education. It also recommends a holistic model for the whole education system. In this regard, the study contributes to systematic design both for policy makers and practitioners in the context of the fact that decentralization implementation in education can be adopted. Since, we need to take the concerns, expectations and suggestions of stakeholders into consideration in order to design a decentralization model which enhances the education system. However, the success and applicability of decentralization efforts seem mostly dependent upon policy makers and practitioners. Central government and policy makers should hear the voices of practitioners in order to improve the system. The quality is hidden in feedback, which means hearing the voices of employees. Since the school principals' views on decentralization efforts are significant, this study is, first, a kind of feedback on decentralization of education for central government. Second, it is an effective guide for policy makers to design a well-functioning education system, which fulfills local needs, uses resources well, delivers quality services and adapts to change quicker. The study, finally, tries to uncover different perspectives on decentralization of education that will provide some insights on what researchers can study.

The acceptance of the necessity of the local government principle for sustainable development does not necessarily mean that the state structure will change. The important thing is that the management structure is kept in view. In this sense, management practices can be accomplished successfully in the nation-state structure (Mengi & Algan, 2003). Decentralization of education may also be an important tool to provide effectiveness and productivity in educational services if it is designed and implemented in an appropriate way according to the state structure and the society. Thus, the aim of the study is to determine the opinions of school principals in context of their anxiety, expectation and recommendations regarding decentralization in education.

## METHODOLGY

### Research Design

In this study, which aims to determine in depth the opinions of school principals regarding decentralization in education, the phenomenological research design, one of the qualitative research methods, was used. Phenomenological studies attempt to determine in depth and detail the perceptions and reactions of an event from the experience of individuals (Fraenkel, Wallen & Hyun, 2011). Thus, in phenomenological studies, the researcher attempts to capture the uniqueness of events from the interpretive point of view and their analysis. Therefore, not only the events but also the political, historical and sociocultural context of these events are also focused on (Yin, 2011). In other words, the researcher focuses on phenomena in which s/he has knowledge of and is conscious of but does not have an in-depth and detailed understanding of (Büyüköztürk, Çakmak, Akgün, Karadeniz & Demirel, 2010; Yıldırım & Şimşek, 2011) and aims to discover and define the meaning or essence of the participants' knowledge and experience. In short, the researcher tries to understand his/her experiences (Creswell, 2014; Hays & Singh, 2012). In this sense, the phenomenological research design was used in the study in order to discover in depth the perceptions and reactions of school principals about decentralization in education.

### Study Group

In phenomenological studies, data sources are chosen from individuals who experience the related subject and who can express and reflect their thoughts well (Büyüköztürk, Çakmak, Akgün, Karadeniz & Demirel, 2010). The study used the purposive sampling methods of convenience and criterion samplings together in accordance with the design of the study (Yıldırım & Şimşek, 2011). Volunteer principals who have worked in public schools, trained in education management, have administrative experience at both primary and lower secondary school levels for at least five years were preferred during the selection of the participants. It was assumed that principals who have had either long or short

58

training in educational management would be more familiar with administrative approaches and thus would be able to provide a deeper understanding of decentralization in education. Therefore, the study group consists of six school principals, working in primary or lower secondary schools in central districts of Antalya Province. The principals were carefully chosen so that the schools they were working in reflect the different socio-economic milieu. In Turkish education system, the percentage of female school principals is very low *(The female school principal rate for primary education schools in the province of Antalya is 10.9%; Milli Eğitim Bakanlığı [MEB], 2015)* making it difficult to reach female principals. Available female principals refrained from participating in the study because they were hesitant to talk about the concept of decentralization. For this reason, all of the principals who participated in the study were male. When the teaching subjects of the participants were examined, it was observed that 4 (66.4%) were classroom teachers, 1 (16.7%) was a mathematics teacher, and 1 (16.7%) was a social studies teacher. One (16.7%) participant has a master's degree on social studies education while the other 5 (83.3%) participants have a bachelor's degree. All participants attended in-service administrator training courses on education management offered by Ministry of National Education of Turkey. Participants' service time in administration (STinA) ranged from 7 to 15 years (STinA$_{mean}$ = 10.7 years); total service time (TST) ranged from 14-25 years (TST$_{mean}$ = 18.3 years).

**Data Collection Tool and Data Collection Process**
In the study, individual face-to-face interviews were conducted in the offices of the school principals who participated in the study. Yıldırım and Şimşek (2011) point out that interviewing, which is one of the qualitative methods, is a very powerful way of determining the perspectives, emotions and perceptions of people. The interviews lasted approximately for 68 minutes. A semi-structured interview form prepared by the researcher was used as the data collection tool in the interviews. In order to ensure internal validity of the interview form, the interview form was examined together with an academician and a principal and the final form was prepared according to that. The researcher recorded the interviews by using a voice recorder and then the voice recordings were transcribed.
The first part of the interview form contains demographic information of the participants and the second part contains four semi-structured, open-ended questions:

*What does decentralization mean?*
*What do you think about decentralization in education?*
*What needs to be done in Turkey for decentralization in education to be beneficial?*
*Which decentralization model in education is appropriate for Turkey? Why?*

In the first three questions of the second section, the principals' thoughts regarding decentralization in education were determined without any prior information. Before moving on to the fourth question, participants were informed about the various decentralization models in education and asked to re-evaluate the thoughts which they had expressed in the first three questions in the context of the decentralization models given for the fourth question. In effect, the fourth question wanted school principals to model their multidimensional views regarding decentralization in education.

**Data Analysis**
Regarding the analysis of the data, both descriptive analysis and inductive content analysis were performed by using the NVIVO qualitative research program. As for the descriptive analysis process, a thematic framework was established with the conceptual structure of the research and the research questions, which were both regarded to be a roadmap and framework. According to this thematic framework, the data was compiled meaningfully and logically. Then, the derivation was coded using inductive content analysis and the final themes were derived by determining the relations between the codes and the findings. The aim was to reveal the concepts underlying the data and the relationships between these concepts. In addition, descriptive direct citations have been included to conspicuously reflect the views of those involved in the study (Yıldırım & Şimşek, 2011). Finally, principals' opinions were coded as P1, P2, etc. to preserve their anonymity.

**Validity and Reliability**

A thematic framework, containing criteria of analysis, has been used to provide consistency and cohesion in the analysis of qualitative data. The data was analyzed using the NVIVO qualitative research program in accordance with this framework plan. This process, which was carried out during the analysis stage, was important both in terms of the validity and the reliability of the qualitative data. Because of the consistency of the analyses made by the researcher at different times, the framework plan criterion was influential.

As a result of the analysis the researcher made, it was observed that 223 perspectives were gathered under 112 different codes. The coding and the thematic process were shared with an expert in the field of educational management. This was completed within about three and a half hours over the course of two days. A consensus was reached that 93 of the 112 codes (83%) reflected the opinions of the researcher and expert. The researcher and expert came to an agreement and made necessary changes regarding 6 codes (5,4%). Regarding the other 13 codes, no consensus was reached (11.6%). Coming to a consensus regarding a large portion of the resulting codes and themes (88.4%) increases the reliability of the study (Güler, Halıcıoğlu & Taşğın, 2013; Marques & McCall, 2005). The research findings were then shared with two participants, and they were asked to read and confirm whether the findings correctly reflected their perspectives. Participants' views on the findings were found to be consistent with the results of the research. This is accepted as contributing to the study's internal validity. The involvement of participants with different demographic characteristics and their consistency with each other also increases the external validity of the study. Furthermore, the integrity of the study increases as a result of its clear process, archiving of raw data, and accountability when deemed necessary (Creswell, 2014; Yıldırım & Şimşek, 2011).

**FINDINGS**

In order for them to be easily understood, the results have been categorized systematically under four different headings: (1) opinions regarding the concept of decentralization, (2) opinions regarding the application of decentralization in education, (3) opinions regarding how decentralization in education would be beneficial if certain conditions were met or something was done in Turkey and (4) opinions regarding decentralization models.

**The meaning attributed to decentralization**

In this part, the meanings attributed to the concept of decentralization by the school principals were investigated. The phenomenological views of the principals regarding decentralization are presented in Table 1.

Table 1
*Opinions Regarding the Concept of Decentralization*

| Opinions | P1 | P2 | P3 | P4 | P5 | P6 |
|---|---|---|---|---|---|---|
| Devolution | | ✓ | | ✓ | ✓ | |
| Administrative and Economic Support of Schools with Local Resources | ✓ | | | | | |
| Delegation to Local Authorities | | | ✓ | | | |
| Full Local Government or Full Autonomy | | | | | | ✓ |

It was observed that half of the participants understood the concept of decentralization as the way in which politics was planned and carried out locally and that it was more autonomous. In this context, P2 stated, *"When talking about decentralization in education, I understand it as the way the local government is channeled by the currently centralized National Education organization."* P4 more clearly stated that the level of decentralization in the mind is a way of devolution, *"The first thing that comes to mind when speaking of decentralization in education that the policies followed in education are planned and carried out locally and that education processes are carried out more autonomously independent from the center."* Likewise, P5 said, *"In terms of decentralization in education, it is like how these work. Management locally. It depends on the municipalities. The first thing that comes to mind is that education is being done under the guidance of the municipalities."*

60

P1 emphasized that local governments should support schools financially by emphasizing that *"Decentralization in education is more about the ownership of education by local resources or local governments and especially for schools to be supported by local resources"* and emphasizing that the localized way of perceiving decentralization is tied to the schools being supported by the administrative and economic local resources. As a matter of fact, P1 supported this view by saying, *"I understand decentralization in education in terms of nation-state only as strengthening the economic and physical structures of schools. I mean I tend to think about it like that. Only improving economic structures and physical conditions."* P3, another participant, also expressed that decentralization is understood as the transfer of the authorities of the central government to the local governments. *"I think that, in the case of local government, I am transferring the powers of the central government to the local governments, to the private administrations, to the municipalities."* P6 perceives decentralization as management and autonomy in its entirety. *"It is up to the higher authorities to manage the school in its own right without depending on the Ministry of National Education, without depending on anyone. It is also possible to choose their own employees and work like that."*

### Opinions regarding the implementation of decentralization in education

The opinions of the principals regarding decentralization in education have been analyzed with a two-level thematic approach. The data was first collected under three primary themes: positive opinions, expectations, and concerns. Then, the data related to the first level themes were re-grouped and the second level themes were obtained and the results are presented in Table 2, Table 3 and Table 4.

Table 2
*Positive Opinions Regarding Decentralization in Education*

| Themes and Codes | P1 | P2 | P3 | P4 | P5 | P6 |
|---|---|---|---|---|---|---|
| **Theme 1. Positive Opinions Regarding Financial, Physical and Infrastructure Support** | | | | | | |
| I think that the physical conditions of schools will improve rapidly. | ✓ | | ✓ | ✓ | ✓ | ✓ |
| It is something positive in terms of strengthening the infrastructure of schools. | | ✓ | ✓ | | ✓ | ✓ |
| It's a positive thing that schools are economically supported by local governments. | ✓ | | | | ✓ | ✓ |
| In terms of economic and physical conditions, it will make it easier on schools. | | ✓ | | | ✓ | |
| It will increase the number of schools. | ✓ | | | | | |
| It can more easily accommodate schools' needs such as cleanliness and security. | | ✓ | | | | |
| It will ensure more ownership of the school. | ✓ | | | | | |
| Local governments can better meet expectations because they can better identify local people's needs. | | | | | ✓ | |
| **Theme 2. Positive Opinions Regarding the Organizational Structure and Administrative Functioning** | | | | | | |
| Bureaucracy in schools will decrease and tasks, decision-making and problem solving will speed up. | ✓ | | | ✓ | ✓ | ✓ |
| It will increase the authorities and powers of the administrators. It will provide for more autonomy. | ✓ | | ✓ | | | ✓ |
| I think that the amount of bureaucracy will decrease in more senior administrative offices. | ✓ | | | | | ✓ |
| I think the working environment will be better. | | | | | | ✓ |
| It will develop an understanding for participative management in educational institutions. | | | | | ✓ | |
| Concerns regarding job security would increase the performance of employees. | | | | | | ✓ |
| It ensures institutionalization. | ✓ | | | | | |

Positive opinions of the principals regarding decentralization in education have been collected under two different themes. The positive views were mostly related to financing, the physical environment and infrastructure support, as well as organizational structure and administrative functioning. It is noteworthy that positive opinions on educational practices were not reported.

61

With regards to financing, physical environment and infrastructure support, it was emphasized that it will quickly improve the physical conditions of schools and meet its needs. P1 stated, *"When there is decentralization in education, I think the physical structures of the schools will be improved first."* P6 said, *"This way we can get to the resource quicker. We can meet our financial needs easier. That's because currently it's really difficult for the money to reach us from the Ministry, i.e., Ankara. We, as individuals, can better meet our problems and needs. It would be better off through local governments."* And P3 stated, *"The problem regarding the development of the physical conditions of the school is solved quicker. Students will receive better education under better conditions. In this context, I think that it will be better for our children and for our students."*

In similar fashion, many participants emphasized that decentralization is something positive also in terms of strengthening the infrastructure of schools. P2 stated, *"When we look at the financial dimension of decentralization in education, today our schools are at financial impasse. You will not receive a donation. You will manage the school without a budget. But you will meet every need. It is contradictory to fulfill all the wishes of the parents. This is why it is no problem for the local school administration to provide cleaning needs, school security, infrastructure work or school needs. Decentralization is positive when referring to infrastructure."* P3 said, *"Now, if decentralization in education is to transfer the financial burden to these local governments and its purpose is for the Ministry to be freed of this burden and we are only thinking financially, I think it's a good thing to use local resources to provide for school needs ... For example, the relevant authority could be completely transferred to the municipalities, and the repairing, painting/whitewashing, maintenance and similar needs of the schools can be fulfilled using the resources allocated by the municipalities. I think this would be completely appropriate."* P6 said, *"This is already the biggest problem for schools and their municipalities when looking at it from a school structure or environmental standpoint. I think it would be easier to provide maintenance, repairs, additional buildings, and so on, if the biggest problems depended upon those municipalities."*

The participants also saw the fact that schools are supported economically by local governments in a positive light. In relation to this issue, some participants said:

*Regarding decentralization in education, when I think about it from an economic point of view, I do not believe that the expenses of the school are met by the parents or even civilian organizations and the local governments especially the municipalities. For example, our schools believe that repair, maintenance, electrical and plumbing expenses, paint/whitewashing and environmental management can be done easily and smoothly by local governments (P1).*

*Local governments should meet the funding of schools. It's good to be economically connected to the municipality. For example, the economic support of schools by local governments will help the principals to overcome the economic troubles of schools. Thus, school principals may have more time to engage in education and training rather than in physical space (P6).*

Other favorable views on financing, physical environment and infrastructure support that were emphasized were that schools would be more relaxed in terms of economic and physical conditions, the number of educational institutions would increase, the needs of schools such as cleanliness and security would be more easily met, schools would be better equipped and local governments would be able to better meet the needs of the public since they would be able to better identify their needs.

Regarding positive opinions in relation to organizational structure and administrative functioning, it was stated most that bureaucracy would decrease, and as a result tasks, decision-making and problem solving would accelerate. Participants who expressed similar opinions said, *"I believe that the problems would be solved quicker, at least I believe that problems will be solved quicker with NGOs and local resources."* P4 had similar thoughts: *"I find it completely beneficial for the school administration to be affiliated with local governments as their upper management. Then, the problems would be able to be solved quicker. Decision-making would be faster. I find it beneficial in that respect."*

Another important positive view of organizational structure and administrative functioning is that the powers and authorities of the administrators would increase, and thus more autonomy would be achieved. Participants such as P1 emphasized that the authorities of the administrators would increase and in the end they would become more autonomous by saying, *"Delegation strengthens the hands of those employees involved,"* while P6 said, *"We will move more comfortably if we implement*

62

*decentralization. I believe I will meet my goals easier. I believe that the importance of schools will increase even more."*

Moreover, some of the participants emphasized that the burden of bureaucracy and centralized authority in upper management would be reduced. In this context, P1 expressed that the burden of centralized administration would be alleviated and bureaucracy would be reduced by saying, *"Of course the bureaucracy would decrease, because the burden of the centralized authority would be alleviated."*

Other positive considerations were that the working environment would be better, the participatory management approach in schools would be developed, parents would want to participate in the decision-making process, job security concerns would increase the performance of employees and institutionalization would be achieved.

Table 3
*Expectations Regarding Decentralization in Education*

| Themes and Codes | P1 | P2 | P3 | P4 | P5 | P6 |
|---|---|---|---|---|---|---|
| **Theme 1. Educational Expectations** | | | | | | |
| The expectation of education being national. | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Education programs would be made at the local level. | | | | | | ✓ |
| Education should be offered in different languages. | | | | | | ✓ |
| **Theme 2. Financial, Physical and Infrastructure-Based Expectations** | | | | | | |
| There must be financial decentralization. | ✓ | | ✓ | | ✓ | ✓ |
| Schools' needs must be met by local authorities. | | ✓ | | ✓ | | |
| I expect local governments to build well-equipped schools. | | | | ✓ | | |
| **Theme 3. Organizational Structure and Administrative Operation Expectations** | | | | | | |
| School administration should be dependent on higher institutions. | ✓ | | | ✓ | ✓ | |
| Policies should be determined at the administrative center, application should be local. | | | ✓ | ✓ | | |
| Appointments should be made under the authority of the central government. | ✓ | | ✓ | | | |
| There should be an inspection mechanism. | | | ✓ | | | ✓ |
| There should be an employment authority. | | | | | | ✓ |
| I expect school administrators to lighten their operating burden and to allocate more time to educational issues. | | | | | ✓ | |
| School administrators should be more autonomous. | | | | | | ✓ |
| Local governments should not be given much authority. | | | | ✓ | | |

In Table 3, the principals' expectations regarding decentralization in education are gathered under three themes: educational expectations; financial, physical environment and infrastructure based expectations; and expectations regarding organizational structure and administrative functioning.

The most frequently expressed expectation for the education system is the protection of the national structure of education. With the exception of one principal, all other principals emphasized that the education is national. In this context, it was emphasized that the central government should transfer the educational activities outside the national education policies and curricula to local governments, especially if education programs should be at a national level. P1 shared their expectation by saying, *"I mean, as long as there are educational programs, there is no trouble in carrying out this work with local administrators or local staff as long as there are joint programs. In other words, I come from the point of view that education is national."* Some other participants expressed their thoughts on this subject as follows:

*On one hand, we are a nation with a history of around 2,000 years. We need to implement education in this country that will convey this history and culture. When we look at America, if everyone in America says I am American, we want everyone in Turkey to say I am Turkish. This is all we want. We do not pay attention to anyone's race... I think that we need the establishment of an education system ensuring this and a national education system and that these rules should be applied in the same way in the whole country (P2).*

*When it comes to what I think regarding decentralization in education, I think it is absolutely necessary to have a national education policy, even if some degree of decentralization will happen. I advocate that education is national and I defend that this nationality should always exist (P4).*

63

Contrary to other participants, one participant expressed the expectation that the educational programs could be determined at the local level and that the training could be carried out on a separate basis. P6 stated, *"I positively embrace it. If we have schools in other countries for our people living in foreign countries, there could be different kinds of education and programs created here. I do not think this will cause a problem. If it is not politically provoked, I do not think it's going to be a problem. They probably think that at the top. It is their only fear. There is concern that this language will be provoked and used for other purposes. Different languages are already spoken now anyways. There is no issue here. The second is that even as a southeasterner I do not think people will be educated in their own language. I do not think it is going too far. I do not know. I am saying this particularly for Turkey. You know the current climate in Turkey. Songs used to be sung in Kurdish. There was no ban on Kurdish songs. It was legal, but there wasn't much more. There was no demand. They listened, and that is okay. Of course, it is better to listen in your own language. Just like going to another country and speaking Turkish is a problem and it is difficult. Let people here speak in Kurdish and speak in Armenian. Let them talk about whatever they want. I support this."*

In the context of financial, physical environment and infrastructural expectations, the highest expectation of decentralization was at the financial level. One of the participants, P1, stated, *"Autonomy is economic and as I said, it should be in other areas, especially in the economic area. Autonomy in the administrative sense must be under a central authority."* He emphasized that autonomy should only be in economic terms. P3 said, *"Yes, if decentralization in education is only considered as financial. This would be nice. I think it would be a positive thing is the Ministry would send money and resources to municipalities and special provincial administrations and resolve school needs through these resources."*

P2 touched on decentralization in education supporting infrastructure and superficially meeting school needs as being a positive thing by saying, *"Decentralization in education is generally positive when we really look at it, but because of the geographical location and the geopolitical importance of Turkey, different polarizations or different social characteristics between east and west and north and south have emerged, and decentralization is only positive in terms of infrastructure work, since there will be a differences in the west and the negative consequences of the understanding of local governments and the pressure on the staff will create pressure in this direction. Therefore, it is not a problem for the school to provide the local government with its school needs, such as the cleaning of the school, its security or its infrastructure or the school's needs."* P5 shared similar thoughts by saying, *"If municipalities are to meet the needs of the schools and they are able to meet students' needs immediately, then there will certainly be progress in education."*

Another expectation regarding financial, physical and infrastructure support is to build schools equipped by local governments. Regarding this subject, P4 expressed his expectations with the following words, *"Since the aim here is to prepare the best for future national education policies in line with the interests, wants, needs and abilities of the children directly entrusted to us, I believe that local governments should be built and equipped for this very purpose. I would like the schools to be built in such a way that they will cover all the social and athletic cultural fields within this goal, and that all their needs will be fully met in the subsequent educational and training processes."*

Regarding organizational structure and administrative functioning, the most frequently expressed expectation was that school administrations depend on higher up institutions. Among participants, P4 expressed this thought by saying, *"The school administration should depend on a higher up."* P1 expressed the view that *"Autonomy should be under a centralized authority in the administrative sense"* and expressed their expectation stemming from anxiety by emphasizing that schools should be connected to central government in administrative terms. P5 emphasized his thoughts by saying, *"It is unthinkable that school principals are in such a place that they would give no accountability to anyone."* Another expectation expressed regarding organizational structure and administrative functioning was regarding policies being determined by the central government and only application was to be at the local level. P3 showed that the concept of localized application was a sensitive topic and that there are concerns regarding the educational policies. Regarding this, P3 stated,

*For once, Ministry of National Education, the state, should have a basic education policy. This must be determined from the ministry, the center. But I think that authority can be delegated for application (P3).*

64

*Education can be decentralized. A number of problems can be solved through local governments. But I am not in favor of giving authority to local governments for educational policies. Their views can be taken into consideration. These opinions should be assessed at National Education Councils, and of course, as it is currently done, a national policy should be established and disseminated to the country for application and not just staying on paper (P3).*

*I definitely would say that the basic policy of national education should be determined from the center, taking into account the views of the employees. It certainly should not be compromised. Otherwise, I think it will be very difficult in this country (P3).*

P4 had similar thoughts. *"Whether or not this is a nation state, I believe that there should be a national education policy. Absolutely. That is because not much is all that important, but the concept of nationality is necessary in order to sustain the nation forever. But in practice, there may be decentralization in decision-making processes. Local administrators at the lower levels may think a bit more independently, more autonomously. But I certainly think that the national education policy applied throughout the country should be determined from a center, that it should not deviate from it, and that it should be strictly adhered to."*

Another expectation was related to appointments and transfers of the staff. Two participants emphasized that the appointment and transfer authority should be in the central government because of the politic concerns such as political favoritism. In this regard, P1 stated that the central government should designate administrators by saying, *"I am of the view that the administrators still be determined by the centralized authority. Autonomy in an administrative sense should be under a centralized authority."* In addition, it was stated that the centralized administration is beneficial in terms of providing intercity coordination in appointments. P3 clarified this issue by stating, *"Tomorrow, the teachers will think about this. Let's say I want to be appointed from City A to City B. But if it depends on the local government there, perhaps they do not want me, etc. We need to talk about these things too. A specific basis of everything must be defined. In this regards, the opinions of local governments can be taken into account, but the last word, in terms of appointments, should come again from the center."*

Some of the participants addressed the need for an inspection system regarding decentralization. Participants who commented on this issue pointed out that an effective supervision mechanism should be implemented if there were to be decentralization in education. In this regard, P3 touched on the idea that central government should supervise employees by saying, *"Central government have to measure and inspect. I am not convinced that in our country it would be very objective in the local government."* Indeed, it can be argued that not meeting this expectation is due to a lack of confidence in the inspections carried out by local governments. As a matter of fact, P3 shared that local governments may not act objectively in their supervision of the application. P6 expressed the idea of a supervision system as follows. *"When saying it is connected, we need an inspection mechanism. A higher up must be linked to this, i.e., to the Ministry of National Education. That is to say it does not need to be connected in everything. I am not talking about implementing their orders. I am just talking about needing to be connected to the inspection mechanism operation."*

As for the other expectations, they are related to school principals being empowered to be more autonomous and that their workloads can be supported through the help of assistants, so that they can spend more time on educational matters and lead educationally. It was also emphasized by one of the participants that local governments should not be given much authority.

Table 4
*Concerns Regarding Decentralization in Education*

| Themes and Codes | P1 | P2 | P3 | P4 | P5 | P6 |
|---|---|---|---|---|---|---|
| **Theme 1. Concerns Regarding Educational Practices** | | | | | | |
| Concern that curricula will stray from the national level | ✓ | | | ✓ | ✓ | ✓ |
| Concern about politics in education | ✓ | ✓ | | | | |
| Concern for each local government to determine its own educational policies | | | ✓ | | | ✓ |
| Concern for political pressure on education reducing the quality of education | | ✓ | | | | |
| Concern that political pressures on education would make it difficult for students to be disciplined | | ✓ | | | | |
| **Theme 2. Concerns Regarding Finance, the Physical Environment and Infrastructure Support** | | | | | | |
| Concern that schools would place an extra economic burden on local governments | | ✓ | | | ✓ | |
| **Theme 3. Concerns Regarding Organizational Structure and Administrative Functioning** | | | | | | |
| Concern for employee job security and employment | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Concern that performance will be ignored | ✓ | ✓ | | | ✓ | |
| Concerned regarding unethical practice, favoritism and mobbing | | ✓ | | | ✓ | |
| Concern regarding favoritism in appointments | | ✓ | ✓ | | | |
| Concern that local governments would intervene in the autonomy of school principals | | ✓ | | | ✓ | |
| Concern regarding disturbing peace in the workplace and a decline in the productivity and performance of employees | | ✓ | | | | |
| Concern that it would be difficult to employ staff with political leanings | | ✓ | | | | |
| Concerns regarding low-cost employment by local governments | | | | | ✓ | |
| **Theme 4. Concerns regarding Politics** | | | | | | |
| Concern regarding the deterioration of the nation-state structure | | ✓ | | ✓ | | ✓ |
| Concerns that local governments would put administrative pressure on educational institutions | | ✓ | | ✓ | | |
| Concern that schools would be instrumental in conflicts between power groups at local level | | | ✓ | | | |
| Concern that there would be different educational policies at the local level | ✓ | | | | | |
| Concern regarding the weakness and ineffectiveness of opposing political structures | | | | | ✓ | |
| Concern that political pressures on educators would increase | | ✓ | | | | |
| Concern that local administrators would behave in a populist fashion | ✓ | | | | | |

The negative opinions principals hold of decentralization in education have been gathered under four themes: concerns regarding educational practices; concerns regarding finance, the physical environment, and infrastructure support; concerns regarding organizational structure and administrative functioning; and concerns regarding politics.

The most frequently expressed concern regarding educational practices was that the curricula would stray from the national level. Participants believe that, with the decentralization of the education system, the curricula would be determined by the local government, thus detracting the education system from the national level and damaging the structure of the state. This suggests that there are political concerns underneath the concerns regarding the decentralization of the education system. P4 states that he is concerned about this: *"Education must be national. If education is not national, different generations would arise from the different cultures. I think that some negative aspects could occur when trying to be a nation. If there is not a national education policy, as I said, think of a chain link that is contrary to the others, contradicting with each other, just as it was in Ottoman times. The chain links would all be going in different directions. So there would not be integrity. In other words, if we want to get to where we want to get, the goal we want to reach, we have to have integrity within all of the links of this chain."*
Another concern was the politicization of the education system. P2 clearly expressed this concern by saying, *"The neighborhood president from the ruling political party would immediately see himself as the boss of the school. Or, in any regards, those voting for this political party would see themselves as the boss of those who work at the school."*
Another important concern expressed was that each local government would have its own educational policy. In this regard, P3 stated, *"If every local government would determine National Education policies through its own eyes, this would be wrong."* P6 expressed their concern that different

66

educational policies might be implanted throughout the country by saying, *"If we were connected to municipalities, this could be a problem. I think that things might change according to political views."* Furthermore, P2 stated, *"Political parties in some provinces, especially those that are geopolitical or population dense, and that are more industrialized, would fight more for local governments. That is because everything stems from there. A party that obtains local political powers in those provinces would have the power to determine education policy altogether. This, of course, would give them the opportunity to raise up generations more sympathetic to their own views."*

Other concerns related to the education system were the concerns that political pressures on education would undermine the quality of education and make it difficult to discipline the students. P2 expressed their concerns about these issues as follows. *"In an undisciplined environment it would not be possible to educate and the student would be most negatively affected here. That is because a parent who puts pressure on the teacher would not end up seeing the teacher as an authority figure. I think that they would see them not as a person to be respected, but rather as a person to be bossed around, and as a result a disorganized educational environment and the education that would also emerge from that disorganized educational environment would result in an unsuccessful educational experience."* With regard to disciplining students, P2 also said, "*When we think about the student, there might be a situation that prevents us from disciplining the student at all. This is because the student and their parent might reach out to the local governments in various ways and put pressure on the teacher and the school through the local government."*

Regarding concerns about finance, the physical environment and infrastructure support, only education institutions were concerned about placing an extra economic burden on local governments. In this regard, P2 said, *"Local governments would see it as a plus, because they would have a say in the educational institutions that are raising up the future generation, and on the other hand, they would see it as a negative burden due to the financial burden that comes with it. Concerns might arise if the schools were not able to come up with sufficient finances from the centralized budget and as a result the schools not being able to meet their real needs. In that case, they would have a greater burden."*

In the context of concerns regarding organizational structure and administrative functioning, the fact that all participants raised the concern of employment and job security is important. Regarding this, participants expressed their concerns on several occasions (25 times) even while talking about different issues. In this respect, it was the most frequently expressed concern in the study. In terms of the job security, they emphasized concerns regarding job security due to political favoritism and they were not open to decentralization in education. Some of the participants say those:

*I would guess that everyone's mutual concerns would be job insecurity and finances (P1).*

*The decentralization of appointments and the relocation of training staff, I think, would have a negative and not a positive effect on education. That is because local governments would follow their political leanings, and, as a result, they would end up applying pressure only on people who are opposed to their own political leanings while tolerating whose who agree with them. Appointments and relocations would be completely personal, completely politicized. This would destroy educational peace of mind and unity. As injustices against educators would come to light, it would demoralize other educators. They would end up preferring not to work (P2).*

*Teachers would have a heap of concerns. The first concerns would be in relation to job security. Teachers who do not do their job very well would think about what would happen to them. Or even if they do their job well, they would directly try to make overtures to the local administrative authority. I don't know, they would spend a lot of efforts keeping their places. I would rather wish that these efforts be used for education and teaching (P3).*

*Staff may be concerned politically if decentralization were to come about in education. That is, if local political authorities appointed school principals due to decentralization, or if the local political authorities have a very clear influence over the educational institution, the teachers might be concerned politically or they might be constantly concerned about job security. Teachers need to have 100% job security. Again, if local political authorities were completely empowered, they could emerge as a tool to put pressure on school principals. I am concerned about the influence these political powers in local governments would have on the appointment, relocation, and advancement of school principals (P4).*

*As local governments change, if the parties change, they might cause problems by changing the school administration. If continuity is important in education and if anyone coming to power considers*

67

*changing the school administration and their teachers, why not place my buddy, sergeant, or relative there. If they would not protect the social security of educators, it would not be good if speaking from an educational point of view. We really do not like this guy. If there were thoughts such as today this person treated my relatives bad so I'm going to fire him, we're paying this person any way, it's going to result in bad things happening. It would cause trouble. Employees would not be able to be free then. Teachers need to be free in these kinds of things. When the teacher concentrates on a lot of things, s/he would not be very productive, because s/he would not be able to attend to the people in the class. For this reason, teachers would not be able to teach children freely when they are in places where they feel themselves threatened with such things. That's what I think. (P5).*

*I am concerned with them if they were to be tied to municipalities. I would say that municipalities might cause political problems when elections are held. There might be a constant change in administrations. That is my only concern. Just as I said, I think workers might be concerned about losing their jobs for political reasons (P6).*

Another important concern expressed regarding organizational structure and administrative functioning was that performance could be ignored. Among the school principals who commented on this, P2 referred to the fact that the politicization that decentralization could bring may lead to unchallenged appointments, thus increasing the employment of non-performing and incapable administrators and teachers. *"In the school where our child goes, is the teacher really working because s/he deserves it or because s/he agrees with the administration politically? Is this person really productive and giving his/her all? Or if s/he's not is it simply because of s/he is close to the authorities? We would be concerned about this."* P2 also believes that politics and political performance would be emphasized. *"I think that local governments would be active in educational institutions, their initiatives would be more active, and so that it would become compulsory for people to work wherever their leanings line up with the local government. I think that political views and political leanings would take preference over qualifications and performance."* P5 mentioned that qualifications would be ignored and people finding jobs based on who they know would become widespread by saying: *"Everyone knows someone who has political power or someone who carries out those things that I said. There's definitely someone who s/he is buddies with or who was his sergeant. ... S/he says I know a teacher here. S/he says we should employ him. It becomes something that they are going to take care of. Such a problem could arise."*

There was also concern that unethical practices, mobbing and favoritism would increase. P2 expressed that concern by saying, *"I am worried that if decentralization in education came into being, it would not be able to ensure objective criteria."* P5 said, *"With decentralization, when a different administration were to come into power, the first thing that comes to mind is, let's say, if the person in power goes and another person comes in, there would be a very painful injustice without any consideration for what people do. I mean as school principals. Think about this. You are assigned to an exam, but what happens when those places are looked after by proxy? For example, people who are close to the current power would be assigned. People also think that rewards would also be based on this, and this is often talked about. This is something frustrating. Or there is a complaint filed against the teacher. This would end up being a lot simpler. I did not like the teacher's thought on that; I was sick of this guy. Let's fire this guy from the school."*

Another concern addressed in the context of favoritism was the non-objective practice of appointments. P3 expressed their thoughts as follows. *"For example, with appointments, it is absolutely necessary for the local commission to make a statement regarding my appointment, to make some arrangements to prevent subjective rather than objective decisions. Otherwise, I think that if we gave too much authority to local governments, it would be unbearable."*

Another concern was the concern that local governments would interfere with the autonomy of the school principals. In this regard, it was thought that the powers of the administrators would become restricted. P1 expressed their thoughts on this issue by saying, *"Even if we were having so much trouble with the central government, I think that our place of action would be further restricted when local governments are concerned. The administrator, who is constantly prevented from working in this restricted place of action, would no longer attempt to work anymore after 3 months, 6 months, 1 year, after a certain period of time."*

Other concerns emphasized the deterioration of employee comfort and a decrease in the productivity and performance of the employees. In addition, there is concern that it would be difficult to employ

68

people who have political leanings and that local governments might be able to operate a cheap labor force. In relation to this subject, some participants said:

*There would be parental pressure. I do not believe that a very productive environment would emerge. This, of course, would ruin people's comfort. People would become less productive as the business would fall apart. In short, I think that political opinions and political leanings would prevent qualification and performance. Like I said, what I care most about this matter is personnel relocation and appointment. It stems from the concern that local admissions would act subjectively. Because of this concern, people would not be able to work in peace (P2).*
*If the school were to be a source of revenue, the municipalities would want to manage the school. If schools were wretched and a money source was not coming to the schools, they would not want to invest in the schools ... Let's say that this school's budget is 1000 TL. This would be cost 600 TL for personnel. They would say to the school principals: Friends, we are going to find teachers who will work here cheaper. Newly graduated teachers. They might say we should get some of these kinds of teachers (P5).*
*I think that if you were to tell the teacher something, tomorrow it would cause pressure to be put on us. Or when we request something, we might worry that they would reply I have a lot of support behind me and we don't care about your request, so we're not going to fulfill it (P2).*

The last theme regarding concerns expressed was regarding negative thoughts stemming from politics. Under this theme, the most frequently expressed concern was the concern of harming the state structure. P2 talked about decentralization in education unitarily harming our state structure by saying, *"Of course you can have a sense of power when you are the arbiter, as if I have the money so you need to listen to me. Then, I can manage the educational institution in the way that I want, and they end up acting out of that logic leading them to create an education system according to their own opinions leading them to even unitarily deteriorate our current structure. In other words, this is not the case for every municipality but if we look at our country as a whole, we can see that this is the case at least with some of our provinces."* Similar considerations were conveyed by P4 by saying, *"In fact, it is absolutely useful for the school's administration to be affiliated with local governments as a higher administration. However, as I have just pointed out, in some parts of our country due to the reality of terrorism in our country, we are anxious and worry. Normally, if this terrorism were not to be around us, it would be very helpful to have schools affiliated with a local higher authority. I also believe that this is the case in Europe. Then, problems would be able to be solved more quickly. Needs can be met quicker and faster. Decision-making can be quicker. I find it useful in that respect. But as I said, I do not think that there are separatist movements in some parts of our country that will bring beneficial results to our country in those regions. I am concerned about that ... I would be concerned about preserving the integrity of this country as I mentioned at the beginning."*
Another political concern was related to the fact that the local governments may have a say in schools. In this regard, P2 was stressed that politicians would try to put pressure on schools and people and schools close to the local government in power would try to take advantage of educational institutions by saying, *"Local governments would have a say in schools which are preparing the future generation... Of course, unfortunately, there would also be people and institutions who would want to take advantage of them. There are those types of people, but there are also institutions who really are in it just to please God. Of course, there would be conflict between the two. Those with similar interests as the local government would of course work to take advantage of them and profit from them. Which is what I think would happen in the end."*
Another thing that was also mentioned was that educational institutions might be disturbed by the fact that at the level of local governments, power groups could be used as a tool in conflicts, different educational policies at the local level could be developed, and they might not be able to be held in a structure with opposing politics. In addition to this, there was a concern expressed that the political pressure on educators might end up increasing, the pro-political teachers and the parents might end up putting pressure on the educators, educators' peace of mind would be destroyed and local administrators might take a populist approach.

**Opinions regarding how decentralization in education would be beneficial**

Opinions regarding how decentralization in education would be beneficial in Turkey were gathered under five themes: suggestions related to the political structure, suggestions related to organizational structure and work, suggestions related to funding, physical environment and infrastructure support, and suggestions related to educational practices and proposals regarding the inspection system.

Table 5
*Opinions Regarding How Decentralization in Education Would Be Beneficial*

| Themes and Codes | P1 | P2 | P3 | P4 | P5 | P6 |
|---|---|---|---|---|---|---|
| **Theme 1. Political Suggestions** | | | | | | |
| There should not be political pressure on the school or its employees. | | | | ✓ | ✓ | |
| There should be no political favoritism in the school. | | ✓ | | | ✓ | |
| We should have a democratic legacy as a country. | | | | ✓ | | |
| Authorities and resources should be transferred to local governments. | ✓ | | | | | |
| Local governments should not be political. | | | ✓ | | | |
| Separatist terror should end. | | | | ✓ | | |
| Schools should be connected to the center in terms of its basic policies. | | | | ✓ | | |
| **Theme 2. Suggestions on Organizational Structure and Administrative Functioning** | | | | | | |
| Appointment, relocation and firing should be based on an objective attitude. | ✓ | ✓ | ✓ | | | ✓ |
| The principal and stakeholders should manage the school. | ✓ | | ✓ | ✓ | | ✓ |
| The autonomy of schools should be increased. | ✓ | | ✓ | ✓ | | ✓ |
| Employee rights should be increased. | ✓ | ✓ | ✓ | | | ✓ |
| There should be job security. | | ✓ | | | ✓ | ✓ |
| The principal should be the president of the school board. | ✓ | | | | ✓ | ✓ |
| There should be educated people at the head of the school's board of directors. | | ✓ | | | | ✓ |
| Educational administration is a professional occupation. | ✓ | | | | | ✓ |
| The principal should be engaged in educational issues. | | | | ✓ | | ✓ |
| The opinion of the principal should be taken into account, but s/he should not have full authority. | | | | ✓ | ✓ | |
| At the workplace, the school administrations should be autonomous. | ✓ | | | | | ✓ |
| Personnel employment and appointments should be made by central government. | | ✓ | | ✓ | | |
| The school principal should be appointed by the school stakeholders. | ✓ | | | | | |
| Schools should still be attached to a higher institution. They should not be fully autonomous. | | | | | ✓ | |
| The number of school staff and administrators should be increased. | ✓ | | | | | |
| **Theme 3. Suggestions on Financial, Physical and Infrastructure Support** | | | | | | |
| Local governments should provide financial, physical and infrastructure support to schools. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| There should be financial (economic) autonomy. | ✓ | | | | ✓ | ✓ |
| New schools should be built. | ✓ | | | | | |
| **Theme 4. Educational Practice Recommendations** | | | | | | |
| The curriculums should be determined by the central government. | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Curricula should be national, with some flexibility. | | | ✓ | ✓ | ✓ | ✓ |
| Education policies are determined by central government. | | ✓ | | ✓ | | |
| **Theme 5. Suggestions for the Inspection System** | | | | | | |
| Employees should be objectively assessed. | | ✓ | ✓ | | | |
| There should be a centralized investigation center, but it should take into account stakeholder views as well. | | | | ✓ | | |
| The investigation policy should be determined by the central government, but delegation can happen in practice. | | | | ✓ | | |
| There should be internal and external inspection. The school principal should do the interior inspection. Higher institutions or independent organizations should do the exterior inspection. | | | | | ✓ | |
| Schools should be supervised by local governments. | | | | | | ✓ |

Regarding politically motivated suggestions, two participants pointed out that there should be no political pressure on schools and employees, as local governments might want to have a say on schools.

70

P5 said, *"They shouldn't be too familiar with too many parents. That is, they shouldn't be too familiar with parents or politicians outside the school. The first person of responsibility should be the school principal. The school principal shouldn't be trampled on, and the principal should be able to prevent political pressure. If they are, perhaps the problem can be reduced politically."* Similarly, it was mentioned that there should be no political enthusiasm in schools. It was touched on that favoritism might come about as local governments might want to be influential in the school administration. P5 said this about the subject. *"From a political standpoint, there should be equal spending on schools. If one school has a lot of investments made on it and yet there is a problem with the heating of another school and it is not taken into consideration, if they are not treated equally, it will always cause problems politically."*

Other politically motivated suggestions were to be able to have democratic maturity, to delegate authority and resources to local governments, to remove local governments from politics, to finish off separatist terrorism, and to have the basis of schools connected to a centralized authority politically. Some of the participant opinions on this subject were as follows:

*I believe that this separatist terrorism in our country should be finished off before anything happens regarding decentralization in education. As I said before, for me that is the first condition that must be met... I think that attention must be paid to separatist terrorism (P4).*
*The municipalities should be removed from politics. There shouldn't be a president of party A and the president of party B in the municipalities. I think there should be candidates. Candidates would be selected. The mayor's office would not be political. It would be removed from politics (P3).*

With regards to suggestions related to organizational structure and administrative functioning, one of the most emphasized issues was to display a qualification based objective attitude in terms of employment, appointment, relocation and firing. In this regard, P2 touched on the need to be wary of abuses in appointments by saying, *"Yes, I mentioned it at the beginning. Once work conditions and relocation conditions and administrator appointment criteria are objective, precise, and clear and people can work in their institution comfortably, that is, when they stop worrying about whether or not they will be drug around or that they would employ me and do this or that, then it will be positive for authority to be delegated to local governments and for the local governments to meet the needs of the schools."* P6 touched on the need for firings to be objective by stating, *"Firing should be done using objective criteria, and observing based on objective performance standards. No one should be wronged. I worked in a foreign company before becoming a teacher. No matter how people they fired, they fired them rightly and if necessary paid them a severance wage."* P6 again mentioned that firing should not be done by the school administration but rather by a higher up institution by saying, *"I think that the authority for firing should not be delegated. But, of course, the school board can prepare and give the necessary paperwork, documents, and recommendations to the higher authority, that is, the inspection mechanism. The inspection mechanism could be a judicial board. I would say that they'd evaluate it and make a decision based on that. The same would be done in a normal disciplinary investigation. So at the place of employment, the school administration should be autonomous. It should be able to employ but only make suggestions based on objective criteria regarding firing."* Similarly, P3 and P1 emphasized that the recruitment of personnel should be both loyal and objective. In this regard, P3 stated, "*When administrators are appointed, it should be based on objective criteria rather than my man, your man ... A system should be established that is based on objective criteria that can distinguish one who does his or her job and one who does not, and everything should be demanded from a teacher. Only by doing this would it gain momentum."* P1 said, *"Educational institution administrators should also be appointed by independent committees, giving importance to qualification and their career, and the exam should never be overlooked."*

Regarding suggestions made about organizational structure and administrative functioning, one of the most mentioned was related to the management of schools by a board of directors consisting of its principal and its stakeholders. In this regard, P4 stated that it would be beneficial to the school to be ran by a school board made up by its stakeholders by saying, *"The school should not be managed only by the school principal. That's how it used to be. Schools should definitely be managed together with its stakeholders according to a participatory management understanding. It could be a school board. The board of directors could be made up of the school principal, a representative of its stakeholders, a*

71

*student representative, a parental representative, an NGO representative. Local governments might also be represented. This could be a possible administrative unit. But the school principal should be right in the heart of it. S/he should be right at the center... S/he should be in it and be the president of the board."* S/he also emphasized that the school principal should be the head of this board.

Another important suggestion was to increase the autonomy of schools. Regarding autonomy, P4 said that autonomy needs to be ensured by saying, *"I think that if there is decentralization in education, it should be administrative. I do not find the type of administration where everything comes from a centralized unit very useful. But not completely. In other words, I think that there should be local autonomy in terms of problems that can be easily solved locally."* P6 defended the idea that schools should not be run by a higher institution and that they should be autonomous outside of inspections by saying, *"The school should not necessarily be directly connected but there should be something. There should be place for it to be connected to an inspection mechanism. It could be the Directorates of National Education or maybe municipalities. It needs to be under some sort of inspection. Schools need to be governed by higher institutions, but schools should be autonomous except for investigation."*

Another suggestion emphasize was the improvement of employees' existing personal rights. Emphasis was placed on giving educators the value they deserve both economically and emotionally and keeping and improving their current personal rights. P2 stated, *"That is to say, their current rights have to be kept."* In particular, the proposal to protect existing employee rights shows that employees are concerned about the loss of individuality that may arise from decentralization. P6 stated that it would positively affect the performance of educators for individual rights to be improved by saying, *"I believe that if the economic conditions of the employees were improved, performance would increase even more. But it must be done professionally. The teacher or the employee needs to be in the place where they don't need an additional job. What I am saying is that economic conditions need to be fixed."* Similarly, P3 stated, *"If we want to increase educational quality, we need to improve the quality of teachers to the same standard found in European countries. Today, however, our teachers still often yell. It's our individual right. We don't get along, etc. For one thing, teachers wouldn't have such a problem."*

Another recommendation that supports the proposal of protecting and improving employee rights was with regards to job security of employees. Similarly, this suggests that workers are concerned about the loss of jobs that may arise from decentralization. P2 talked about the need for job security by saying, *"As I said, people should be treated according to their work rather than their personal political views. That is why people should never lose their security. Job security is the security that people are looking for most. When you do not have job security, are you worried and afraid that they end my job today? It is probably not right for us to talk about how meaningful and productive a lesson is if it's given by a teacher who is wondering whether or not they will be fired from the school or institution that day."* P5 stated that those that are performing well should have job security by saying, *"Job security needs to be ensured. It might be the same as in the previous system, for example, say 657. But it could be a little bit more flexible, too, not necessarily for the benefit of the staff. That's because there are people who do not work very hard in National Education. They must be weeded out. It could be an indicator of performance."* Indeed, P5 is concerned with the loss of unjustified work that might be caused by favoritism through subjective measures that could arise from decentralization, referring to the fact that job security should be linked to objective measures.

One of the suggestions regarding the school administration was related to the fact that the schools should be managed by a board of directors and that the principal should be its president. P1 openly spoke of this by saying, *"Of course, the school principal should be the president of the board. I think s/he should use the authority invested in him or her by the board of directors."* P6 supported this by saying, *"I think there should be a board of directors. That's because a single school administrator alone is not democracy. I think that decisions should be made through a board decision so that there are no differing opinions. Everything needs to be done by board decision so that there is no thought such as what is the administrator doing with the money or what is s/he doing with the grant that was given. This, of course, requires a board of directors. And, I think the school principal needs to be the president."*

P2 and P6 also emphasized that educated people need to be at the head of the board, P1 and P6 emphasized that educational administration is a professional occupation, and P4 and P6 emphasized that principals can divide most of these educational issues into either time or labor when speaking of educational quality. Some participants said of this issue:

72

*I would say that it needs to be managed by someone who is educated. This is the first requirement. This needs to be the red line. There needs to be a professional administrator who understands education. I mentioned it in the previous questions. As the name implies, that professional administrator should be involved with education. S/he should not be involved with just the repair and maintenance of the school. 90% of current school principals think completely about how they can make the school better. The physical structure is focused on and education is put on the backburner (P6).*

*S/he needs to be an educator as well. That is to say, s/he needs to have tasted chalk. That's because it's easy to just talk for those who have not tasted it and experienced its difficulties (P2).*

*But again I would say that the school administration needs to be separated from the running of the school. Definitely. If we improve the quality of the education in this country and further develop our schools, we need a different way to run the schools. The school principal needs to be the educational leader. Or at least take on that role more. In other words, s/he needs to have a certain amount of effect and influence when running the school. But I think his or her primary role must be to the educational leader (P4).*

Some of the participants held the opinion that the school principal should not only offer his or her opinion when employing personnel but that s/he shouldn't hold all authority. P4 stated, *"I think it would be beneficial to receive the opinions of the school administrators when employing personnel. But I do not think it would be right to have the school administration make all employment decisions."* P5 stated that the school principal should have some say in employing personnel but that s/he should not be the only one making the decisions by saying, *"Of course, there needs to be some criteria when employing personnel. The potential employee needs to have a diploma, they need to have this and that. But besides this, for example, if five people are going to be involved in the employing of personnel, one of them needs to be the school principal. I mean, the school principal shouldn't say I'm employing this person, he's my brother, etc. And, it needs to be the same way when firing. When the school principal brings up the subject regarding firing an individual, it needs to be determined whether or not their assessment is correct. This needs to be evaluated. That is, it can't all be left up to the school principal's will and disposition."* However, some different participants felt that school administrations should be fully autonomous in employing personnel. With regards to this, P1 expressed his or her opinion as follows. *"From the perspective of employing personnel, autonomy is the strongest thing you can give a school principal. It should be autonomous. Some things should be met from the private sector, not the public, for example, purchasing services or employing personnel. In particular, assistants."*

P2 and P4, unlike P1 and P6, advocated that staffing and appointments should be made by the centralized administration. *"But as I said, I think that the general policies and education curricula should be produced by the centralized administration and that the personnel relocations should be done in line with the principles set forth by the centralized administration."*

Other suggestions regarding organizational structure and administrative functioning were that school principals be assigned by school stakeholders, the number of staff and administrators in schools be increased, and schools not be fully autonomous.

Regarding suggestions related to financing, the physical environment and infrastructure support, participants suggested local governments provide schools with financial, physical environment and infrastructure support, that financial autonomy be provided to schools, and new schools be built to increase the number of schools. In this context, some participants said:

*Autonomy, I think, should be limited to just a few areas. For example, in economic conditions, in environmental education, in the development of educational opportunities, and in new social and cultural activities (P1).*

*Local governments should be directly involved in the financing of their schools. I believe that finances should be left entirely up to local governments. (P4)*

The fourth theme with regards to decentralization in education was the theme of educational practices. In this regard, participants suggested that educational programs be determined by a centralized administration, that national curricula be nationwide, and educational policies be determined by the centralized administration. Some participants' opinions on the subject were as follows:

73

*I think that educational policies should come from a centralized administration rather than local governments, and that the central government should create educational policies and that the future be shaped based on this. This way, I think it would be very productive. There needs to be a single framework curriculum for the whole country. As I said, we are a very mosaic nation. If every people group or people living in this nation were to come up with their own education philosophy, it wouldn't be possible to even talk about unity in this country within a decade (P2).*

*Of course, I think some courses having the same curricula is a must. In other words, it wouldn't work for local government A and local government B to have a different curriculum program. However, perhaps flexibility in curriculum programs could be mentioned. A flexible structure could be provided that would be adaptable to that region. But, as a basic policy, it needs to be determined by a centralized administration (P3).*

*I believe that the curriculum should absolutely be determined from a center and that it should be national. There's no buts about it. I think it should be determined by a centralized administration (P4).*

The last theme of suggestions regarding decentralization in education related to the inspection system. In this regard, suggestions were made that evaluations of employees should be made according to objective standards, the inspection system should be connected to the centralized authority but that stakeholder opinions should be taken into account, that the investigation policy should be determined by the centralized administration but that the authority may be delegated in practice, that schools should have both internal and external inspections, that the school principal should do the internal inspections and higher or independent institutions should do the external inspections, and that schools should be inspected by local governments. Some participants' opinions on the subject were as follows:

*These people's success should be rewarded and those who work fair should be respected and fairly judged. As I said, people should not be treated according to their political views ... Employees should be checked on and evaluated according to objective criteria (P2).*

*There needs to be an inspection system based on performance and they should be scored based on that ... This inspection mechanism should also be determined by the centralized administration. I think that the application of it should be delegated. That is, the same control system should be applied throughout the country. Otherwise, there shouldn't be a different approach to inspections in Burdur than there is in Antalya (P3).*

*On the topic of inspections, I think it would be right for education inspectors to be connected to a centralized administration. But that's not enough. I think it would also be good to get school stakeholder opinions through various surveys, satisfaction surveys, etc. That's because education inspectors' inspections would be limited to one hour, two hours, or perhaps 2-3 full school days. But in the provincial Directorate of National Education, it would be beneficial to continue the inspections through higher up institutions. These are already centralized administrations anyways. However, as I said, I believe that school stakeholders and parents should definitely have their opinions taken into consideration to an extent through satisfaction surveys (P4).*

*The school principal needs to inspect his or her school. The first inspection needs to be done by the school principal. I'm talking about inspecting it all the time. It just needs to have an inspection once a year every other year. Responsibility should fall on the school principal. When needed, those who provide direct guidance should come and do it as well. So let's say a new system has been implemented. The people responsible for the supervision of this system should give guidance directly to the schools ... It is also possible to have the school inspected by independent institutions (P5).*

### Opinions regarding decentralization models

In this part, first, opinions of the principals regarding decentralization of different educational processes were investigated and presented in Table 6. Then, holistic opinions on decentralization in education were summarized in Table 7.

Table 6
*Opinions Regarding Decentralization of Different Educational Processes*

| Themes and Codes | P1 | P2 | P3 | P4 | P5 | P6 |
|---|---|---|---|---|---|---|
| **Theme 1. Decentralization Types Related to the Inspection System** | | | | | | |
| Delegation | | | ✓ | | ✓ | |
| Devolution | ✓ | | | | | ✓ |
| Deconcentration | | ✓ | | ✓ | | |
| **Theme 2. Decentralization Types Related to Education Policies and Curricula** | | | | | | |
| There should be centralized and nationwide programs, not decentralized. | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Deconcentration | | ✓ | | | | ✓ |
| Delegation | ✓ | | | | | |
| **Theme 3. Decentralization Types Related to Equal Opportunities in Education** | | | | | | |
| It should be connected to a central government, not decentralized. | ✓ | | ✓ | ✓ | | |
| Deconcentration | | ✓ | | | | |
| Delegation | | | | | ✓ | |
| Devolution | | | | | | ✓ |
| **Theme 4. Decentralization Types Related to Financial, Physical and Infrastructure Support** | | | | | | |
| Delegation | | | ✓ | | ✓ | ✓ |
| Devolution | ✓ | | ✓ | | | ✓ |
| **Theme 5. Decentralization Types Related to Quality and Performance** | | | | | | |
| Devolution | ✓ | | | | ✓ | ✓ |
| Delegation | | ✓ | ✓ | ✓ | | |
| **Theme 6. Decentralization Types Related to Organizational Structure and Administrative Functioning** | | | | | | |
| Delegation | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Devolution is not appropriate. | | ✓ | | ✓ | | |
| Devolution | | | | | | ✓ |
| **Theme 7. Decentralization Types Related to Personnel Employment** | | | | | | |
| Delegation | | ✓ | | ✓ | ✓ | |
| It should be connected to a centralized administration, not localized. | | | ✓ | | | |
| Deconcentration | | ✓ | | | | |
| Devolution | ✓ | | | | | ✓ |

In terms of the opinions of the principals towards the inspection system, P3 and P5 supported delegation, P1 and P6 supported devolution, and P2 and P4 supported deconcentration. Some of the participants' opinions on the subject were as follows:

*My opinion is that if this is done it should be through delegation. I think that the situation does not warrant implementing the others (P3).*
*There needs to be inspection, and it could come about through devolution (P6).*
*I certainly do not advocate the delegation of inspection to local governments. However, it could be delegated to sub-units of the centralized administration. In fact, today's system is rather close to this. I do not advocate the devolution of the inspections either. But I rather have deconcentration to lower levels (P4).*

In terms of educational policies and curricula, P2 and P6 supported deconcentration and P1 supported delegation. In terms of devolution, decentralization was not preferred when speaking of educational policies and curricula. In addition, according to P1, P2, P3, P4, and P5, educational policies and curricula should be nationwide and determined by a centralized administration. However, only P1 and P2 struggled with this. Due to their concerns, both participants did end up emphasizing that educational policies and curricula should be nationwide and shared throughout the nation. P3 also stated that there would need to be some flexibility, providing that it adheres to centralized educational policies. Some participants' opinions on the subject were as follows:

*The curriculum needs to be prepared according to certain regions. It could take place through deconcentration (P6).*
*We are in favor of devolution. In other words, devolution in terms of curricula (P1).*

75

*In terms of curricula, I believe that it should be determined entirely from a centralized authority. In the current state, the Board of Education determines this. It's the same way. That's because if we argue that education should be national, it needs to be determined from a centralized authority (P4).*

In terms of equal opportunities in education, P2 supported deconcentration, P5 supported delegation, and P6 supported devolution. As for P1, P3 and P4 from the perspective of the provision of equal opportunities in education throughout the nation, they desired for there to be no decentralization in this area and that the centralized administration's authority and responsibility would offer equal opportunities. Some participants' opinions on the subject are as follows:

*Of course, the central authority would talk about equal opportunity here (P1).*
*If transferred to local governments, equal opportunities in education might not be possible. Politics could come in to play here. Kinship could come into play. Friendships and relationships could come into play. Equal opportunities might not be possible. However, if it is determined from a centralized authority, I think it would be ensured (P4).*
*I think devolution would reduce equal opportunity. Maybe because of our experiences, we believe this to be true. Deconcentration is more objective in terms of equal opportunities, because in a centralized system, assignments would be made according to a performance score without taking into consideration name/surname, ethnicity, or religion, and deconcentration would be implemented or the place of assignment would be determined. I think that this would ensure equality between people (P2).*
*I would say that for equal opportunities in education we would need devolution. I think that it shouldn't be private but autonomous (P6).*

In terms of financial, physical and infrastructure support, P2, P4, and P5 supported delegation and P1, P3, and P6 supported devolution. Some participants' opinions on the subject were as follows:

*As I said, I don't think that with some things it would be a problem for local governments to determine the educational philosophy and determination of curricula and providing job security for employees as well as meeting school needs such as equipment, infrastructure, cleaning and security of the schools as long as the Ministry has the final say. In terms of financing education institutions, I think that delegation is much more appropriate (P2).*
*Devolution would completely work in terms of finances (P3).*

In terms of quality and performance, P1, P5 and P6 supported devolution and P2, P3 and P4 supported delegation. Some participants' opinions on the subject were as follows:

*I am of the perspective that we should try delegation initially and observe it and then we can respond to such a question, perhaps because of my concerns regarding the subject (P3).*
*When we are talking about it being good quality or very good, it can come about through devolution or privatization. Unfortunately, that seems to be a bit better (P5).*

In terms of organizational structure and administrative functioning, P1, P2, P3, P4 and P5 supported delegation. P6 advocated for devolution. Moreover, P2 and P4 emphasized that devolution would not be appropriate in terms of organizational structure and administrative functioning. Some participants' opinions on the subject were as follows:

*I think that delegation might be more appropriate in the context of the administration. As I said, as long as we pay attention to certain areas (P2).*
*I believe that it would be useful to delegate in such a way that the main responsibility would lie with the centralized authority but everything wouldn't be carried out from the centralized authority and some authorities would be delegated in such a way that if there was any deviation from the foundational policies that it could be fixed easily and immediately (P4).*
*From the perspective of the administration, I think that devolution would be appropriate in terms of decentralization in education (P6).*

76

*In terms of the administration, it would be beneficial for devolution to lower units and recognition of their autonomy to take place. It would be useful. That way work could get done quicker. Decisions could be made quicker. There would be faster application. It would be beneficial in terms of finding quicker solutions and many other similar things. However, as I said, these powers could be used with bad intentions because of the terrorism that exists in our country. It could be used to separate. Because of that I do not support devolution (P4).*

In terms of employing personnel, P2, P4 and P5 supported delegation and P1 and P6 supported devolution. According to P3, employing personnel should be connected to the centralized authority. Moreover, P2 stated that decentralization regarding employing personnel could also happen through deconcentration. Some participants' opinions on the subject were as follows:

*Because of the reasons we've already mentioned, in terms of personnel employment privatization wouldn't work in terms of employing, firing, salary, and individual. I would advocate delegation to the local organization (P5).*

*I definitely don't advocate the delegation of personnel employment to local. Again, it's because of the conditions I've already mentioned. I'm talking about local units employing personnel. I'm talking about local units of the centralized administration. I certainly do not advocate for it to be delegated to local governments. I advocate delegation to the local units of the centralized administration. I've already mentioned this, or even the provincial Directorate of National Education could do it. It doesn't necessarily have to be the province or governorships (P4).*

*Everyone should be able to choose their own people. The board needs to be able to choose them itself. They need to be able to choose their employees, including their schoolteachers. It would be through devolution. It shouldn't be private, but it should be autonomous (P6).*

*In terms of personnel employment, privatization could cause a problem here when talking about employee rights. The same could be true of devolution. In order for these things not to cause an issue, I think that it would be better for the personnel staff to be connected to the centralized authority (P3).*

Table 7
*The Holistic Opinions of the Principals on Different Types of Decentralization in Education*

| Opinions | P1 | P2 | P3 | P4 | P5 | P6 |
|---|---|---|---|---|---|---|
| Delegation | ✓ | | ✓ | ✓ | | |
| Deconcentration | | ✓ | | | ✓ | |
| Devolution | | | | | | ✓ |

Furthermore, it was asked of the participants as to what their decentralization style preference in education would be as a whole. P1, P3 and P4 supported delegation, P2 and P5 supported deconcentration, and P6 supported devolution as it would be more appropriate to our nation. Some participants' opinions on the subject are as follows:

*I would say delegation. But in different areas of work, for example, it could be different with regards to financing. It could change for administration. But, in general terms, delegation (P1).*

*It would be very beneficial for devolution to lower units happen in our country if terrorism wasn't an issue. That's how it is. In word, I support devolution. However, if I take into consideration the current condition of our country, I find delegation more appropriate (P4).*

*"I am personally opposed to the idea of devolution. That's because, as I said, our country is a mosaic. Each region has its own local culture. We do not want it to cause division. This country has a flag, a border and an anthem, a symbol of independence. We want everyone to respect this, everyone to adopt and accept it. That is why we do not think that the devolution model would be very suitable for our country ... I think it would be more appropriate for deconcentration to take place. In other words, even in the case of the centralized administration, we are experiencing many difficulties. I think it would be more appropriate to appoint a commission because I don't think local governments would be experienced enough, and I think that experts with sufficient experience would make up the commissions (P2).*

*I support devolution when talking about decentralization in education. It needs to be autonomous (P6).*

77

## DISCUSSIONS and CONCLUSION

Decentralization is regarded as being the transfer of authority from central government to local governments, and the majority of the participants regarded decentralization as highly autonomous being a type of devolution and autonomous in nature. Participants generally understood local governments as municipalities. In this context, it could be said that decentralization was understood as the transfer of schools to municipalities. This is usually perceived as dangerous in terms of the unitary (national) state structure, as decentralization is seen as more of a devolution to local governments. Actually, Papadopoulou and Yirci (2013) stated that Turkey was not ready for decentralization in education in terms of the present state of local governments, the acts, and geographical, cultural and social features. The underpinnings of the results of the both studies indicate that there are significant concerns about decentralization in education. Papadopoulou and Yirci (2013), in their same study, revealed some of the concerns as social inequalities, biased attitude in education, and undesired interventions of the society on educational management.

When opinions on decentralization in education were evaluated, it was observed that concerns were more expressed than positive opinions and expectations. Positive opinions of decentralization in education were mainly within the fields of finance, physical environment and infrastructure support, as well as organizational structure and administrative functioning. Regarding positive opinions in relation to organizational structure and administrative functioning, it was also stated most that bureaucracy would decrease, and as a result, tasks, decision-making and problem solving would accelerate. Taşar (2009) similarly concurs that bureaucracy will be decreased and decision-making will be faster thanks to decentralization. Moreover, it is noteworthy that the positive opinions regarding educational practices were not reported, indicating that the participants are of the opinion that decentralization in education does not contribute to education.

The general belief regarding decentralization in education was that local authorities could contribute to schools in the context of improving and financing the physical condition of schools. In line with this, expectations were that local governments could resolve financial and infrastructure problems. In their study, Papadopoulou and Yirci (2013) confirmed that educational decentralization could provide effective solutions for educational financing too. However, Ngok (2007), states that regional inequality in education in China has deteriorated because decentralization has stimulated the involvement of local governments and other non-state sectors in education development.

Regarding other aspects of the school system, decentralization was not widely embraced. It was stated that decentralization in education could be useful in the context of improving the physical structures, equipment and capacities of schools, so that principals would be able to allocate more time to education which is the main focus of education anyways. In fact, it could be said that this is one of the main reasons underlying the understanding of "limited decentralization run by central government" with regards to decentralization in education. For this reason, financial and limited administrative forms of decentralization were embraced. However, in a study conducted by Geçit (2008), the majority of the participants had expressed a centralized view that the central government should finance the school's financing of equipment. Moreover, it would be beneficial to be connected to a higher up in an administrative sense, which is completely opposed to autonomy altogether when talking about decentralization in education; however, from an administrative point of view, it was stated that more autonomy would be better than the current situation. From a political standpoint, it was emphasized that decentralization in education and nation-state and nationwide education should not be compromised. In addition, it was desirable that inspection practices be centralized, because there were concerns that localized inspections would increase political pressure and subjective application. In contrast, Turan, Yücel, Karataş and Demirhan (2010) found that inspectional authority must be run by the districts, which are the local units of central government.

Regarding concerns decentralization in education, there were strong deterrents related to educational politics as decentralizations could harm the nation-state structure. Participants believed that with decentralization in the education system, the curricula would be determined by local governments, thus separating itself from the national education system and damaging the nation-state structure. Therefore, it could be said that there were political concerns underneath the concerns regarding decentralization of the education system. In addition, it was determined that participants held the opinion that curricula needed to be common and national in terms of student mobility. It was emphasized that due to common

78

curricula, it was possible for students to be able to relocate to schools in different provinces without any problems. Based on these views, it could be said that the general opinion of participants regarding educational policies and curricula was that the basic policies should be determined by central government in order to ensure that educational policies and curricula are national in nature. Only two participants emphasized that in addition to these considerations, it may need to have more flexibility to leave room for local governments. In short, it was desirable for the authorities in the centralized administration to continue in terms of educational policies and curricula. As a matter of fact, Hanson (1998) and Taşçı (2008) point out that decentralization and curricula in education can move schools away from the national structure. Similar results have also emerged in studies conducted by Koçak-Usluel (1997) and Geçit (2008) regarding the desirability of a centralized authority determining the curricula and the current centralized application to continue. However, in another study conducted by Bozan (2002), it had revealed that the authority of preparing the curriculum should be delegated to the national education directorates, which is the provincial units.

Participants were also concerned regarding the job security of the staff. As a result of the political pressure caused by the local governments, it was predicted that there would be an increase in favoritism and incapability in the schools, and it was expressed that the atmosphere of the workplace would deteriorate. For this reason, participants suggested that the authorities of central government continue with employing and relocating personnel. This conclusion also coincides with the study done by Koçak-Usluel (1998) and Geçit (2008). Sawada and Ragatz (2005), however, take a different approach that decentralization may lead teachers showing more motivation. On the contrary, school principals stress their concerns about teacher performance and motivation in the present study. They think that decentralization will cause rises in favoritism, and mobbing in schools which then result in a decrease in motivation of teachers. In addition, there was an administrative concern as local governments were expected to exert political and administrative pressure on schools as well if decentralization in education was implemented. In a study conducted by Türkoğlu (2004), local administrators declared similar concerns. They emphasized that decentralization in education would cause a rise in power of local politics on education and lead to favoritism. In another study conducted by Addi-Raccah and Gavish (2010), the principals of the schools adopted school based management reported the power of local educational authorities over the schools was stronger than the schools not adopted school based management.

Kurt (2006) asserted that decentralization in education could assist in coping with the problems of the system. However, the participants of the present study indicated that this was not always possible. In order for the application of decentralization in education to be beneficial and effective, the participants desired that central government deal with the employment of personnel, protecting the individual rights of personnel and ensuring job security. It was also expected that the schools would be kept away from the political pressure of the local governments and that there would be no political enthusiasm found in them. This shows that participants have concerns about that decentralization may lead a rise in political pressure. If this is the case, Hannaway (1993) asserts that decentralization is far less likely to be successful in the environments with strong political pressures. Bardhan (2002) similarly emphasizes that indirect political pressures of local power elites may frustrate the goals of decentralization.

In addition, it was desired that for decentralization in education in our country to be successful for separatist terrorism to be finished off and schools to be connected to the policies decreed from the centralized authority. In particular, there should be an objective attitude based on qualifications displayed towards the employment, appointment, relocation and firing of personnel. There were opposing views as to whether or not the authority and responsibility of the employment and firing of personnel should be placed upon schools or the central government. However, the majority felt that the authority and responsibility should be placed on the central government. Similarly, in the studies done by Göksoy (2014, 2016), school administrators want to not have the authority to fire teachers and be completely autonomous, and that this authority should lie in the institutions in authority over the schools. However, in a study conducted by Turan et al. (2010), it was found that decision of employment and firing of personnel should be placed upon schools. West, Allmendinger, Nikolai and Barham (2010) reported test scores of students were high in the schools having autonomy over personnel management. In this sense, increasing the autonomy of schools on personnel management may be beneficial for Turkey, after the concerns in the present study were extinguished.

79

Regarding suggestions related to funding, the physical environment and infrastructure support, suggestions were made that local governments should provide financial, physical and infrastructure support to schools, provide financial autonomy for schools, and build new schools to increase their number.

Within the scope of educational application, the suggestion was made that educational policies and curricula should be determined by central government, and that national curricula should be nationwide, though giving some place for flexibility. In the study of Turan et al. (2010), it was similarly revealed that the educational policies and curricula must be defined by the ministry.

In addition, it should be noted that suggestions were made that the internal inspection system should be evaluated according to objective criteria, that the inspection system should be based on central government, though stakeholders' opinions should be taken into account, that the inspection policy should be determined by the centralized administration, that higher education institutions or independent institutions should be able to do this and that schools should be inspected by local governments. This conclusion was also consistent with the study done by Taşçı (2008). It was also stated that the inspection system should be centralized in order to ensure integrity and coherence with the education system.

When opinions regarding the different types of decentralization were evaluated, it became clear that an eclectic form of decentralization had emerged, in which different levels of decentralization in different areas of the education system were embraced. In fact, the eclectic model in which different forms of decentralization were preferred across different educational areas suggests that participants preferred decentralization, but because they are concerned about certain areas, they preferred to have a low level of decentralization in those areas or be completely dependent on the centralized administration. At the top of these concerns was the concern that the national structure of education would deteriorate and harm our nation state identity. It was also observed that there were some serious concerns regarding personnel employment, relocation and job security. On the whole, it was observed that there was a high level of concern regarding devolution in Turkey and also high concern for higher-level decentralization models. With this regard, it can be said that in the context of decentralization, a high level of autonomy was not embraced in every area of the education system.

In conclusion, from a holistic perspective, most of the participants found decentralization to be a very high form close to full autonomy. However, they wanted a low level of decentralization in the education system and they have more centralized attitudes towards educational processes except from financing and infrastructure support. This was indeed an indication that concerns related to decentralization in education are high. Some of the most serious of these concerns were (1) concerns regarding political pressure, (2) favoritism, (3) chaos in relocations and appointments, (4) deterioration of the national education structure, and (5) causing harm to the nation state structure. As a result, participants overwhelmingly believe that meritocracy based decentralization that will not harm our national identity and the national education structure can be useful and effective.

In this sense, policy makers should make the necessary regulations so that decentralization improves the education system. In this process, they had better take care of the concerns, expectations, and suggestions revealed in the present study.

In academic literature, there are so many studies on decentralization in education. In order to increase the efficiency of these studies and make them widespread throughout the community, the researchers may conduct meta-analysis studies in which holistic applicable suggestions were drawn especially for the policy makers, and administrators both in central and local governments.

**REFERENCES**

Addi-Raccah, A., & Gavish, Y. (2010). The LEA's role in a decentralized school system: The school principals' view. *Educational Management Administration & Leadership, 38*(2), 184-201. DOI: 10.1177/1741143209356361

Arslan, M. M., & Atasayar, H. H. (2008). Ideas of the provincial managers of the Ministry of National Education about localization. *Ankara University Journal of Faculty of Educational Sciences, 41* (2), 59-79.

Atasayar, H. H. (2005). *Milli Eğitim Bakanlığı taşra örgütü yöneticilerinin yerelleşme konusundaki görüşleri* (Yayımlanmamış Yüksek Lisans Tezi). Kırıkkale Üniversitesi Sosyal Bilimler Enstitüsü, Kırıkkale, Türkiye.

Balcı Bucak, E. (2000). *Eğitimde yerelleşme.* Ankara, Türkiye: Detay Yayınları.

Balcı, A. (2010). *Açıklamalı eğitim yönetimi terimleri sözlüğü.* Ankara, Türkiye: Pegem Akademi.

Bardhan, P. (2002). Decentralization of governance and development. *Journal of Economic perspectives, 16*(4), 185-205.

Barrera-Osorio, F., Fasih, T., Patrinos, H. A., & Santibáñez, L. (2009). *Decentralized decision-making in schools: The theory and evidence on school-based management.* Washington, USA: The World Bank.

Bozan, M. (2002). *Merkeziyetçi yönetimden terinden yönetime geçişte alternatif yaklaşımlar: Milli Eğitim Bakanlığı örneği* (Yayımlanmamış Doktora Tezi). İnönü Üniversitesi Sosyal Bilimler Enstitüsü, Malatya, Türkiye.

Büyüköztürk, Ş., Çakmak, E. K., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2010). *Bilimsel araştırma yöntemleri.* Ankara, Türkiye: Pegem Akademi.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches.* Los Angeles, USA: Sage publications.

Dubois, H. F., & Fattore, G. (2009). Definitions and typologies in public administration research: the case of decentralization. *Intl Journal of Public Administration, 32*(8), 704-727. DOI: 10.1080/01900690902908760

Duman, A. (1998). Eğitimin yerinden yönetimi. [Local administration of education]. *Çağdaş Yerel Yönetimler Dergisi, 2,* 83-93.

Erdem, A. R. (2016). Türk eğitim sisteminin yapısı. R. Sarpkaya (Ed.), *Türk eğitim sistemi ve okul yönetimi* (pp.33-86). Ankara, Türkiye: Anı Yayıncılık.

Faguet, J. P., Fox, A. M., & Poeschl, C. (2014). *Does decentralization strengthen or weaken the state? Authority and social learning in a supple state.* London, UK: Department of International Development, London School of Economics and Political Science.

Falleti, T. G. (2005). A sequential theory of decentralization: Latin American cases in comparative perspective. *American Political Science Review, 99*(3), 327-346.

Floresteal, K., & Cooper, R. (1997). *Decentralization of education: Legal issues.* Washington, USA: The World Bank.

Geçit, Y. (2008). *Eğitimde yerinden yönetim yaklaşımı* (Yayımlanmamış Yüksek Lisans Tezi). Yeditepe Üniversitesi Sosyal Bilimler Enstitüsü, İstanbul, Türkiye.

Göksoy, S. (2014). To what extent should schools be autonomous? *Educational Research and Reviews, 9*(1), 24-33. doi:10.5897/ERR2013.1679

Göksoy, S. (2016). How autonomous should schools be? Research based on teacher opinions. *International Journal of Human Sciences, 13*(1), 582-591. Doi:10.14687/ijhs.v13i1.3553

Güler, A., Halıcıoğlu, M. B, & Taşğın, S. (2013). *Sosyal bilimlerde nitel araştırma.* Ankara: Seçkin.

Güran, M. C. (2001). Etkin devlet ve Türkiye. [Efficient State and Turkey]. *H.Ü. İktisadi ve İdari Bilimler Fakültesi Dergisi, 19*(1), 199-218.

Hannaway, J. (1993). Political pressure and decentralization in institutional organizations: The case of school districts. *Sociology of Education, 66*(3), 147-163.

Hanson, E. M. (1998). Strategies of educational decentralization: Key questions and core issue. *Journal of Educational Administration, 36*(2), 111-128. DOI:10.1108/09578239810204345

Hays, D. G., & Singh, A. A. (2012). *Qualitative inquiry in clinical and educational settings.* New York, USA: Guilford Press.

İnce, M. (2009). Küreselleşme ve yerelleşme: Bir çelişki mi? [Globalization and localization: A contradiction?]. *Gazi Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 11*(1), 259-275.

Kaya, M. (2008). *Okul merkezli yönetim sistemine ilişkin öğretmen görüşleri* (Yayımlanmamış Yüksek Lisans Tezi). Yeditepe Üniversitesi Sosyal Bilimler Enstitüsü, İstanbul, Türkiye.

Kıran, H. (2001). Milli Eğitim Bakanlığı taşra örgütü yöneticilerinin eğitimde yerinden yönetime ilişkin tutumları. [The attitudes of provincial administrator of Ministry of National Education on local administration of education]. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, 9(9), 1-9.

Koçak-Usluel, Y. (1997). Milli Eğitim Bakanlığı'nın merkez örgütü yöneticilerinin yerelleşme konusundaki görüşleri. [The opinions of the central organization administrators of Ministry of National Education on the decentralization]. *Eğitim ve Bilim, 21*(103), 25-36.

Kurt, T. (2006). Eğitim yönetiminde yerelleşme eğilimi. [Decentralization Trend in Educational Administration]. *Kastamonu Eğitim Dergisi, 14*(1), 61-72.

Litvack, J. & Seddon, J. (Eds.). (1999). *Decentralization briefing notes.* World Bank Institute WBI Working Papers in Collaboration with PREM Network. Retrieved from https://europa.eu/capacity4dev/file/8474/download?token=ViwoHuLP

Marques, J. F., & McCall, C. (2005). The application of interrater reliability as a solidification instrument in a phenomenological study. *The Qualitative Report, 10*(3), 439-462.

Memduhoğlu, H. B. (2013). Türk eğitim sisteminin genel yapısı. H. B. Memduhoğlu, & K. Yılmaz (Ed.), *Türk eğitim sistemi ve okul yönetimi* (pp.1-26). Ankara, Türkiye: PegemA.

81

Mengi, A.& Algan, N. (2003). *Küreselleşme ve yerelleşme çağında bölgesel sürdürülebilir gelişme: AB ve Türkiye örneği.* Ankara, Türkiye: Siyasal Kitabevi.

Milli Eğitim Bakanlığı. (2011). Milli Eğitim Bakanlığının teşkilat ve görevleri hakkında kanun hükmünde kararname [The executive order related to the organisation and duties of Ministry of National Education]. *Resmi Gazete*, Sayı: 28054.

Milli Eğitim Bakanlığı. (2015). *Milli Eğitim Bakanlığı MEBBİS MEİS modülü*. Retrieved from https://mebbis.meb.gov.tr

Mukundan, M. V., & Bray, M. (2004). The decentralisation of education in Kerala State, India: Rhetoric and reality. *International Review of Education, 50*(3-4), 223-243.

Ngok, K. (2007). Chinese education policy in the context of decentralization and marketization: Evolution and implications. *Asia Pacific Education Review, 8*(1), 142-157.

Ökmen, M., & Canan, K. (2009). Avrupa Birliği'ne üyelik sürecinde Türk kamu yönetimi. [The Turkish public administration in the process of adaptation to the EU]. *Yönetim ve Ekonomi: Celal Bayar Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 16*(1), 139-171.

Ömür, Y. E. (2017). Eğitimde neoliberal yerelleşme ve eleştirisi. [Neoliberal decentralization in education and its critique]. *Trakya Üniversitesi Eğitim Fakültesi Dergisi, 7*(1), 10-25.

Özdemir, M. (2008). Eğitim yönetiminde yerelleşme siyasaları. [Decentralization policies in education administration]. *Amme İdaresi Dergisi, 41*(3), 153-168.

Özgen, V. (2011). *Eğitim hizmetlerinde yerelleşme ve hizmet kalitesi* (Yayımlanmamış Yüksek Lisans Tezi). Adnan Menderes Üniversitesi Sosyal Bilimler Enstitüsü, Aydın, Türkiye.

Özmüş, L. (2005, 28 Mart - 1 Nisan). *Desantralizasyon (yerelleşme) ve yeni kamu yönetimi anlayışı*. Paper presented at TMMOB Harita ve Kadastro Mühendisleri Odası 1. Türkiye Harita Bilimsel ve Teknik Kurultayı, Ankara, Türkiye. Retrieved from http://www.hkmo.org.tr/ resimler/ekler/SUO5_175_ek.pdf

Papadopoulou, V., & Yirci, R. (2013). Rethinking decentralization in education in terms of administrative problems. *Educational Process: International Journal, 2*(1-2), 7-18.

Prud'homme, R. (1995). The dangers of decentralization. *The World Bank Research Observer*, *10*(2), 201-220.

Rondinelli, D. A., Nellis, J. R., & Cheema, G. S. (1983). *Decentralization in developing countries. World bank staff working paper, 581.* Washington, USA: The World Bank.

Sağlam, A. Ç. (2010). Yönetimde yerelleşme. H. B. Memduhoğlu, & K. Yılmaz (Ed.), *Yönetimde yeni yaklaşımlar* (pp.97-109). Ankara, Türkiye: PegemA.

Satria, A., & Matsuda, Y. (2004). Decentralization of fisheries management in Indonesia. *Marine Policy, 28*(5), 437-450.

Sawada, Y., & Ragatz, A. B. (2005). Decentralization of education, teacher behavior, and outcomes. In E. Vegas (Ed.), *Incentives to improve teaching* (pp. 255-306). Washington, DC: The World Bank.

Schneider, A. (2003). Decentralization: Conceptualization and measurement. *Studies in comparative international development, 38*(3), 32-56.

Sharma, C. (2006). Decentralization dilemma: Measuring the degree and evaluating the outcomes. *The Indian Journal of Political Science, 67*(1), 49-64.

Taşçı, H. (2008). *Yerel yöneticiler ve okul yöneticilerinin eğitimde yerelleşmeye ilişkin kendilerini hazır görme durumları* (Yayımlanmamış Yüksek Lisans Tezi). Çanakkale Onsekiz Mart Üniversitesi Sosyal Bilimler Enstitüsü, Çanakkale, Türkiye.

Taşar, H. H. (2009). Merkeziyetçi yönetim yapısının kamu okulları üzerinde bıraktığı olumsuz etkiler. [Negative affects of centralist administration approach on public schools]. *Adıyaman Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 2*(2), 108-119.

The World Bank. (2013, June). Types of decentralization. In *Decentralization*. Retrieved from http://www.worldbank.org/en/topic/communitydrivendevelopment/brief/Decentralization

Turan, S., Yücel, C., Karataş, E., & Demirhan, G. (2010). Okul müdürlerinin yerinden yönetim hakkındaki görüşleri [Opinions of school principals about local management]. *Uşak Üniversitesi Sosyal Bilimler Dergisi*, 3/1, 1-18.

Türkoğlu, R. (2004). Eğitimde yerelleşme sorununa kamu yönetimi temel kanunu tasarısı ve yerel yönetim yasa tasarısının getirdiği çözümler konusunda yerel yöneticilerin görüşleri. *İnönü Üniversitesi Eğitim Fakültesi Dergisi. 5*(8).

Uz, M. (2009). *İlköğretim okulu müdürlerinin okul merkezli yönetimin bütçe boyutuna ilişkin görüşleri* (Yayımlanmamış Yüksek Lisans Tezi). Çanakkale Onsekiz Mart Üniversitesi Sosyal Bilimler Enstitüsü, Çanakkale, Türkiye.

Uzun, F. (2015). *Türkiye'de yerel yönetimlerin eğitim harcamalarındaki rolü ve etkileri* (Yayımlanmamış Doktora Tezi). Hacettepe Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara, Türkiye.

West, A., Allmendinger, J., Nikolai, R., & Barham, E. (2010). Decentralisation and educational achievement in Germany and the UK. *Environment and Planning C: Government and Policy, 28*(3), 450-468. DOI:10.1068/c0992

82

World Development Report (WDR). (2017). *Governance and law.* Washington, USA: The World Bank Group. Retrieved from https://openknowledge.worldbank.org/bitstream/handle/10986/ 25880/9781464809507.pdf

Yavuz, Y. (2001). *Lise yöneticilerinin ve öğretmenlerinin okulda yerinden yönetim ve merkezden yönetim yaklaşımlarına ilişkin görüşlerinin karar verme sürecine etkileri* (Yayımlanmamış Doktora Tezi). Dokuz Eylül Üniversitesi Eğitim Bilimleri Enstitüsü, İzmir, Türkiye.

Yin, R. K. (2011). *Qualitative research from start to finish.* New York, USA: The Guilford Press.

Yıldırım, A., & Şimşek, H. (2011). *Sosyal bilimlerde nitel araştırma yöntemleri.* Ankara, Türkiye: Seçkin Yayınevi.

Yolcu, H. (2010). Neo-liberal dönüşümün yaşandığı ülkelerde yerelleşme ve okul özerkliği uygulamaları. [Decentralization and school autonomy practices in countries experiencing neo-liberal transformation]. *ZKÜ Sosyal Bilimler Dergisi, 6*(12), 253–273

Yuliani, E. L. (2004, 27-30 April). *Decentralization, deconcentration and devolution: What do they mean?* Interlaken Workshop on Decentralization. Interlaken, Switzerland. Retrieved from http://www.cifor.org/publications/pdf_files/interlaken/Compilation.pdf

**TÜRKÇE GENİŞLETİLMİŞ ÖZET**

Yerelleşme merkezi yönetimin bazı konularda ve durumlarda var olan yetkilerini daha alt yerel birimlere devretmesi şeklinde tanımlanmaktadır. Aynı zamanda, yerelleşme, karar yetki ve görevlerin işi bizzat yapanlara devrini ifade etmektedir. Başka bir ifadeyle, kamusal faaliyetlere ilişkin merkezi yönetimin yetki ve sorumluluklarının taşra birimlerine, yerel yönetimlere, yarı özerk kamu kurumlarına veya özel sektöre devredilmesi olarak belirtilmektedir (Atasayar, 2005; Balcı, 2010; Litvack ve Seddon, 1999; Özmüş, 2005; Sağlam, 2010; Uz, 2009; Yuliani, 2004). Yerelleşmeye ilişkin bakış açılarındaki çeşitlilikten ve yerelleşmeye yüklenen anlamdan dolayı görevlendirme, yetki devretme, yetki aktarma ve özelleştirme şeklinde farklı yerelleşme model ve biçimleri bulunmaktadır (Arslan & Atasayar, 2008; Balcı, 2010; Florestal & Cooper, 1997; Hanson, 1998; Koçak-Usluel, 1997; Ömür, 2017; Özdemir, 2008; Özmüş, 2005; Sağlam, 2010; Yuliani, 2004).

Görevlendirme merkezden taşra örgütüne yetki devridir. Aynı zamanda görevlendirme merkezin, bir takım bürokratik işlerini uç noktalardaki taşra teşkilatları eliyle yürütmesidir. Burada herhangi bir siyasi yetki devri söz konusu değildir. Bu nedenle, görevlendirme yerelleşmenin en hafif şekli olarak kabul edilmektedir (Balcı, 2010; Duman, 1998; Koçak-Usluel, 1997; Özmüş, 2005; Yolcu, 2010; Yuliani, 2004).

Yetki devretme, merkezi yönetimin görevlerinin özerk örgütlere devri olarak tanımlanabilir. Yetki devretme, görevlendirmeye göre bir üst yerelleşme biçimidir. Yetki devretme ile merkezi yönetimler karar verme ve sorumluluk yetkilerini yarı otonom kurumlara devretmiş olurlar. Bu kurumlar tamamen kontrol altında tutulamaz, merkez hükümet tarafından dolaylı olarak denetlenirler. Nihai sorumluluk yine merkezi yönetimde kalmak koşuluyla tanımlanmış fonksiyonlarını yerine getirmek üzere tüm yetkiler ve işler yerel örgütlere devredilir (Balcı, 2010; Florestal & Cooper, 1997; Koçak-Usluel, 1997; Özmüş, 2005).

Yetki aktarma yerinden yönetim olarak da bilinmektedir. Yetki aktarmada özerk ve bağımsız, gelir toplama ve harcama yetkisi olan ulus altı birimlerin oluşturulması söz konusudur. Başka bir deyişle yetki aktarma ile milli yapılanmanın altında özerk alt düzey bir yapılanma oluşturulmaktır. Oluşturulan bu alt düzey yapılanmanın coğrafi sınırları iyice çizilmiş, yasal durumu net olarak tanımlanmış, gelir elde edebilen ve harcayabilen duruma gelmiştir. Yetki aktarmada yerel yönetimler sadece idari fonksiyonları değil aynı zamanda yetkileri ve sorumlulukları da devralır. Ancak, yine de tam olarak özerk bir yapıya kavuşmuş değillerdir (Balcı, 2010; Barrera-Osorio, Fasih, Patrinos, & Santibáñez, 2009; Florestal & Cooper, 1997; Hanson, 1998; Koçak-Usluel, 1997; Özmüş, 2005; Yuliani, 2004).

Özelleştirme ise yerelleşmenin en üst düzey biçimi olarak kabul edilmekte olup karar alma yetkisi kamudan özel sektöre verilmektedir (Balcı, 2010; Florestal & Cooper, 1997; Özmüş, 2005).

Yerelleşme, hizmetlerin topluma en yakın birimlerce yürütülmesinde, hizmet alanların memnuniyetlerinin artırılmasında, hizmette etkililik ve verimliliğin sağlanmasında etkili bir araç niteliğindedir. Ancak, asıl önemli olan, yerelleşmenin topluma ve devlet yapısına uygun bir şekilde tasarlanması ve uygulamaya konulmasıdır. Çalışmada yöneticilerin eğitimde yerelleşmeye ilişkin tutumları hem beklenti hem de kaygıları bağlamında derinlemesine incelenmiş olup, nihai düzeyde ön görülen yerelleşme modelleri eğitim süreçleri bağlamında hem ayrı hem de bütünsel düzeyde tespit edilmiştir. Bu açıdan çalışma eğitimde yerelleşme uygulamasının hayata geçirilebilmesi bağlamında politika yapıcılara ve uygulayıcılara sistem tasarımı açısından katkı sağlayıcı niteliktedir. Nitekim, kaygıların giderildiği, beklentilerin gerçekleştiği ve önerilerin dikkate alındığı yerelleşme uygulaması iyi işleyen bir eğitim sistemi açısından faydalı olacaktır. Bu noktadan hareketle çalışmanın amacı, ilkokul ve ortaokul müdürlerinin eğimde yerelleşmeye ilişkin görüşlerini belirlemektir.

Çalışmada nitel araştırma yöntemlerinden olgu bilim çalışması deseni kullanmıştır (Creswell, 2014; Fraenkel, Wallen & Hyun, 2011). Çalışma grubu, kamu okullarında çalışan, eğitim yönetimi konusunda eğitim almış, ilkokul ve ortaokul düzeyinde en az beş yıl yöneticilik deneyimine sahip altı ilköğretim kurumu müdüründen oluşmaktadır. Çalışma grubu belirlenirken amaçlı örnekleme yöntemlerinden ölçüt örnekleme ve kolay ulaşılabilir durum örneklemesi kullanılmıştır. Ayrıca, katılımcıların araştırmaya katılmada gönüllü olmaları esas alınmıştır. Araştırmacı tarafından okul müdürleriyle bireysel yüz yüze görüşmeler yapılmıştır. Görüşmeler okullarda katılımcıların odalarında gerçekleştirilmiştir. Veri toplama aracı olarak araştırmacı tarafından hazırlanan yarı yapılandırılmış görüşme formu kullanılmıştır. Verilerin analizinde NVİVO nitel araştırma programından yararlanılarak hem betimsel analiz hem de tümevarımsal içerik analizi yapılmıştır.

84

Sonuç olarak, yerelleşme genellikle, merkezi yönetimin yetkilerinin yerel yönetimlere devredilmesi olarak algılanmakta olup katılımcıların çoğunluğu yerelleşmeyi üst düzey özerkliğin olduğu yetki aktarma ve üzerindeki daha özerk yerelleşme biçimleri olarak kabul etmektedir. Aslında katılımcıların çoğunluğunun yerelleşmeyi üst noktada gördükleri, tam özerkliğe yakın buldukları söylenebilir. Ancak eğitim sisteminin yerelleşmesine ilişkin düşünceleri sorulduğunda yerelleşme düzeyi algıların düşük olduğu, finansman ve altyapı desteği dışında daha merkeziyetçi tutum sergiledikleri görülmektedir. Bu durum aslında eğitimde yerelleşmeye ilişkin kaygıların yüksek olduğunun bir göstergesidir. Bu kaygıların en önemlilerinden bazıları (1) siyasi baskı kaynaklı işten atılma kaygısı, (2) kayırmacılık, (3) nakil ve tayinlerde karmaşa, (4) eğitimin milli yapısının bozulacağı ve (5) ulus devlet yapısının zarar göreceği endişeleridir.

Eğitimde yerelleşmeye ilişkin olumlu görüşler ise genellikle, finansman, fiziki ortam ve alt yapı desteği ile örgütsel yapı ve yönetsel işleyiş alanındadır. Eğitsel uygulamalara ilişkin olumlu görüş bildirilmemesi ise dikkat çekici bir durum olup katılımcıların eğitimde yerelleşmenin eğitsel açıdan katkı sağlayıcı nitelikte olmadığına dair düşünce içerisinde olduklarını göstermektedir.

Eğitimde yerelleşmenin uygulanması halinde yararlı ve etkili olabilmesi için personel istihdamının merkezi yönetimler tarafından yapılması, personelin özlük haklarının korunması ve iş güvencesinin sağlanması arzu edilmektedir. Ayrıca eğitim kurumlarının yerel yönetimlerin siyasi baskılarından uzak tutulması ve siyasi kayırmacılığın olmaması da beklentiler arasında yer almaktadır. Bunların yanı sıra ülkemizde eğitimde yerelleşmenin başarılı olabilmesi için ayrılıkçı terörün bitirilmesi ve okulların temel politikalar bağlamında merkeze bağlı olması arzu edilmektedir. Özellikle istihdam, atama, tayin ve işten çıkarmada liyakat esaslı objektif tutum sergilenmesi gerektiği belirtilmektedir. Personel istihdamının ve işten çıkarmanın yetki ve sorumluluğunun okullarda ve merkezi yönetimde olması gerektiğine dair karşıt düşünceler bulunmaktadır. Ancak merkezi yönetimin bu yetki ve sorumluluğu devam ettirmesi yönündeki görüşler ağır basmaktadır.

Özetle, eğitimde yerelleşmeye ilişkin görüşler değerlendirildiğinde olumlu görüşler ile beklentilere nazaran genellikle kaygıların ifade edildiği görülmektedir. Eğitimde yerelleşmeye ilişkin genel kanı okulların fiziki şartlarının iyileştirilmesi ve finansmanı bağlamında okullara yerel yönetimler tarafından katkı sağlanılması yönündedir. Beklentiler, okullara yerel yönetimlerin maddi kaynak sağlaması ve alt yapı sorunlarını çözmesi noktasında yoğunlaşmaktadır. Okul sisteminin diğer boyutları açısından ise yerelleşme çok benimsenmemektedir. Son olarak katılımcılarda personel rejimi hususunda liyakatin temel alındığı, ulus devlet kimliğimize ve eğitimin milli yapısına zarar vermeyecek bir yerelleşme anlayışının hâkim olduğu söylenebilir.

# Relationship between students' math engagement and math teachers' motivational support

Neşe Özkal

Alanya Alaaddin Keykubat University, Faculty of Education, Alanya, Turkey,
nese.ozkal@alanya.edu.tr, orcid.org/0000-0002-7854-5276

ABSTRACT    This study intended to explore the relationship between middle school students' engagement in mathematics classes and mathematics teachers' motivational support. Explanatory correlational research design was used for this purpose. Participants were composed of 612 students attending 6th, 7th and 8th grades in Alanya district of Antalya Province. Effective Participation Scale and Teachers' Motivational Support Scale were used in data collection. The relationship between the datasets of middle school students' engagement in mathematics classes and their perceptions regarding mathematics teachers' motivational support was investigated via canonical correlation analysis. Findings obtained showed that mathematics teachers' autonomy support provided to middle school 6th,7th, 8th grade students positively affected their behavioral engagement and emotional engagement. It was also identified that mathematics teachers' autonomy and relatedness support provided to middle school 6th,7th, 8th grade students negatively affected their emotional disaffection towards mathematics classes.

Keywords    Engagement, Disaffection, Motivational support, Mathematics classes

# Öğrencilerin matematik dersine etkin katılımları ve matematik öğretmenlerinin güdüsel destekleri arasındaki ilişki

ÖZ    Bu araştırmada ortaokul öğrencilerinin matematik dersine etkin katılımları ile matematik öğretmenlerinin güdüsel destekleri arasındaki ilişkinin incelenmesi amaçlanmıştır. Bu amaca uygun olarak araştırmada keşfedici korelasyonel araştırma modeli kullanılmıştır. Araştırmanın çalışma grubunu Antalya ili Alanya ilçesi 6., 7. ve 8. sınıfta öğrenim gören 612 öğrenci oluşturmaktadır. Araştırma verileri "Etkin Katılım Ölçeği" ve "Öğretmen Güdüsel Destek Ölçeği" ile toplanmıştır. Araştırmada ortaokul öğrencilerinin Matematik dersine etkin katılımları ile Matematik öğretmenlerinin güdüsel desteklerine ilişkin algıları arasındaki ilişki kanonik korelasyon analizi ile incelenmiştir. Elde edilen bulgular ortaokul 6., 7. ve 8. sınıf öğrencilerinin Matematik Öğretmenlerinin özerklik desteklerinin öğrencilerin Matematik dersine davranışsal katılım ve duyuşsal katılımlarını pozitif olarak etkilediği belirlenmiştir. Ayrıca ortaokul 6.,7. ve 8.sınıf öğrencilerinin Matematik öğretmenlerinin özerklik ve ilişki desteklerinin öğrencilerin Matematik dersine ilişkin duyuşsal hoşnutsuzluklarını negatif olarak etkilediği belirlenmiştir.

Anahtar Kelimeler    Etkin katılım, Hoşnutsuzluk, Güdüsel destek, Matematik dersi

## INTRODUCTION

Motivating students in the classroom and ensuring their engagement are problems often encountered by educators. There are students who are willingly and enthusiastically engaged in classroom activities as well as students who do not participate during activities or demonstrate unwillingness and disaffection when they do so. These students participate in activities in a mechanical manner and are not engaged in the activities. This fact has led the researchers to investigate the quality rather than the quantity of engagement. The studies conducted so far have identified that willing and active engagement in learning activities in the classroom predicts student learning, grades, achievement test results, recall, graduation and academic tenacity. Additionally, research results also demonstrate that engagement in classroom activities is preventive against risks such as substance abuse and delinquency (Fredricks, Blumenfeld & Paris, 2004; Kahraman, 2014; Lee, 2014; Skinner, Furrer, Marchand & Kindermann, 2008; Skinner, Kindermann, Connell & Wellborn, 2009; Skinner & Pitzer, 2012).

Engagement is a precondition for students to learn. When students are engaged in program activities functionally and mentally, they can have quality learning. Otherwise, learning will be based on memorization and successful learning cannot be achieved. Skinner et al. (2009) state that effective participation is related to motivational structures: engagement and disaffection. Engagement is an active action between the program and real learning. On the other hand, disaffection or burnout is the opposite of engagement. Disaffection includes lack of student effort in academic learning, passivity, behaviors such as not exerting physical efforts while feigning to engage in tasks and mental aspects such as lack of concentration, indifference and lack of motivation. Affective reactions are important components of disaffection because the pattern of action changes whether lack of participation depends on boredom, anxiety, embarrassment, unhappiness or disappointment (Skinner & Pitzer, 2012). Disaffection is especially important in institutions such as schools where students cannot leave on their own volition. The normal reaction to helplessness and exclusion is to leave but when leaving is prohibited; the form of engagement can develop in a manner that can be reflected in affective states such as tension and disillusionment, mental disinterest or some behaviors. Feelings related to disaffection form the foundation of behaviors such as passivity, lack of entrepreneurship-effort and dropping out of school (Reeve, Jang, Carrell, Jeon & Barch, 2004).

Motivation theories are basically related to the psychological processes that underline energy, direction and durability of human activity (Deci, 1992). Engagement qualities such as effort, endeavor, vigor, intensity, gratification and enthusiasm are indicators of energy. Interest, focus and concentration are the signs of direction whereas adoption, determination and tenacity show durability. While motivation reflects the sources underlying energy, direction and durability, engagement is the form through which they are observed (Skinner & Pitzer, 2012). In other words, engagement is the outward manifestation of motivation (Skinner et al, 2009). By their nature, motivation and engagement are related and affect one another. Engagement is regarded as the output of the motivational process and motivation is the source of engagement (Reeve, 2012).

Motivation is generated from various different sources (needs, comprehension, emotions, events in the environment, etc). In this study, motivation was investigated with a needs-based perspective in the framework of *Self-Determination Theory*. According to self-determination theory, individuals have basic need such as relatedness, competence and autonomy. *Competence* reflects the need for feeling efficient and competent in actions, *relatedness* reflects the need to be cared for and accepted by others and *autonym* points to the need to act in harmony with one's own values and others. Autonomously motivated behaviors emerge when individuals define their behaviors as important or valuable (Ryan & Deci, 2002).

Students have their own needs, goals and values. A student can spend hours on a topic that he/she finds interesting. In this case, the student is independently motivated. However, context is important in classroom environments. In the classroom, students interact with a social world that may support or threaten their needs, goals, interests and values. Teaching and learning environment in classrooms has significant impact on supporting or diminishing student motivation and engagement. Student engagement cannot be regarded as separate or independent from the social context in which it occurs. Hence, it is a firm fact that each student's engagement is the common product of student motivation, in-class support or obstacles that he/she experiences. Supportive conditions, especially supportive

87

teacher-student relations are necessary to enhance student motivation and engagement (Reeve, 2012). Teacher-student interactions have three significant qualities: pedagogical caring (to support experiences of relatedness), optimal structure (to facilitate competence) and autonomy support (to promote self-determined motivation) (Skinner & Pitzer, 2012). According to self-determination theory, when these needs are not met, students may experience disaffection (Wilding, 2015). Students whose needs are met will be more motivated compared to students whose autonomy, competence and relatedness needs are overlooked during learning activities or students who are disappointed during teaching. Teachers' role is not to create student motivation, but support the existing student motivation and engagement to create high quality of motivation and engagement (Reeve, 2012).

There is a mutual relationship between the teacher and the student. Teachers' motivational styles will result in student autonomy, engagement and wellbeing. Controlling styles inhibits autonomous engagement, results in the refusal of new motivational resources and generates less optimal student outputs (Reeve, 2012). Studies present findings that support this view (Demir, 2011; Güvenç, 2015c; Reeve et al., 2004; Skinner et al, 2008). In addition, outcomes of engagement related to learning and school achievement cause students to feel academically more competent and committed, receive more support from their teachers and form more positive relationships. While engagement increases, students are allowed to enter into relationships with more engaged classmates and peers and create friendships. Disaffected students display bad performance at school and they feel excluded. Teachers provide less support for these students or pressure them more. There is a high possibility that these students enter into relationships with peer groups that feel more disaffection. This cycle keeps repeating. Teachers' motivational support increases student engagement and teachers provide more motivational support to students when engagement increases (Skinner, et al., 2008; Skinner & Pitzer, 2012).

Compared to studies on engagement in the literature, it was identified that studies conducted in Turkey mostly focus on high school students (Eryılmaz & Aypay, 2011a; Eryılmaz & Aypay, 2011b; Eryılmaz, 2013; Güvenç, 2015c; Sever, 2014) and the studies conducted on middle school students are limited (Güvenç, 2016; Kahraman, 2014). Also, there were no studies that examined teachers' motivational support at middle school level as a variable that affected engagement.

The influence of teachers' motivational support on engagement is an important topic in the context of all subjects. However, the current study was undertaken in the framework of mathematics teachers' motivational support. It was identified in Turkey that high school students' engagement in mathematics classes is low and these students tend to not participate during classes (Sever, 2014). National and international mathematics exam results in Turkey demonstrate that students' mathematics achievement is also low. According to 2015 Transition from Primary to Middle Education Exam (TEOG) results, the means in mathematics for 20 questions was found to be 7,6; according to 2016 Transition to Higher Education Examination (YGS) results, the means in mathematics for 40 questions was 7,9 (Student Selection and Placement Centre [OSYM], 2016a) and according to Undergraduate Placement Exam (LYS) the means in mathematics for 50 questions mathematics was found to be 10,4 (OSYM, 2016b). In PISA exams, Turkey was listed as 41st among 65 countries in 2009, 44th in 2012 and 72nd in 2015 (Taş, Arıcı, Özarkan & Özgürlük, 2016). In TIMMS exams, Turkey was listed as the 35th country among 50 countries in 4th grades in 2011 (Büyüköztürk, Çakan, Tan &Atar, 2014a), and 24th among 42 countries in 8th grades 8 (Büyüköztürk, Çakan, Tan & Atar, 2014b). Turkey was listed as 36th among 49 countries in TIMMS 2015 exam in 4th grades and 24th among 39 countries in 8th grades (Yıldırım, Özgürlük, Parlak, Gönen & Polat, 2016). In line with this information, this study investigated the relationship between middle school students' engagement in mathematics classes and mathematics teachers' motivational support. It is expected that the study will provide indicators for teachers and educators about the most effective methods in increasing student engagement in mathematic classes and determine the state of teachers' motivational role in affecting student engagement and therefore indirectly contribute to increased achievement in mathematics and literature.

## METHODOLGY

### Research Design
This study intended to explore the relationship between middle school students' effective participation in mathematics classes and mathematics teachers' motivational support. The explanatory correlational research design was used for this purpose. Exploratory correlation studies are used to understand important phenomena by analyzing interrelationships between variables (Fraenkel & Wallen, 2006)

### Participants
The study was conducted in Alanya district of Antalya province with voluntary participation of 612 students from 6th, 7th and 8th grades of 10 middle schools for which research permits were obtained. Out of 612 participants, 55.6% (n=340) were females and, 44.4% (n=272) were males. 32 % (n=196) of the students were from 6th grade, 34.3% (n=210) from 7th grade and 33.7% (n=206) from 8th grade.

### Data Collection Tool
In this study, data were collected "Effective Participation Scale" (Güvenç, 2015b) and "Teachers' Motivational Support Scale" (Güvenç, 2015a) implemented on 6th, 7th and 8th graders.

Effective Participation Scale was developed to identify students' engagement and disaffection related to a specific lesson. The four point likert scale developed by Güvenç (2015b) has 16 items. While drafting the Effective Participation Scale, studies and scales that were developed in this area were examined first. Also semi-structured interviews were held with 9 high school students. These interviews recorded with voice recorder were transcribed. The draft form prepared with the help of semi-structured interviews conducted with students included some of the items developed by Wellborn (Güvenç, 2015b).

Validity and reliability analyses for the scale were conducted for both high school and middle school students. The scale was used to measure middle school students' perceptions of engagement in mathematics classes. Four of the scale items measure Behavioral Engagement (I participate in all activities), four items measure Emotional Engagement (I am interested in what goes on in the class), four items measure Behavioral Disaffection (I think about other things during class) and four items measure Emotional Disaffection (I am not interested in what goes on in the classroom). Cronbach's Alpha internal consistency coefficients of the subscales were found to be as follows: .81 for Behavioral Engagement, .71 for Emotional Engagement, .75 for Behavioral Disaffection and .71 for Emotional Disaffection. Cronbach Alpha coefficient for the 8-item engagement section of the scale was .82 and Cronbach Alpha coefficient for the 8-item disaffection part was .83. Confirmatory factor analysis results for the scale were: chi square ($\chi^2$=265.24), degree of freedom (df=98, p=.00) rate $\chi^2$/df=2.71; RMSEA= 0.069; SRMR= .053, AGFI= .88; CFI=.91; GFI=.92 and NNFI=.89. Chi square distribution with a degree of freedom rate lower than 2, RMSEA and SRMR values lower than .05, AGFI values higher than .85 and CFI, GFI and NNFI values higher than .95 are regarded as good fit indices (Şimşek, 2007). Accordingly, the obtained values point to the fact that the 4-dimension construct proposed for Effective Participation Scale is suitable.

The scale was developed to identify students' perceptions based on self-determination regarding their teachers' motivational support. The scale, developed by Güvenç (2014), is a four point Likert type scale with 3 sub scales composed of teacher autonomy, competence and relatedness support and 24 items. Competence support includes 12 items. Items such as "Explicitly expressed what he/she expects from me in the lesson" and "He/she tries to convince me that I can handle the most difficult tasks" can be given as examples to competence support sub scale. Autonomy support includes 6 items and "He/she cares for my ideas" and "He/she presents all the options when assigning me tasks" can be given as examples. Relatedness support sub scale includes 6 items and some examples are "He/she knows me well" and "His/her words and behaviors are honest". Validity and reliability analyses of the scale were completed for both middle school and high school students. In this study, the scale was used to determine middle school students' perceptions regarding their mathematics teachers' motivational support. Cronbach's Alpha reliability coefficients of the subscales were found to be as follows: .77 for relatedness support; .87 for autonomy support and .81 for competence support. The Cronbach's Alpha reliability coefficient for the whole scale was .92. Confirmatory factor analysis results for the scale were calculated as chi square ($\chi^2$= 537.09), degree of freedom (df= 249, p=.00)

89

rate $\chi^2/df$=2.16; RMSEA= .079; SRMR= .053, AGFI= .84; CFI=.90; GFI=.91 and NNFI=.85. Chi square distribution with a degree of freedom rate lower than 5, RMSEA value between 0.05 and .0.08, SRMR value lower than.10, AGFI values higher than .85 and CFI and GFI values higher than .90, AGFI value higher than .85 and NNFI values higher than .90are regarded as acceptable fit indices (Çokluk et. al., 2010). Accordingly, the obtained values point to the fact that the 43-dimension construct proposed for Effective Participation Scale is suitable.

## Data Analysis

SPSS and LISREL were used in data analysis for exploratory and confirmatory factor analyses respectively. The relationship between 6th, 7th and 8th graders' engagement in mathematics classes and their perceptions regarding mathematics teachers' motivational support was investigated via canonical correlation analysis. Stastica program was utilized for canonical correlation analysis. Multiple Correlation Analysis is used in quantitative data to conduct correlation analysis to determine the relationship between variables when there is a single dependent variable but more than one independent variable. In cases where both dependent and independent variables are not single, none of the correlation coefficients cited above can be used in determining the relationship between two variable sets (clusters). In this case, Canonical Correlation Analysis was used which is based on determining the relationship structure between canonical variables by transforming variable sets or clusters into canonical variables consisting of linear components of the variables in these sets. Canonical Analysis is a special case of multiple regression analysis. While multiple regression analysis studies the relationship between a single dependent and multiple independent variables, canonical analysis includes p times dependent and q times independent variables. Canonical correlation is used to present the relationships between two datasets (Set 1 and Set 2) with a>1 and b >1 number of variables (Tatlıdil, 1996). It is possible not to differentiate among dependent and independent variables in canonical correlation analysis (Albayrak, 2010). There are 4 assumptions for canonical correlation analysis: linearity, normality, equality of variances and the assumption of multiple linearity. Whether the data met the hypotheses of canonical correlation analysis was checked before analysis and the result showed that the data met the conditions. The number of observations in canonical correlation analysis should be at least 20 times more than the number of variables (Stevens, 2009). In this study, there were four variables in the dependent variable set and three variables existed in the independent variable set (total 7x20=140). The number of observations in this study was 612. The expected criterion was met in the study. Since they failed to provide answers to some of the items in the measurement tools, 10 students were excluded from the study. z-test was performed to determine one-dimensional outliers and 7 surveys were excluded since the z values were outside critical values ($z = \pm 3.26$). Mahalanobis Distance Coefficients were calculated to determine multi-dimensional outliers. No outliers were identified based on Mahalanobis Distance Coefficients. Levene's Test and Box's M analysis were performed to test assumption of variance and variable variances were determined to be homogeneous. Correlation coefficients between variables and VIF and tolerance values were examined for multicollinearity assumption. Relationship between predictive variables that are higher than r >.90, VIF values equal or higher than 10 and tolerance values lower than .10 point to multicollinearity (Çokluk et. al., 2010). This study found that the highest correlation between predictive variables was .52, tolerance values varied between .35 and .40 and VIF values varied between 2.46 and 2.85. According to these results, multicollinearity was not observed.

Descriptive methods were used to determine whether data had normal distribution and arithmetic means, mode, median, skewness and kurtosis coefficients were examined. Equal or close values for arithmetic means, mode and median and skewness and kurtosis values close to 0 in $\pm1$ limits point to the existence of normal distribution (Tabachnick & Fidell, 2013). This study identified the lowest and highest skewness coefficient for the variables as -.52 and .91. It was also identified that kurtosis value changed between -.27 and .17. Arithmetic means, mode and median values were close. According to these results, the distribution was regarded as normal. In the study, set 1 represents autonomy, competence and relatedness (Set 1= a1, a2, a3 variables) support variables about student perceptions regarding mathematics teachers' motivational support. Set 2 includes the behavioral engagement, emotional engagement, emotional disaffection and behavioral disaffection (Set 2= b1, b2, b3, b4 variables) variables related to students' engagement in mathematics classes. The study intended to determine the relationship between the dataset for student perceptions regarding mathematics teachers'

90

motivational support composed of autonomy, competence and relatedness support and the dataset for students' behavioral engagement, emotional engagement, emotional disaffection and behavioral disaffection perceptions in engagement with mathematics. In canonical correlation analysis, the number of possible variable pairs and the number of canonical correlations are identified with the smallest number of variables in both data sets (min (a, b) (Cohen, Cohen, West &Aiken, 2003). Since the first set included 3 variables (teachers' motivational support) and the second set included 4 variables (engagement); the number of maximum canonical variable pairs was calculated to be 3 (a=3 b=4 therefore (3,4).

## FINDINGS

There canonical correlations were obtained as a result of the canonical correlation analysis is necessary to examine the significance of each canonical function in canonical correlation analysis. Table 1 displays canonical correlation coefficients, canonical correlation squared, (variance), Chi-square values and Wilks's $\lambda$ values.

Table 1
*Canonical correlation Significance (Chi-square Test) Results*

|   | Canonical r | Canonical $r^2$ | $\chi^2$ | df | *p* | Wilks's $\lambda$ |
|---|---|---|---|---|---|---|
| 1 | .64 | .41 | 380.49 | 12 | .00 | .53 |
| 2 | .30 | .09 | 60.87 | 6 | .00 | .90 |
| 3 | .06 | .00 | 2.62 | 2 | .26 | .99 |

According to Table 1, three different canonical variable pairs and three different canonical correlation coefficients were obtained for a and b variables. When Chi-square ($\chi^2$) values are examined by using Wilks's $\lambda$ values in the canonical correlation significance tests demonstrated in Table 1, the obtained first and second canonical variable pairs were observed to be significant. (Wilk's $\lambda$ = .53, $\chi^2_{(12)}$ =380.49, *p*= .00; Wilk's $\lambda$ =.90, $\chi^2_{(6)}$ =60.87, *p*= .00). The other canonical correlation pair was not found to be statistically significant (Wilks's $\lambda$ =.99, $\chi^2_{(2)}$ =2.62, *p*= .26).
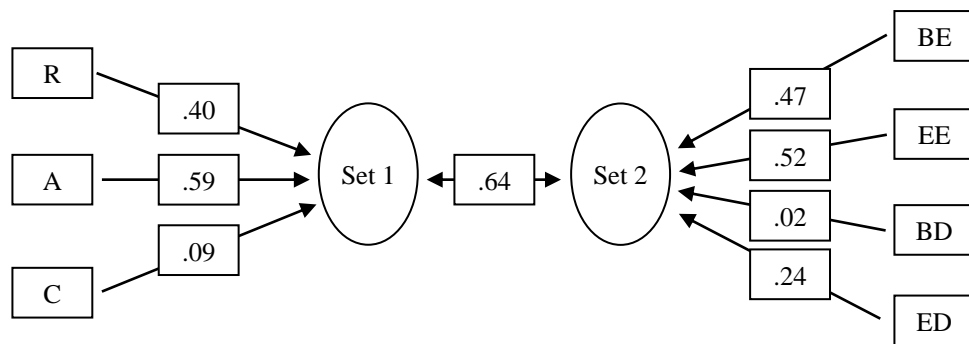
Table 1show that the first canonical correlation was .63 and the variance shared between teacher motivational support dataset and engagement dataset in the first canonical function was approximately 41%. In the second canonical function, canonical correlation was calculated to be .30 and the shared variance between teacher motivational support dataset and engagement dataset was 9%.

In order to determine how the variables included in the datasets contributed to canonical variables, standardized coefficients (sc) and structural coefficients ($r_s$) for the first and second canonical functions were examined and the results are presented in Table 2. The shared variance between the dataset for student perceptions regarding mathematics teachers' motivational support composed of autonomy, competence and relatedness support and the dataset for students' behavioral engagement, emotional engagement, emotional disaffection and behavioral disaffection perceptions in engagement with mathematic was given as $r_s^2$. The sum of $r_s^2$'s in the first and second canonical functions shows the variance shared by the variables with the dataset in the canonical model. This value was given as $srs^2$. The criterion for the significance of the variance that the variables shared with the datasets should be .30 at the least (Tabachnick & Fidel, 2013). Values over .45 and higher point to more significant contribution (Shery & Henson, 2005).

Table 2
*Canonical Analysis of the Relationship between Teacher Motivational Support and Engagement*

| Variables | 1st Canonical function | | | 2nd Canonical function | | | |
|---|---|---|---|---|---|---|---|
|  | sc | $r_s$ | $r_s^2$(%) | sc | $r_s$ | $r_s^2$(%) | $sr_s^2$(%) |
| Relatedness | .89 | .40 | .16 | -.13 | -.04 | .00 | 16 |
| Autonomy | .95 | .60 | .36 | .18 | 1.16 | 1.34 | 100 |
| Competence | .78 | .09 | .00 | -.58 | -1.36 | 1.85 | 100 |
| $r^2$ |  | 40.91 |  | .09 |  |  |  |
| Behavioral engagement | .88 | .47 | .22 | -.23 | -.02 | .18 | 40 |
| Emotional engagement | .90 | .52 | .27 | -.13 | -.20 | .04 | 31 |
| Behavioral disaffection | -.36 | .02 | .00 | -.66 | -.38 | .14 | 14 |
| Emotional disaffection | -.53 | -.24 | .05 | -.80 | -.78 | .61 | 66 |

91

According to the findings presented in Table 2, the contribution of autonomy variable to teacher motivational support dataset in the first canonical function was over .45. Therefore, it can be argued that the contribution of autonomy support variable to teacher motivational support dataset was significant in the first canonical function. Also, it was observed in the first canonical function that the contributions of behavioral engagement and emotional engagement variables to engagement dataset were over .45. Accordingly, it can be argued that the contributions of behavioral engagement and emotional engagement variables to engagement dataset were significant in the first canonical function. The signs of the variables that contributed to the dataset point to the direction of the relationship. Hence, it can be claimed that the structural coefficients for the autonomy support which was included in teacher motivational support dataset had a positive relationship with the behavioral engagement and emotional engagement variables that were included in the engagement dataset. This result shows that increased teacher autonomy support also increases emotional engagement and behavioral engagement. According to Table 2, $rs^2$ value for the first canonical function was 40.91. This value points to the variance shared between teacher motivational support and engagement datasets in the first canonical function. Figure 1 displays the structural coefficients for the first canonical function and the canonical correlation coefficient between teacher motivational support and engagement datasets in the first canonical function.



(R: Relatedness, Autonomy, C: Competence, BE: Behavioral engagement, EE: Emotional engagement, BD: Behavioral disaffection, ED: Emotional disaffection)
*Figure 1* The first canonical function and the canonical correlation coefficient between teacher motivational support and engagement

Based on the findings in Table 2, it was observed in the second canonical function that the contributions of autonomy support and competence support to teacher motivational support dataset in the second canonical function were over .45. Accordingly, it can be argued that the contributions of autonomy and competence support variable to teacher motivational support dataset in the second canonical function were significant. Also, the contribution of emotional disaffection to engagement dataset was over .45 in the second canonical function. Hence, the contribution of emotional disaffection to engagement dataset can be regarded as significant in the second canonical function. It can be argued that the structural coefficients for the autonomy and competence support which were included in teacher motivational support dataset had a negative relationship with emotional disaffection included in engagement dataset. This result shows that increased teacher autonomy and competence support decreases emotional disaffection.

According to Table 2, $r_s^2$ value for the second canonical function was .09. This value points to the variance shared between teacher motivational support and en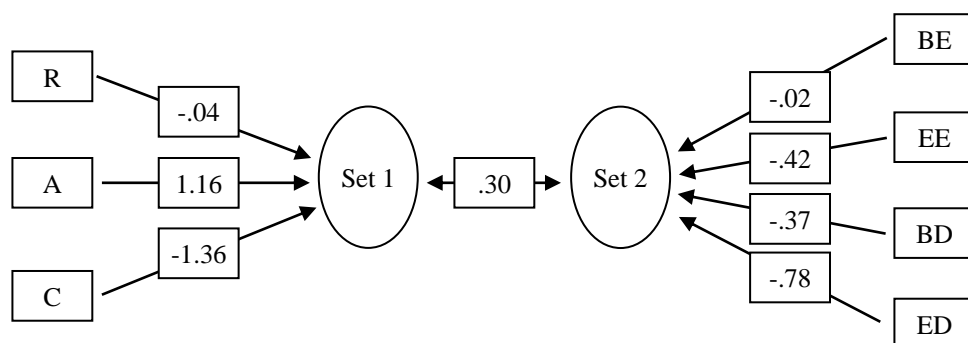gagement datasets in the second canonical function. Figure 2 displays the structural coefficients for the second canonical function and the canonical correlation coefficient between teacher motivational support and engagement datasets in the second canonical function.

*Figure 2* The structural coefficients for the second canonical function and the canonical correlation coefficient between teacher motivational support and engagement

Adding the $r_s^2$ values for the first and second canonical functions gave the variance shared between teacher motivational support and engagement datasets as 41.8 and Figure 3 displays the relationship between them.
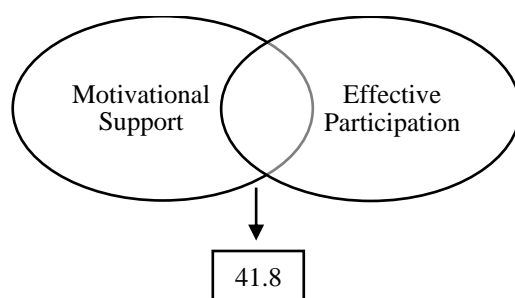


*Figure 3* The variance shared between teacher motivational support and engagement

## DISCUSSIONS and CONCLUSION

This study examined the relationship between middle school 6th, 7th and 8th graders' perceptions on mathematics teachers' motivational support and their engagement in mathematics classes by using canonical correlation analysis. The analysis provided two canonical functions for this relationship. The correlation between the datasets was calculated to be .64 in the first canonical function. According to this result, teachers' motivational support and engagement datasets shared a variance of 40.91% in the first canonical function. The correlation between the datasets was calculated to be .30 in the second canonical function. Accordingly, teachers' motivational support and engagement datasets shared a variance of 9% in the second canonical function.

The variance shared between teachers' motivational support and engagement datasets was found to be 41.8% in the canonical model composed of cumulative values of the canonical functions obtained from the canonical correlation analysis. Findings obtained from canonical functions determined that mathematics teachers' autonomy support provided to middle school 6th,7th, 8th grade students positively affected their behavioral engagement and emotional engagement. It was also identified that mathematics teachers' autonomy and relatedness support provided to middle school 6th,7th, 8th grade students negatively affected their emotional disaffection towards mathematics classes. Based on these findings, it can be argued mathematics teachers' increased autonomy support increases middle school 6th,7th, 8th graders' behavioral engagement and emotional engagement in mathematics classes. Findings also show that teachers' increased autonomy and relatedness support decreases students' emotional disaffection in mathematics classes. Studies show that teachers' positive supportive interactions with students and emotions such as affection, closeness and trust for teachers, positively affect classroom engagement. Çelik, Örenoğlu Toraman and Çelik (2018) investigated the level of relationship between student engagement and sensed teacher immediacy and reported a positive relationship between teacher immediacy and affective and cognitive engagement. Birgin, Akar, Uzun, Göksu, Peker and Gümüş (2017) found that secondary school students with higher affection for their Mathematics teachers had higher engagement levels compared to other students. Menteş (2011) identified a positive and significant relationship between students' trust for their teachers and

93

engagement. In their study on 5th graders, Martin and Rimm (2015) reported that effective interaction between students and teachers increase affective and social engagement levels. Therefore, positive relationship between teachers' autonomy support for students and students' affective and behavioral engagement is an expected finding. Also, negative relationships between autonomy support and affective and behavioral engagement are not surprising as well and literature provides parallel results. In their study, Skinner et. al. (2008) showed that perceived control, autonomy, relatedness and teacher support had positive relationships with behavioral engagement and emotional engagement whereas they had negative relationships with emotional disaffection and behavioral disaffection. Teacher support and especially autonomy perceptions predicted decreases in disaffection. It was identified that autonomy and relatedness support significantly predicted decreased boredom, perceived control predicted increases in changes in the state of anxiety and autonomy predicted decreases in the feelings of disappointment. In their study, Reeve et al (2004) determined that teachers who received training to foster autonomy support behaved supportive of autonomy and their students were more engaged. Similarly, Kiefer, Alley and Ellerbrock (2015) reported positive relationships between teachers' autonomy support and academic motivation, classroom engagement, and feelings of belonging to school.

The first and second canonical functions gave the variance shared between teacher motivational support and engagement Güvenç (2007) found that university students' perceptions about teacher motivational support significantly predicted their engagement in class and that student perception about teachers' motivational support affected motivational regulations. Student perception about their teachers' motivational support was identified to be effective in engagement by indirectly affecting their motivational regulations and it was observed that this indirect influence was more effective than direct influence. Güvenç (2015c) also determined that perceptions of high school students regarding mathematics teachers' motivational support positively affected engagement whereas the construct negatively correlated with disaffection.

In previous studies, teachers in Turkey were found to believe that students should be given autonomy support but they generally displayed less of the behaviors that correspond to this belief (Oğuz 2013; Özkal & Demirkol, 2014) and provide their students with medium level autonomy support and medium level control support (Sünbül, Kesici & Bozgeyikli, 2003; Güvenç, 2011; Oğuz, 2013). This study investigated middle school students' perceptions regarding mathematics teachers' motivational support. Güvenç and Güvenç (2014) identified primary school mathematics teachers' autonomy support to be at medium level and in their study on classroom and branch teachers, Özkal and Demirkol (2014) found that mathematics teachers displayed behaviors that supported learner autonomy at the lowest level.

Findings obtained in this study showed that mathematics teachers' motivational support positively affected student engagement in mathematics. When mathematics teachers' motivational support is insufficient, student engagement will be negatively affected and will result in disengagement during class. In line with the findings, the significance of providing motivational support to students by mathematics teachers and mathematics teacher candidates and the need to train them in accordance with relevant teacher behaviors to that effect should be emphasized. It is also suggested to examine the other factors that may be effective in students' mathematics engagement and to replicate the current study at different educational levels and subject fields.

**REFERENCES**

Albayrak, A. S. (2010). Kanonik korelasyon analizi. In S. Kalaycı (Eds.), *SPSS Uygulamalı çok değişkenli istatistik teknikleri*. Ankara: Asil Yayın Dağıtım.

Birgin,O. Mazman-Akar, S.G., Uzun, K., Göksu, B., Peker, E.S., & Gümüş, B. (2017). Ortaokul öğrencilerinin matematik dersine bağlılık düzeylerini etkileyen faktörlerin incelenmesi. *International Online Journal of Educational Sciences, 9 (4)*, 1093 -1110.doi:10.15345/iojes.2017.04.014

Büyüköztürk, S., Kılıç Çakmak, E., Akgün, O. E., Karadeniz, S., & Demirel, F. (2013). *Bilimsel Araştırma Yöntemleri*. Ankara: Pegem Akademi.

Büyüköztürk, S. Çakan, M., Tan, S.i & Atar, H. Y. (2014a). *TIMSS 2011 ulusal matematik ve fen raporu 4. sınıflar* Retrieved from http://timss.meb.gov.tr/wp-content/uploads/TIMSS-2011-4-Sinif.pdf

Büyüköztürk , S. Çakan, M., Tan, S., & Atar, H. Y. (2014b). *TIMSS 2011 ulusal matematik ve fen raporu 8. sınıflar*Retrieved fromhttp://timss.meb.gov.tr/wp-content/uploads/TIMSS-2011-8-Sinif.pdf

94

Cohen, J.,Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/ correlation analysis for the behavioral sciences*. London: Lawrence Erlbaum Associates, Publishers.

Çelik, S., Toraman, O. S., & Çelik, K. (2018). Öğrenci başarısının derse katılım ve öğretmen yakınlığıyla ilişkisi. *Kastamonu Eğitim Dergisi, 26(1)*, 209-217. doi:10.24106/kefdergi.378129

Deci, E. L. (1992). On the nature and function of motivational theories. *Psychological Science, 3*, 167–171.

Demir, K. (2011). Teachers' intrinsic and extrinsic motivation as predictors of student engagement. *e-Journal of New World Sciences Academy Education Sciences*, 6, (2), 1397-1409.

Eryılmaz, A., & Aypay, A. (2011a). Ergenlerin derse katılmaya motive olmaları ile öznel iyi oluşları arasındaki ilişki. *Uluslararası İnsan Bilimleri Dergisi, 8(1)*, 1220-1235.

Eryılmaz, A., & Aypay, A. (2011b). Lise öğrencilerinde derse katılmaya motive olma ile yaşam amaçları belirleme arasındaki ilişkiler. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi (KEFAD), 12(3)*, 149-158.

Eryılmaz, A. (2013). Okulda motivasyon ve amotivasyon: Derse katılmada öğretmenden beklentiler ölçeğinin geliştirilmesi. *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi, 13(25)*, 1-18.

Fraenkel, J. R., &Wallen, N. E. (2006). *How to desing and evaulate research in education*. New York: McGraw-Hill İnternational Edition.

Güvenç, H. (2007). *Üniversite öğrencilerinin öğretmen güdüsel destek algıları ve derse kendini verme. XVI. Ulusal Eğitim Bilimleri Kongresinde sunulan bildiri*, Gaziosmanpaşa Üniversitesi Eğitim Fakültesi Retrieved from http://www.pegemnet/akademi/kongrebildiri_detay.aspx?id=128901

Güvenç, H. (2011). Sınıf öğretmenlerinin özerklik destekleri ve mesleki özyeterlik algıları. *Kuram ve Uygulamada Eğitim Yönetimi, 17(1)*, 99-116.

Güvenc, H., & Güvenc, H. (2014). İlköğretim matematik ile fen ve teknoloji öğretmenlerinin sınıf yönetim biçemleri ve özerklik desteği algıları. *E-Journal of New World Sciences Academy*, *9(3)*, 311-322.

Güvenç, H. (2015a). Öğretmen güdüsel desteği ölçeği geliştirme ve uyarlama çalışması. *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi, 15(1)*, 129-145.

Güvenç, H. (2015b). Etkin katılım ölçeği geliştirme ve uyarlama çalışması. *Kırşehir Eğitim Fakültesi Dergisi*, *16(1)*, 255-267.

Güvenç, H. (2015c). The relationship between teachers' motivational support and engagement versus disaffection. *Educational Sciences: Theory & Practice*, *15(3)*, 647-657.

Güvenç, H., & Koç, C. (2016). Ortaokul öğrencilerinin etkin katılımı ve yardım isteme eğilimleri. *Trakya Üniversitesi Sosyal Bilimler Dergisi, 18(2)*, 347-366.

Fredricks, J. A., Blumenfeld, P.C., & Paris, A.H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*,*74(1)*, 59–10.

Kahraman, N. (2014). Cross-grade comparison of relationship between students' engagement and TIMSS 2011 science achievement. *Education and Science (Large-ScaleAssessment Special Issue), 39 (172)*, 95-107.

Karasar, N. (2009). *Bilimsel araştırma yöntemi.* Ankara: Nobel Akademik Yayıncılık.

Kiefer, S. M., Alley, K. M., & Ellerbrock, C. R. (2015). Teacher and peer support for young adolescents' motivation, engagement, and school belonging. *Research in Middle Level Education*, *38(8)*, 1-18.

Lee, J.S. (2014). The relationship between student engagement and academic performance: Is it a mythorreality? *The Journal of Educational Research*, *107*, 177–185, doi:10.1080/00220671.2013.807491

Martin, D.P., & Rimm, K.E. (2015). Do student self-efficacyandteacher-student interaction quality contribute to emotional and social engagement in fifth grade math? *Journal of School Psychology*, *53(5)*, 359-373. doi. 10.1016/j.jsp.2015.07.001.

Menteş, C. (2011). *İlköğretim okulu 5. sınıf öğrencilerinin öğretmenlerine olan güven düzeyleri ile derse katılım düzeyleri arasındaki ilişki*. Yayımlanmamış yüksek lisans tezi, Abant İzzet Baysal Üniversitesi, Bolu.

Oğuz, A. (2013). Öğretmenlerin öğrenen özerkliğinin desteklenmesine ilişkin görüşleri. *Uluslararası İnsan Bilimleri Dergisi, 10(1)*, 1273-1297.

Özkal, N., & Demirkol A. (2014). Öğrenen özerkliğinin desteklenmesinin gerekliliğine ve sergilenmesine ilişkin öğretmen görüşleri. *NWSA-Education Sciences*, *9(3)*, 293-310. doi: 0.12739/NWSA.2014.9.3.1C0619.

Reeve, J. (2012). A Self-determination theory perspective on student engagement. S.L. Christenson et al. (eds.), *Handbook of Research on Student Engagement*, 149-172. Springer Science Business Media, LLC. doi: 10.1007/978-1-4614-2018-7_7

Reeve, J., Jang, H., Carrell, D., Jeon, S., & Barch, J. (2004). Enhancing students' engagement by increasing teachers' autonomy support, *Review of Educational Research*, *74(1)*, 59–109.

Ryan, R. M., & Deci, E. L. (2002). An overview of self-determination theory. In E. L. Deci & R. M. Ryan (Eds.), Handbook of self-determination research (pp. 3–33). New York, NY: University of Rochester Press.

Sever, M., Ulusoy, Ö., Toraman, Ç., & Türe, E. (2014). Lise öğrencilerinin çeşitli değişkenler açısından derse katılımlarının incelenmesi. *Eğitim ve Bilim*, *39(176)*, 183-198.

95

Sherry, A., & Henson, R. K. (2005): Conducting and interpretin gcanonical correlation analysis in personality research: A user-friendly primer. *Journal of Personality Assessment, 84(1)*, 37-48.

Skinner, E., Furrer C., Marchand G., & Kindermann T. (2008). Engagement and disaffection in the classroom: part of a larger motivational dynamic? *Journal of Educational Psychology,100(4)*, 765-781. doi: 10.1037/a0012840.

Skinner, E. A., Kindermann, T. A., Connell, J. P., & Wellborn, J. G. (2009). Engagement as an organizational construct in thedynamics of motivational development. In K. Wentzel & A. Wigfield (Eds.), *Handbook of motivation in school* (pp. 223-245). Malwah, NJ: Erlbaum.

Skinner E., & Pitzer J. R. (2012). Developmental dynamics of student engagement, coping, and everyday resilience. In Christenson et al. (Eds.) *Handbook of research on student engagement* (pp. 21-44). Retrieved from file:///C:/Users/user/Downloads/9781461420170-c1.pdf

Stevens, J. P. (2009). *Applied multivariate statistics for the social sciences*. New York: Routledge.

Student Selection and Placement Centre (2016a). *2016-YGS sayısal bilgiler.* Retrieved from http://dokuman.osym.gov.tr/pdfdokuman/2016/YGS/2016_YGS_Sayisal_Bilgiler.pdf

Student Selection and Placement Centre (2016b).*2016-LYS sayısal bilgiler.* Retrieved from http://dokuman.osym.gov.tr/pdfdokuman/2016/LYS/LYSSayisalBilgiler19072016.pdf

Sünbül, A.M., Kesici, Ş., & Bozgeyikli, H. (2003). *Öğretmenlerin psikolojik ihtiyaçları, öğrencileri motive ve kontrol etme düzeyleri*, Selçuk Üniversitesi Araştırma Fonu, Proje No: 2002-236.

Şimşek, Ö.F. (2007). *Yapısal eşitlik modellemesine giriş - Temel ilkeler ve LISREL uygulamaları*. Ankara: Ekinoks Yayıncılık.

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics*. Boston: Pearson Education, Inc.

Taş, U. E., Arıcı, Ö., Özarkan, B. H., & Özgürlük, B. (2016). *PISA 2015 ulusal raporu.* Retrieved from http://pisa.meb.gov.tr/wp-content/uploads/2016/12/PISA2015_Ulusal_Rapor1.pdf

Tatlıdil, H. (1996). *Uygulamalı çok değişkenli istatistiksel analiz*. Ankara: Cem ofset.

Özdamar, K. (2004). *Paket programlar ile istatistiksel veri analizi (Çok değişkenli analizler)*. Eskişehir: Kaan Kitabevi.

Wilding, L. (2015). The application of self-determination theory to support students experiencing disaffection, *Educational Psychology in Practice: Theory, Research and Practice in Educational Psychology*, doi: 10.1080/02667363.2014.995154

Yıldırım, A., Özgürlük, B., Parlak, B., Gönen, E. & Polat, M. (2016). *Uluslararası öğrenci değerlendirme programı.* Retrieved from http://timss.meb.gov.tr/wp-content/uploads/TIMSS_2015_Ulusal_Rapor.pdf

96

## TÜRKÇE GENİŞLETİLMİŞ ÖZET

Öğrencileri derse güdülemek ve etkin katılımlarını sağlamak eğitimcilerin önemli sorunlarından birisidir. Sınıfta etkinliklere istek ve merakla katılan öğrencilerin yanı sıra etkinliklere katılmayan, katılsa bile bunu isteksizce, hoşlanmadan yapanlarda vardır. Bu öğrenciler mekanik bir şekilde etkinliklere katılırlar. Yapılan çalışmalar sınıftaki öğrenme etkinliklerine istekli, gayretli etkin katılımın öğrencinin öğrenme, notlar, başarı testi sonuçlarını, devam, hatırda tutma, mezuniyet ve akademik olarak azmini yordadığını göstermektedir. Araştırma sonuçları etkin katılımın madde bağımlılığı, suç işleme gibi risklere karşı koruyucu olduğunu da göstermektedir (Fredricks, Blumenfeld ve Paris, 2004; Kahraman, 2014; Lee, 2014; Skinner, Furrer, Marchand ve Kindermann, 2008; Skinner, Kindermann, Connell ve Wellborn, 2009; Skinner ve Pitzer, 2012).

Öğrencilerin kendilerine has gereksinimleri, amaçları, ilgi ve değerleri vardır. Bir öğrenci ilginç bulduğu bir konuya saatler harcayabilir. Burada öğrenci bağlamdan bağımsız olarak güdülenmiştir. Sınıfta ise bağlam önemlidir. Öğrenciler sınıfta kendi gereksinimlerini, amaçlarını, ilgilerini ve değerlerini destekleyici ya da bunları tehdit eden sosyal etkileşimde bulunurlar. Sınıf içindeki öğretmen ve öğrenme ortamı öğrenci güdülenmesi ve etkin katılımını desteklemek ya da azaltmakta önemli bir etkiye sahiptir. Öğrenci güdülenmesi ve etkin katılımı için destekleyici şartlar, özellikle de destek sağlayan öğrenci-öğretmen ilişkileri gereklidir (Reeve, 2012). Öğrenci öğretmen etkileşimlerinin üç önemli niteliği vardır. Bunlar; eğitimsel önem (ilişki deneyimi destekleri), optimal yapı (yetkinlik kolaylaştırıcılar) ve özerklik desteğidir (öz belirlemeli güdüyü arttırma) (Skinner ve Pitzer, 2012). Öz belirleme teorisine göre öğrencilerin bu gereksinimleri karşılanmazsa hoşnutsuzluk deneyimleri yaşayabilirler (Wilding, 2015). Öğrenme etkinliği esnasında özerklik, yetkinlik ve ilişki destekleri göz ardı edilen ya da öğretim esnasında hayal kırıklığına uğrayan öğrencilere göre bu gereksinimleri karşılananlar daha fazla güdüleneceklerdir (Reeve, 2012). Ayrıca etkin katılımın öğrenme ve okul başarısı ile ilgili sonuçları öğrencilerin akademik olarak yetkin ve bağlanmış hissetmelerine ve öğretmenlerinden daha fazla destek almalarına, daha olumlu ilişkiler kurmalarına neden olur. Etkin katılım arttıkça öğrencilere daha fazla etkin katılan sınıf arkadaşları ile akran gruplarına ve arkadaşlık ilişkilerinin içine girişlerine izin verilir. Hoşnutsuz öğrenciler okulda kötü edim gösterirler, dışlanmış hissederler. Öğretmenler bu öğrencilere daha az destek verirler ve daha fazla baskı yaparlar. Bu öğrencilerin daha fazla hoşnutsuzluk yaşayan arkadaş gruplarına katılma olasılıkları yüksektir. Bu durum döngüsel olarak devam eder. Yani öğretmen güdüsel desteği etkin katılımı artırır, etkin katılım arttıkça öğretmenler öğrencilerine daha fazla güdüsel destek sağlarlar (Skinner, et al, 2008; Skinner & Pitzer, 2012).

Bu araştırmada ortaokul öğrencilerinin Matematik dersine etkin katılımları ile Matematik öğretmenlerinin güdüsel destekleri arasındaki ilişkiler incelenmiştir. Araştırmada keşfedici korelasyonel araştırma modeli kullanılmıştır. Araştırma Antalya ili Alanya ilçesinde yer alan ve uygulama izni alınan 10 ortaokulda 6., 7. ve 8. sınıfta öğrenim gören 612 öğrencinin gönüllü katılımıyla gerçekleştirilmiştir. Bu araştırmada, veriler ortaokul 6., 7. ve 8. sınıf öğrencilerine uygulanan "Öğretmen Güdüsel Desteği" (Güvenç, 2015a) ve "Etkin Katılım Ölçeği" (Güvenç, 2015b) ile toplanmıştır. Çalışmada, ortaokul 6., 7. ve 8. sınıf öğrencilerinin Matematik öğretmenlerinin güdüsel desteklerine ilişkin algıları ile Matematik dersine etkin katılımları arasındaki ilişki Kanonik Korelasyon analizi ile incelenmiştir. Kanonik korelasyon analizi, iki ve daha fazla değişken içeren iki değişken seti arasındaki ilişkiyi doğrusal bileşenler aracılığı ile değerlendiren çok değişkenli bir yöntemdir (Albayrak, 2010).

Araştırma sonucunda ortaokul 6., 7. ve 8. sınıf öğrencilerinin Matematik öğretmenlerinin güdüsel desteklerine ilişkin algıları ile Matematik dersine etkin katılımları arasındaki ilişkiye ait iki kanonik fonksiyon elde edilmiştir. Birinci kanonik fonksiyonda veri setleri arasındaki korelasyon .64 olarak hesaplanmıştır. Buna göre, birinci kanonik fonksiyonda Öğretmenlerinin güdüsel destekleri ile etkin katılım veri setlerinin %40.91'luk bir varyans paylaştıkları belirlenmiştir. İkinci kanonik fonksiyon için veri setleri arasındaki korelasyon değeri .30 olarak hesaplanmıştır. Buna göre, ikinci kanonik fonksiyonda Öğretmenlerinin güdüsel destekleri ile etkin katılım veri setlerinin % 9'luk bir varyans paylaştıkları belirlenmiştir. Kanonik korelasyon analizinden elde edilen kanonik fonksiyonların yığılmalı değerlerinden oluşan kanonik modelde öğretmen güdüsel desteği ile etkin katılım veri setlerinin paylaştıkları ortak varyans %41.8 olarak hesaplanmıştır. Kanonik fonsiyonlardan elde edilen bulgular ortaokul 6., 7. ve 8. sınıf öğrencilerinin Matematik öğretmenlerinin özerklik desteklerinin

97

öğrencilerin Matematik dersine davranışsal katılımlarını ve duyuşsal katılımlarını pozitif olarak etkilediği belirlenmiştir. Ayrıcaortaokul 6., 7. ve 8. sınıf öğrencilerinin Matematik öğretmenlerinin özerklik ve ilişki desteklerinin öğrencilerin Matematik dersine ilişkin duyuşsal hoşnutsuzluklarını negatif olarak etkilediği belirlenmiştir. Bu bulgulara göre Matematik öğretmenlerinin özerklik destekleri arttıkça ortaokul 6., 7. ve 8. sınıf öğrencilerinin Matematik dersinde davranışsal ve duyuşsal katılımlarının artmakta olduğu söylenebilir. Yanı sıra bulgular Matematik öğretmenlerinin özerklik ve ilişki destekleri arttıkça öğrencilerin Matematik dersinde duyuşsal hoşnutsuzluklarının azaldığını göstermektedir. Bu araştırmada ulaşılan sonuçlar Matematik öğretmenlerinin güdüsel desteklerinin öğrencilerin Matematik dersine etkin katılımını olumlu olarak etkilediğini göstermiştir. Öğrencilerin Matematik öğretmenlerinin güdüsel desteklerinin yetersiz olması öğrencilerin derse etkin katılımlarını olumsuz olarak etkileyecektir. Öğrencilerin derste hoşnutsuz duygular yaşamalarına neden olacaktır. Bu doğrultuda Matematik öğretmenlerinin ve Matematik öğretmeni adaylarının öğrencilerine güdüsel destek sağlamalarının önemi ve onların gereksinimlerine uygun öğretmen davranışları konusunda yetiştirilmesi gerektiği söylenebilir.

# Pre-service teachers' reflective judgment skills in the context of socio-scientific issues based inquiry laboratory course

Dilek Karışan
Adnan Menderes University, Faculty of Education, Aydın, Turkey,
dilekkarisan@gmail.com, orcid.org/0000-0002-1791-9633
Özgül Yılmaz-Tüzün
Middle East Technical University, Faculty of Education, Ankara, Turkey,
ozgul@metu.edu.tr, orcid.org/0000-0001-7869-9251
Dana L. Zeidler
University of South Florida, Faculty of Education, Tampa, USA,
zeidler@usf.edu, orcid.org/0000-0002-4250-4982

ABSTRACT    There are certain threats embedded in scientific development that confront society. Gaining practical and instrumental experiences in addressing topics related to the major challenges that confront society today can be possible by tapping the socio-scientific issues as a part of science teaching and learning. This research aimed to explore pre-service teachers' reflective judgment skills in socio-scientific issues based inquiry science laboratory course. The participants of the research were 20 pre-service teachers at a research oriented public university. Qualitative case study research design was used in this study. The laboratory manuals and semi-structured interviews were used as data collection tools. Data were analyzed by using King and Kitchener's (1994) reflective judgment framework. Results of the study showed that pre-service teachers' reflective judgment scores tended to increase from the first experiment to the last experiment. Results suggested that exploring reflective judgment in socio-scientific contexts is beneficial for allowing pre-service teachers to actively engage in knowledge construction.

*Keywords*    *Reflective judgment, Pre-service teachers, Inquiry, Science laboratory, Socio-scientific issues*

# Öğretmen adaylarının sosyo-bilimsel konular temelli fen laboratuvarı dersindeki yansıtıcı muhakeme becerileri

ÖZ    Toplumların bilim temelli güçlüklerle karşılaşmakta olduğu inkâr edilemez bir gerçekliktir. Bu tür problemlere karşı pratik deneyimler kazanmanın olası yollarından biri derslerde sosyo-bilimsel konulara yer vermektir. Bu çalışmanın amacı öğretmen adaylarının sosyo-bilimsel konular temelli fen laboratuvar uygulamaları dersindeki yansıtıcı muhakeme becerilerini incelemektir. Katılımcılar 20 öğretmen adayından oluşmaktadır. Bu çalışmada nitel durum çalışması araştırma yöntemi uygulanmıştır. Yarı-yapılandırılmış mülakatlar ve deney raporları veri toplama aracı olarak kullanılmıştır. Veriler King ve Kitchener (1994) tarafından geliştirilen yansıtıcı muhakeme modeli kullanılarak analiz edilmiştir. Çalışma sonuçlarına göre öğretmen adaylarının Yansıtıcı Muhakeme Modeli puanları birinci deneyden son deneye doğru artma eğilimi göstermiştir. Yansıtıcı muhakeme becerilerinin sosyo-bilimsel konular bağlamında ele alınmasının, öğretmen adayların bilgiyi aktif olarak yapılandırmaları açısından faydalı olduğu bulunmuştur.

*Anahtar Kelimeler*    *Yansıtıcı muhakeme, Öğretmen adayı, Araştırma sorgulama, Fen laboratuvarı, Sosyo-bilimsel konular*

## INTRODUCTION

The reach of science and technology extends virtually to every aspect of human life and our associated ecological interactions with the living and non-living world. Students, as citizens in this technology-rich and scientifically complex world, need to know that the world is far more complex than it first appears and need to have practical and instrumental experiences in addressing topics related to the major challenges. Any educational practice focusing solely on the products and application of science willfully ignores the normative formation of scientific ideas, ideals and goals, thereby misrepresenting the human activity of science (Next Generation Science Education Standards [NGSES], 2012). One of the overarching goals of science education is to engage the public in discussions on scientific issues (National Research Council [NRC], 2012) to understand the effects of scientific and technological developments on their everyday lives (Martin-Gámez & Erduran, 2018; Osborne & Dillon, 2008) and to ensure that students have some recognition of the beauty and wonder of science (Egan, Cant, & Judson, 2014; Maulucci, 2010). Gaining practical and instrumental experiences in addressing topics related to the major challenges that confront society today can be possible by tapping the socio-scientific issues (SSI) in a manner that allows students to explore and frame scientific investigations as a way to explore interdependence of science and society (Zeidler, 2014; Zeidler, Sadler, Simmons, & Howes, 2005).

The goal of science education is to help students to understand societal problems, as well as teaching scientific concepts (Lee & Grace, 2012; Nielsen, 2012; Zeidler, Herman, Ruzek, Linder, & Linn, 2013). SSI provides useful context for addressing these concerns and has been found to enhance students' learning of scientific concepts and their application to daily life (Lee, Chang, Choi, Kim, & Zeidler, 2012; Klosterman & Sadler, 2010). The SSI movement focuses on letting students to handle science-based issues that shape their current world and those which will determine their future world (Sadler, 2004). SSI teaching has been empirically investigated and linked to particular outcomes including facilitating sophisticated argumentation, reflective judgment, informal reasoning, and nature of science understanding (Zeidler & Sadler, 2008; Zeidler, Sadler, Applebaum & Callahan 2009). From these results, a reflective judgment should be considered that focuses on the ability of developing students to collect and analyze data and use several sources (Zeidler et al., 2009).

Accordingly, there is a critical need for students to have the ability to read, understand, communicate and engage in such complex issues derived from the interaction of science and technology in sociocultural contexts (Yoonsook, Yoo, Kim, Lee, & Zeidler, 2016). Given that such issues are open-ended, contentious, usually evoking moral reasoning and often containing multiple competing solutions to each problem (Sadler 2004; Zeidler, 2014), there is a need to engage students in making defensible judgments about real world complex problems and to make sound arguments for their judgments.

Reflective judgment is a kind of epistemic cognition that includes the recognition of uncertainty (exists about many contemporary scientific issues) to the extent that such issues are embedded in and inextricably linked to sociocultural contexts (Zeidler et al., 2009). Reflective judgment domain involves assumptions of the status of knowledge and evidence about ill-structured problems (King & Kitchener, 1994; 2004). Used in concert with SSI-related pedagogy, teachers challenge students to justify their claims and the evidence used to back those claims while considering the counter claims and evidence from those of other perspectives.

### Rationale for the Study

Over the last decade, science education researchers have been investigating research topics conducive to promoting SSI-based instruction and epistemological understanding of factors related to issues such as off-shore oil drilling, fracking, cell phones and health, genetically modified foods, gene therapy,

100

nuclear power plants, animal research, global warming, and so on (Aydin, 2014; Zeidler, 2014; Zeidler & Kahn, 2014). While such issues are widely used as teaching units, they are also useful in providing a rich context for argumentation studies and reflective judgment research. Zeidler et al. (2009) utilized SSI as a teaching tool to explore students' epistemological improvement (Zeidler et al., 2009). In that study, socio-moral discourse, argumentation and debate were important elements that transformed earlier and perhaps the traditional method of instruction embedded in scientism into pedagogy oriented to progressive sociocultural views of science education. Students' epistemological development were explored by using measures of reflective judgment.

Many researchers used SSI in science classroom activities (Liu et al., 2011; Kølsto, 2001) to engage students with ill structured issues. In such studies, SSI are typically used as a teaching tool to initiate students' interest, and promote active engagement and personal involvement with issues directly related to students' lives. It should be noted that the practice of SSI teaching generally requires the deliberate use of scientific topics that have moral or ethical implications compelling students to engage in protracted forms of discourse (Evagorou & Mauriz, 2017).

A significant amount of science education research (Anderson, 2002; Bybee, 2000; Waight & Abd-El-Khalick, 2011) highlights the importance of "doing science." Active engagement in science includes, among other skills, articulating goals of an investigation, predicting possible outcomes, and planning a course of action that will provide the best evidence to support or refute a claim or proposition. In the US, for example, the NGSS (2013) highlight the importance of students' active participation in the processes of science as they construct newfound knowledge. While the science education literature seems to converge on the importance of inquiry learning environments, where students need to be actively engaged in scientific processes, the practical usage of laboratory investigations often falls short in its execution of inquiry activities that not only require higher order thinking skills, but reflect explicit sociocultural aspects of the nature of science, particularly as they may be expressed in SSI driven-curricula (Cobern et al., 2010; Domin, 1999; Khishfe, 2015). Inquiry, like any other pedagogical approach, may be executed to varying degrees of efficacy, and active learning may not be synonymous with inquiry (Cobern et al. 2010; Kirschner, Sweller, & Clark, 2006).

Students' being reflective about their source of knowledge has given importance by numerous research (Eş, Mercan, & Ayas, 2016; Paris & Ayres, 1994; King & Kitchener, 1994; MacFarlane, 2001) and these research appreciate the contribution of reflective judgment to students' meaningful learning. However, there is not many research that focuses on reflective judgment in an inquiry oriented science laboratory. This study engaged students in reflective judgment (i.e., epistemological reasoning or reflective reasoning), through their own development of concepts and principles via exploration; in that sense the present study aligns this mode of inquiry with authentic learning experiences. In this study characteristics of inquiry learning such as posing questions tied to real world scenarios, obtaining supporting or conflicting evidence to address those questions, collecting, analyzing and interpreting data, helps the inquirer to construct and take ownership of their own knowledge.

Inquiry learning, therefore, as current study envisions it, shifts learning demands on students to construct knowledge by solving real-world problems (NRC, 2012. Green, Elliot, and Cummins (2004) noted, for example, that real-world problems promoted students' science learning, students' by motivating them to use scientific evidence and reasoning to apply to in solutions of these problems. In fact, the students also found new information that cannot be placed in any scientific journal or in a regional report. Therefore, the study of research can serve as a locus for invention, craft and creativity. This study is designed to provide effective laboratory work that involves more authentic (that is, attracts students to scientific argumentation and reflective judgment) and a student-centered learning environment.

Reflective judgment is seen as a construction that represents the views of people on the knowledge and rationale of knowledge. The model rejects two known assumptions advanced by previous researchers. First, unlike Piaget, the Reflective Judgment (RJM) model does not suggest that cognitive development is best measured by deductive reasoning. The second contradiction was that there is no intercultural

101

universality. King and Kitchener (1994) recognize that there is a complex stage of development, rather than a simple stage model of development. They are criticized that it is misleading to characterize individuals who are only "in" or "at" one stage of development. The development of reflective thinking is described as:

*… waves across a mixture of stages, where the peak of a wave is the most commonly used set of assumptions. While there is still an observable pattern to the movement between stages, this developmental movement is better described as the changing shape of the wave rather than as a pattern of uniform steps interspersed with plateaus (King, Kitchener, & Wood, 1994 p. 140).*

The logical similarities between the Reflective Judgment Model and the SSI framework have been noted previously (Zeidler et al., 2009). Both of them are associated with ill structured problems and problems that require consideration of different opinions and the ability to analyze these positions.

Both involve ill-structured problems and issues that require consideration of differing opinions, the ability to analyze those positions, the backing claims by evidence to support stances, and the recognition of the role of constructed in consensus building. This investigation was aimed to explore pre-service teachers' reflective judgment skills in SSI based inquiry science laboratory. In this manner, preservice teachers were given the opportunity to investigate aspects of real-life SSI in a laboratory setting. Both are important in addressing and reasoning about ill-structured problems where controversy in varied contexts and differing epistemology understandings come to loggerheads. Simple logic and algorithms will be found wanting where more nuanced yet complex reasoning that taps multiple ways of thinking is required. Hence, the purpose of this investigation was to investigate the nature of reflective judgment as they are displayed in the context of a socio-scientific issues-based inquiry science laboratory course. Varied contextualized SSI were selected to discern how reflective judgment are realized in an authentic inquiry setting. To this end, following research question guided the study:

What are the reflective judgment domains of preservice teachers revealed in SSI based inquiry science laboratory course?

## METHODOLOGY

A qualitative case study research design guided the present research (Merriam, 2009). The study investigates pre-service teachers' reflective judgment skills within its real life context. Current research bounded with 20 pre-service teachers who involved in SSI based inquiry science laboratory course throughout a semester (Stake, 1995).

### Participants

Participants were 20 (19Females, 1Males) pre-service teachers with a mean age of 21 years (ranging from 18-25) attending a research oriented university at the department of elementary science and early childhood education. Most of them were juniors with two exceptions: one student was sophomore taking the course early and another was senior, planning to graduate at the end of the semester. The teacher education program also requires preservice teachers to attend professional development opportunities offered throughout their program. Hence, participants had a number of basic experiences, such as participation in career programs, including seminars, presentations and participation in activities with primary school children in order to enhance their professional development.

**Study Context**

Selected SSI were chosen to be used in tandem with this inquiry science laboratory course to allow researchers to more fully explore the preservice teachers (PT)' reflective judgment. Controversial issues framed by global environmental problems are thought to be reasonably explored in a laboratory setting. More specifically, topics related to food additives, climate change, alternative energy sources, and factors related to the industrial revolution were identified for three main reasons: 1) because of their ubiquity in modern society; 2) their facilitation of classroom discourse and argumentation; and 3) amenable nature of each issue. Throughout the course, preservice teachers were engaged in discussions about the controversial issues and were allowed to consider their own scientific questions, and address those questions through deliberately designed laboratory investigations generated by the preservice teachers themselves.

Each single SSI was covered over a period of two weeks. Preservice teachers met in class twice per week and class time spanned two hours per class. The time during the first week was devoted to discussions surrounding a given SSI. Discussions typically entailed various forms of socio-moral discourse associated with SSI, whereby the pre-service teachers were guided to construct their knowledge about the given SSI as part of a social process during collaborative classroom discussions. Additionally, class discussions were guided in a manner that fostered the development of researchable scientific questions, raised by the preservice teachers themselves, which would next be systematically examined by assigned groups in the laboratory component of class. After the first week discussion for each SSI, the second week was designated for laboratory investigations of key science elements embedded within a given issue. Here, the preservice teachers were able to investigate and explore topics to find verifiable empirical support (or lack of support) for various claims that arose out of the previous discussions. Thus, the laboratory became a learning environment where preservice teachers worked together tackling ill-structured problems connected with each issue.

Over the span of thirteen weeks, course mentors had the responsibility to help their groups prepare presentations and to organize preservice teachers' laboratory reports for each investigation. The mentors' role was *not* to serve as a final arbitrator who resolved issues of conflict, or become the preeminent voice of authority; rather, their role was to ask probing questions in an attempt to propose their own questions, as well as their positions on issues, and offer support and guidance in their research efforts. Mentors themselves also went through a deliberate mentoring process. The criteria to serve as a mentor required that each had to be a graduate student with a master degree in science education having successfully completed coursework toward their PhD. The role of mentors included leading discussions on particular SSI and providing guidance to preservice teachers for group presentations as well as laboratory investigations (described above). These individuals had exposure to nature of science, laboratory experimental methods, pedagogical content knowledge, issues related to environmental concerns, and a basic understanding of SSI-related goals and strategies. All mentors were graduated from the Department of Elementary Science Education and had similar science backgrounds for their Bachelor of Science degree. Meetings and pre-investigation discussions were held to ensure each mentor had both the background knowledge and pedagogical strategies necessary to assist the SSI based inquiry science laboratory course.

Pre-service teachers conducting experiments utilized basic science process skills such as making observation, making inferences, measurement, communicating, and predicting. For example, they could have observed the effects of acids on plant leaves by using various concentrations of hydrochloric acid and sulfuric acid. Preservice teachers recorded their observations, formed inferences about acid rain effects, and drew possible connections and analogies with climate change. Inferences and predictions needed to be communicated to their peers. After conducting investigations, participants answered open-ended reflective judgment questions about that issue and engaged in reflective discussion with their peers.

The laboratory manuals were designed using open inquiry methods to allow pre-service teachers to think about how knowledge construction progressed during their experiments. The particular method ultimately selected for investigation was left up to the pre-service teachers to develop. The course mentors were charged with the responsibility to maintain consistency within investigations, help their groups to prepare presentations, and to aid in the organization of preservice teachers' laboratory reports.

**Data Collection and Assessments**

Preservice teachers' written records from laboratory investigations and semi structured interviews were used as data collection tools. Reflective judgment was assessed using the Prototypic Reflective judgment Interview (PRJI) which is a semi-structured interview developed by King and Kitchener (1994; 2004) and used as an indicator of epistemological sophistication in other SSI research (Zeidler et al., 2009; Zeidler et al. 2013). The interviewer presented four standard interview scenarios to each participant. Those were followed by seven standard questions aimed at encouraging preservice teachers to formulate a stance on each scenario, as well as a justification for their position.

The preservice teachers were interviewed after they completed the experiments. Interviews were used as an additional data source to triangulate laboratory reports. All the Interviews lasted between twenty to thirty minutes, were audio recorded and transcribed.

The precise organization of the reports, as well as the design of the laboratory investigations, was determined by the preservice teachers; hence, each group developed their own research questions and designed their own investigations in order to address their research questions. While there were suggested procedures, they were free to deviate from those and utilize alternative procedures for their investigations. This helped to promote a constructivist-learning environment. Additionally, to foster individual accountability, each preservice teacher prepared their own unique reports; however, all of them responded to the same standard prototypic reflective judgment interview questions at the end of their reports.

**Data Analysis**

Preservice teachers' laboratory reports and interview responses were evaluated by the authors of the study in accordance with the levels of sophistication provided by the King and Kitchener (1994, 2004) framework for reflective judgment. According to the framework, there are seven levels contained within three broad developmental stages. Scores from 1 to 3 were categorized as pre-reflective, scores from 4 to 5 were categorized as quasi-reflective, and finally scores from 6 to 7 were categorized as reflective stages. Each student's score was summarized into a three-digit code (e.g., 4-4-5). Each digit was differentially weighted (50% for the first digit, 30% for the second, 20% for the 3rd digit) to reflect the relative proportion of emphasis given to the particular developmental levels. Most of the reflective judgment interview responses were comprised of only one or two predominant stages. However, some preservice teachers reveal a wider array of developmental stage indicators in responses. For example, a pattern of reflective judgment might be 5-4-6, which represents a predominant stage of five reasoning patterns, but some responses at stage four, and even less responses at stage six. The display of three stages (e.g., 4-5-3) occurs much less frequently than a pattern composed of two predominant stages of reasoning (e.g., 4-5-5). Table 1 provides an overview of exemplars used for the coding of reflective judgment developmental domains.

Table 1
*Examples of student responses to the PRJI.*

| Reflective judgment Domains | Stages | Preservice teachers' explanation | Major Characteristics of the stage |
|---|---|---|---|
| Pre-reflective (responses of student 1 about using food additives) | Stage 1 | I believe that sweeteners are very useful in food industry I know that it is good for the health of diabetic people | Belief is concrete and single-category |
| | Stage 2 | My grandmother is diabetic. She uses sweetener. Her doctor recommended to her to use it. It must be healthy. | Justification by agreement with authority figure |
| | Stage 3 | I read articles about aspartame and lump sugar content. Moreover, my friend made a presentation about this topic. On the other hand, I used it before, and I made observations. In the video, an expert said that 1 aspartame=25 lump sugar. | Right answers are provided by authority |
| Quasi-reflective (Responses of student 7 about using food colorings) | Stage 4 | I suspect about this issue (using food colorings). Also, some researchers about food colorings don't have certain consequences. Food colorings have not only positive effects but also negative effects. But, I watched on the TV; some doctors support that food colorings are artificial, and they have a negative effect on human health over the long term. Sometimes doctors can have a bias. I do not know. | Authority is often biased, they fit the evidence to their beliefs. |
| | Stage 5 | I was working as practicing teacher in early childhood center I made this experiment. We used green and pink food coloring. …Children wanted to drink colorful milks instead of regular milk, according to this experiment; I think that food coloring is attractive. In addition to this, I do not have an exact idea if they are dangerous or not. | Understanding that people cannot know directly, but can within a context based on subjective interpretation of evidence |
| Reflective (Responses of student 15 about climate change issue) | Stage 6 | I think some scientist exaggerating the climate data. You know; Al Gore's Nobel prize has been cancelled because his work was ruled politically biased and containing scientific errors. But personally, I experience some climate change problems, there are IPCC data. I think; the climate is changing but may be this change is a little bit exaggerating. I read lots of articles; we watched national geographic documentary in class; there are lots of protocols such as Kyoto. You know the amount of CO2 increase, sea level rise. I mean; the nature is unbalanced know. | Knowledge is based on Information from a variety of sources |
| | Stage 7 | Last week, we were responsible for presenting this issue (climate change) in the classroom. Before the presentation, I was sure about the issue I mean, there is climate change and I had no suspect. But while researching the issue, I saw there are cons also. | Subject is involved in constructing knowledge |

## Trustworthiness

The reliability of the current study was based on Lincoln and Guba (1985). To obtain valid and reliable results, three methods were used: triangulation, checking members and providing a thick description. Interview results triangulated with preservice teachers' laboratory reports. In addition, the researcher triangulation was used to establish interrater reliability. Two researchers evaluated each report in turn and graded documents using an independent reflective judgment framework. The level of agreement between the two researchers was calculated. The interrater reliability is found 90%. Triangulation improved the quality of data analysis and the accuracy of the results. The present study, based on a qualitative paradigm, thus, external validity was not the main task of researchers, but even in qualitative studies there are some issues for increasing external validity, such as transferring research results to another study (Merriam, 2009). The issue of external validity for this research is addressed through thick descriptions of participants, data collection procedures, data collection tools and, finally, data analysis procedures.

## Ethical Considerations

First, the researchers received permission from the University Ethics Committee. After receiving permission from the ethics committee, each participant was informed about the course content. All of them were explained that there would be no harm or deception. Researchers ensured that the confidentiality of data, voice recordings and laboratory reports would be protected, and preservice teachers' names would not be revealed anywhere. Preservice teachers' real names were not used in anywhere but randomly assigned numbers (Table 2).

## FINDINGS

## Food Additives Issue

Food additives were examined by five different groups with five different experiments. The experiments those were conducted at this week were; the effects of food colorings, emulsifiers and stabilizers, and sweeteners. Figure 1 shows the numbers of pre-reflective, quasi-reflective and reflective stages in the food additives experiment. It is clear in the figure that quasi-reflective stages were frequently observed across these experiments. Eleven of the 20 Pre-service teachers' responses fell into the quasi-reflective; six responses were pre-reflective, and three of them were in reflective stages
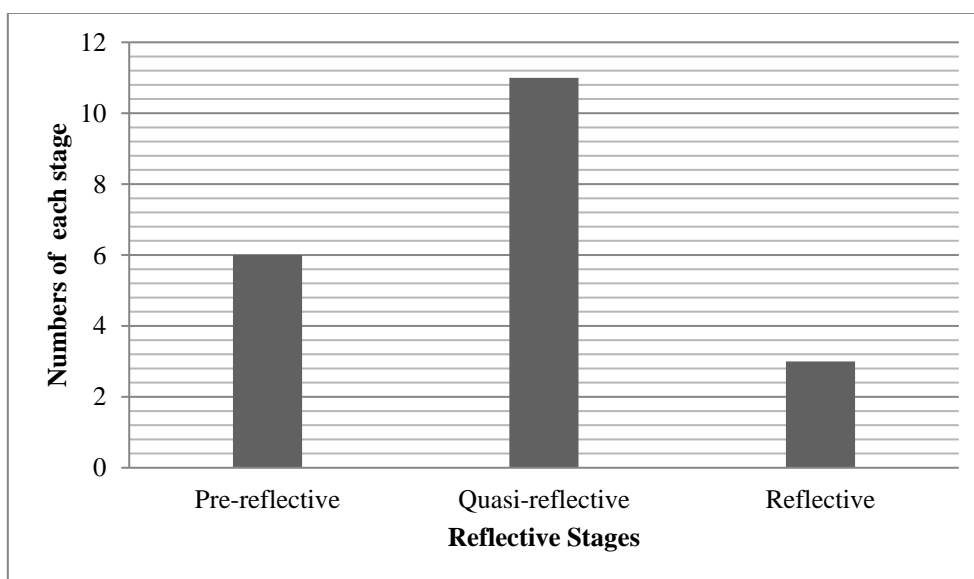


*Figure 1*. Numbers of Pre, Quasi, and Reflective Stages: Food Additives Issue

Following dialogues are direct quotations from semi-structured interviews.

*What is your opinion about food colorings?*

Foods seem enjoyable and attractive when we use food colorings those attracts consumer. Although there are some regulations for using food colorings, different bodies may have different reactions to them. They can be dangerous, or they can cause allergic reactions. (Stage 5)

106

Researchers' rationale: She has subjective interpretation for using food colorings. She evaluates both side of the issue (attractive- allergic reactions). She is uncertain about using food colorings.

*Can you ever for sure that your position is correct?*

I am not sure. I made a comment with my own experience; however, a food engineer can claim that it may cause health problems, but this is also a claim that should be supported. We cannot be sure whether the allergic reaction happened because of the additives or not. (Stage 5)

Researchers' rationale: She is aware of that she has subjective interpretation about the issue. She takes food engineers as authority, but she does not think that they are the source of right answers. She sees authorities as experts but knows that knowledge is limited to experts own perspectives.

## Alternative Energy Sources

Following the food additives issue, alternative energy sources were examined. Efficiency of solar energy, wind turbines, thermal energy, and hydroelectric power plants activities were completed at this week. Figure 2 shows the number of pre-reflective, quasi-reflective, and reflective stages appeared in the alternative energy sources experiment.
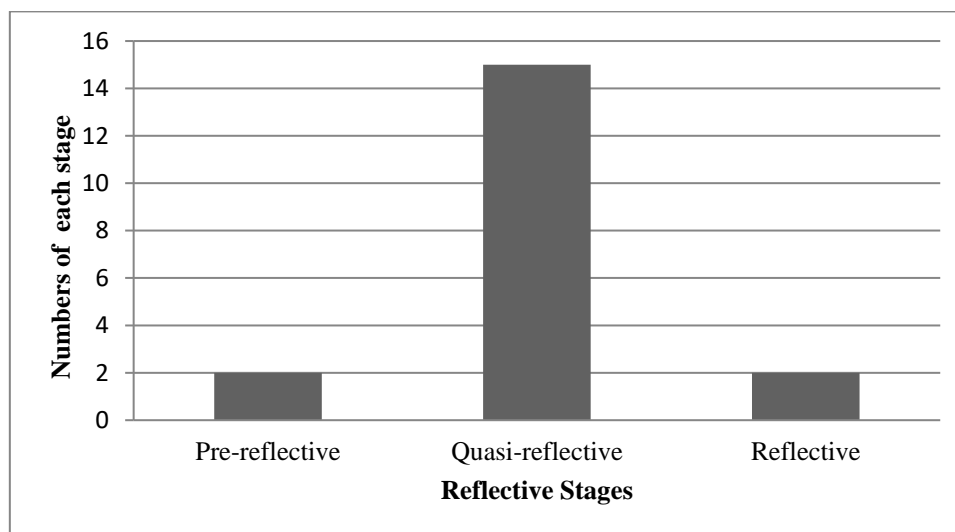


*Figure 2.* Numbers of Pre, Quasi, and Reflective Stages: for Energy Issue

The dominant stage observed in energy week was quasi-reflective stage. Fifteen quasi-reflective stage, two pre-reflective, and two were reflective stages were observed. Nineteen report were assessed at this week due to the absence of one PT.

## The Climate Change Issue

Pre-service teachers attempted to explore numerous effects of climate change which are; the effects of acid rain, greenhouse effect, and sea level rise and its effects to the environment.

Climate change was a controversial issue for participants. Some of them were sure that people caused recent climate changes; However, some of them argued that it is a normal process which has happened

107

in the past and will happen in future. Figure 3 shows the numbers of pre-reflective, quasi-reflective and reflective stages for the climate change experiments.
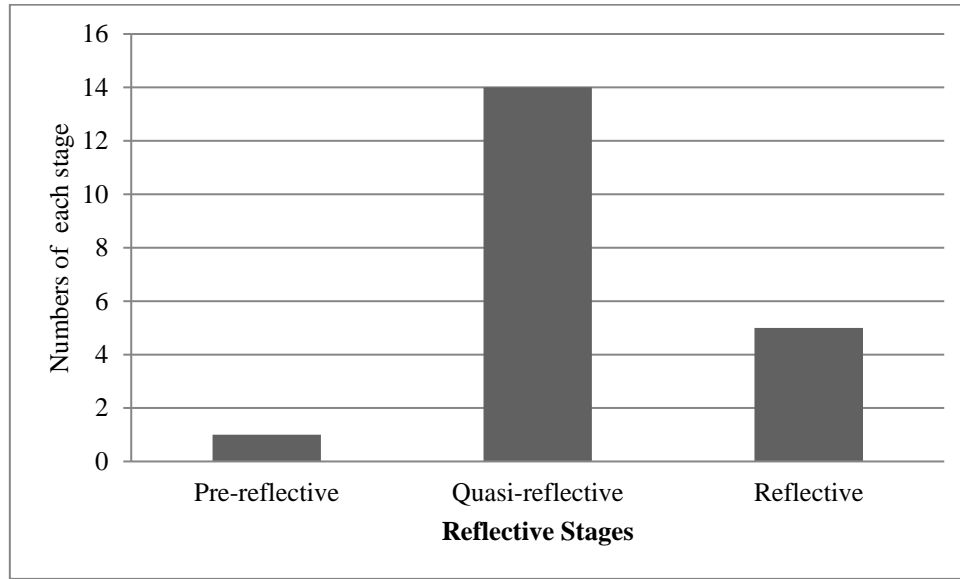


*Figure 3.* Numbers of Pre, Quasi and Reflective Stages: The Climate Change Issue

Quasi-reflective stages were frequently observed across climate change week. There were fourteen quasi-reflective stage, one pre-reflective, and five reflective stages. Some example dialogues were quoted in following paragraphs.

*What do you think about the climate change issue?*

I think some scientists are exaggerating the climate data. You know; Al Gore's Nobel prize has been cancelled because his work was ruled politically biased and containing scientific errors. But personally I experience some climate change problems, there are IPCC data. I think; the climate is changing but maybe this change is a little bit exaggerated. (Stage 6)

Researcher rationale: The student is aware of the problem. She evaluates the issue from both (negative and positive) aspects. She tries to construct her knowledge by depending on various sources.

*On what do you base your point of view?*

I read lots of articles; we watched national geographic documentaries in class; there are lots of protocols, such as Kyoto. You know the amount of $CO_2$ increase, sea level rise. I mean; the nature is unbalanced know.

Researchers' rationale: Knowledge is based on information from a variety of sources. (Articles, Documentaries, International Protocols, IPCC data, and her personal opinion)

**The Industrial Revolution**

The effects of Industrial Revolution on society were examined last week of the investigation. Soil pollution, air pollution and water pollution occurred during industrialization were tested. Figure 4 shows the numbers of pre-reflective, quasi-reflective and reflective stages appeared in the Industrial Revolution issue experiments. In this laboratory, the number of reflective judgment scores slightly increased. However, quasi reflective stage was still dominant.
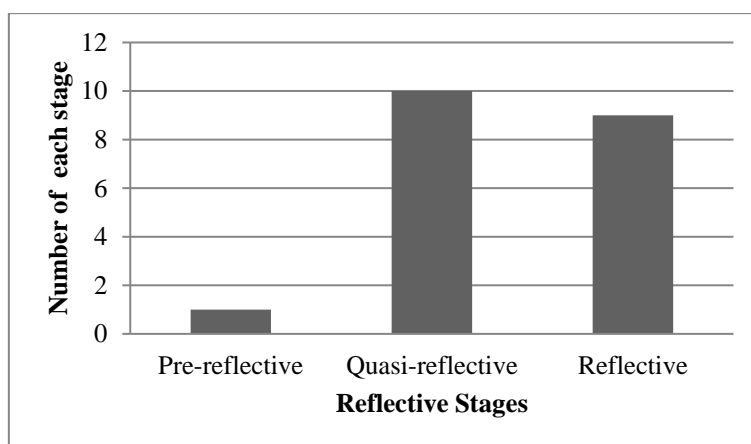
108

*Figure 4.* Numbers of Pre, Quasi and Reflective Stages: Industrial Revolution

*Three digit scores of each preservice teacher across four SSI.*

Preservice teachers' reflective judgment stages were assessed across four SSI contexts. Table 2 provides the three-digit scores of individuals' reflective judgment over the four socio-scientific issues Twenty laboratory reports and semi-structural interviews on the same issue were analyzed regularly each week and preservice teachers' written responses and oral responses were compared to triangulate the results. Results were categorized into one of the three broad domains of reflective judgment: pre-reflective, quasi-reflective and reflective.

Table 2
*Summary of Reflective judgment scores across related SSI contexts.*

| Pre-service Teacher | Food | Energy | Climate | Industrial Revolution |
|---|---|---|---|---|
| 1 | 5-5-6 | 5-5-6 | 3-4-5 | 4-4-5 |
| 2 | 1-1-2 | incomplete | 5-5-5 | 5-5-6 |
| 3 | 5-5-6 | 6-6-5 | 6-6-5 | 5-5-6 |
| 4 | 5-5-4 | 5-6-6 | 2-2-3 | 5-5-5 |
| 5 | 6-6-5 | 5-5-5 | 5-5-6 | 5-5-5 |
| 6 | 5-5-4 | 5-5-4 | 5-5-6 | 5-5-6 |
| 7 | 5-5-4 | 5-5-6 | 5-5-5 | 6-6-5 |
| 8 | 6-6-7 | 5-5-4 | 4-4-3 | 6-6-7 |
| 9 | 5-5-4 | 5-5-4 | 5-5-6 | 6-6-5 |
| 10 | 3-3-2 | 4-4-5 | 5-5-6 | 6-6-6 |
| 11 | 5-5-4 | 2-2-1 | 5-5-4 | 4-4-4 |
| 12 | 5-5-4 | 5-5-4 | 6-6-5 | 6-6-7 |
| 13 | 4-4-5 | 1-1-3 | 5-5-5 | 5-5-5 |
| 14 | 5-5-6 | 5-5-6 | 4-4-6 | 6-6-6 |
| 15 | 1-1-4 | 6-6-5 | 5-5-4 | 5-5-6 |
| 16 | 1-1-2 | 5-5-5 | 6-6-5 | 5-5-6 |
| 17 | 6-6-7 | 5-5-6 | 5-5-6 | 6-6-6 |
| 18 | 3-3-5 | 5-5-5 | 5-5-6 | 3-3-3 |
| 19 | 3-6-5 | 6-6-7 | 6-6-5 | 6-6-6 |
| 20 | 1-1-1 | 5-5-6 | 6-6-7 | 5-5-6 |

Table 2 illustrates that preservice teachers' three digit scores tended to increase from the first experiment to the last (e.g., Pre-service teacher 10 was rated 3-3-2 for the first issue and 6-6-6 for the last issue). It can be referred from Table 2 that quasi reflective stage was dominant across all weeks. For the food additives weeks three responses were labelled as pre-reflective which belonged to Pre-service teachers 2, 10, 15, 16,18 and 20. As it was explained in data analysis procedure in detail, each digit was differentially weighted (50% for the first digit, 30% for the second, 20% for the 3rd digit) to reflect the relative proportion of emphasis given to the particular developmental levels. Thus, Pre-service teacher

109

15's calculated score was [(1x0.5) + (1x0.3) + (4x0.2) = 1.6] in pre-reflective stage (i.e., the original score was 1-1-4, although 4 is in the range of quasi reflective stage, dominant stages were 1-1). For the alternative energy week only two responses labelled as pre-reflective which belonged to Pre-service teacher 11 and 13. The numbers of the pre-reflective responses decreased in following weeks. Pre-service teacher 4 and 18 were labelled as pre-reflective for climate change and the industrial revolution issue respectively. Table 3 shows the frequencies for reflective judgment stages across each week.

Table 3
*Frequencies for Reflective judgment Domains across SSI.*

| RJM Domains | Food additives | Alternative Energy | Climate change | Industrial Revolution |
|---|---|---|---|---|
| Pre-reflective | 6 | 2 | 1 | 1 |
| Quasi-reflective | 11 | 15 | 14 | 10 |
| Reflective | 3 | 2 | 5 | 9 |

As Table 3 suggest that the number of the PTS responses found in the pre-reflective domain decreased from food additives issue (n=6) to industrial revolution issue (n=1), while the number of the responses for the reflective domain increased from food additive issue (n=3) to the industrial revolution issue (n=9) throughout the semester. However, this is not true for all issues, as individuals' scores for each issue varied from context to context. For example, it can be noted that there was a sharp decrease in participant 13's reflective judgment score for the alternative energy issue (1-1-3), and a decrease in participant 4's reflective judgment score (2-2-3) for the climate change issue.

**DISCUSSION**

Much SSI research and classroom pedagogy tend to be focused on the kinds of reasoning strategies students evoke during discussions that occur in classroom settings, but generally apart from laboratory investigations. Our aim was to explore pre-service teachers' reflective judgment skills in SSI based inquiry science laboratory. Findings of the current study illustrated that majority of the Pre-service teachers' responses were in quasi-reflective stage. Undergraduate students' reflective judgment abilities have been studied in prior research (King & Kitchener, 1994; Kitchener & King, 1981; Wood, Kitchener, & Jensen, 2002) and typically, most students were observed to be in the quasi-reflective stage, as well. In the present study, results showed that at the beginning of the semester some preservice teachers were at the pre-reflective stage and very few of them were at the reflective stage. By the end of the semester, however, the number of the pre-reflective stage responses decreased, while the quasi-reflective and reflective stage responses increased. Since this shift among the stages was subtle, it suggests that changing students' reflective judgment is a gradual developmental process. This finding is in agreement with Kitchener, Lynch, Fischer, and Wood (1993) who suggest that those reflective judgment skills of individuals would tend to gradually but slowly increase over shorter periods of time. King and Kitchener (2004) highlighted that the amount of change was smallest in studies of short duration (3–4 months). King, Kitchener, and Wood (1994) also reported that charting substantial changes in individuals' reflective judgment requires longitudinal data. Zeidler, et al. (2009) also confirmed that students should be engaged in a semester long SSI course in order to see any improvement in their reflective judgment skills. Thus, based on the findings of this study and the results of the earlier studies stated above, longer exposure to classroom learning experiences regarding reflective judgment can be regarded to result in better facilitation of students obtaining higher levels of reflective judgment.

The findings of the current study enabled us to interpret the role of the context in students' reflective judgment. Although the overall RJM scores tended to increase from the first experiment to last

110

experiment (i.e., number of reflective preservice teachers increased from three to nine) there were no temporal linear increase/decrease on individual scores. Given that this research only extended over the course of one academic semester, and given the age of the college students, it is plausible that this shift has less to do with developmental factors and more to do with differential performance across contextual SSI factors. Variation of the reflective judgment across different contexts has also been addressed in previous studies (e.g., Kitchener et. al., 1993; King & Kitchener, 2002; Rest, 1979). Findings are also supportive of the research on differential reasoning patterns in varied SSI contexts for both intellectual and affective domains (Bell & Lederman, 2003; Sadler, Chambers, & Zeidler, 2004; Zeidler et al., 2013). This interpretation is consistent with Fischer's (1980) assertion that "skills in a context" (i.e., the strength of the skill) can be variable and situational, changing as circumstances, time of day, or emotional stage changes. Therefore, it is more prudent to be sensitive to how contextual differences on SSI affect performance in terms reflective judgment within restrictive developmental period of time.

It is worth noting a developmental caveat – that is, characterizing individuals as being "in" or "at" a single stage, can be misleading. Kitchener et al., (1993) attribute individuals' score variations across different contexts to the motivation or personal interest connected to a particular situation or issue. In the present study, the expressed variation in preservice teachers' reflective judgment across different socio-scientific issues could reasonably be attributed to the particular characteristics of the issues and preservice teachers' motivation to engage in a domain of interest (e.g., climate change, alternative energy, etc.).

## CONCLUSION

As it is stressed in the beginning of this paper, this research was guided from a sociocultural perspective that places precedence on thinking, reasoning and engaging the participants in science activities rather than memorization of knowledge and processes. If educators wish for school science to be meaningful to the lives of children, then it must be situated in contexts that provide opportunities for reflective, discussion and collective evidence-based decisions. Moreover, if science educators are passionate about improving science education, then the quality of the educative experience of teacher education programs must be commensurate with those aims. Students in teacher education programs need to experience teaching socio-scientific issues so that they can better equipped themselves to teach them to their future students through student-centered implementations. This study provided information in terms of how to integrate SSI within science laboratory settings. Results of the study suggests that exploring Reflective Judgment in SSI contexts is beneficial for allowing preservice teachers to actively engage in knowledge construction during classroom discussions.

Finally, it is noteworthy that if an SSI directly connected to the students' lives, it appeared to initiate and sustain students' curiosity, promote active engagement and personal involvement. This suggests that it is important to consider the contextual factors that may play important role in designing curricular experiences, whereby student are better able to engage themselves in a given issues by using their cognitive, affective, and psychomotor skills. Students' familiarity and interest in socio-scientific issues may be improved by triggering their reflective judgment skills and argumentation.

### Acknowledgement

## REFERENCES

Anderson, R. D. (2002). Reforming science teaching: What research says about inquiry. *Journal of Science Teacher Education*, *13*(1), 1-12.

Aydın, F. (2014). Ortaöğretim öğrencilerinin küresel ısınma konusundaki bilgi düzeylerinin belirlenmesi. *Turkish Journal of Education*, 3(4), 15-27. DOI: 10.19128/turje.181089

Bell, R.L., & Lederman, N. G. (2003). Understandings of the nature of science and decision making on science and technology based issues. *Science Education, 87*(3), 352-377.

Bybee, R. W. (2000). Teaching science as inquiry. In, J. Minstrel & E. H. Van Zee (Eds), *Inquiring into inquiry learning and teaching in science* (pp. 20–46). Washington, DC: AAAS.

Chistenson, N., Chang-Rundgren, S. N., & Zeidler, D.L. (2014). The relationship of discipline background to upper secondary students' argumentation of socio-scientific issues. *Research in Science Education, 44*(4), 581-601.

Crawford, B. A. (2000). Embracing the essence of inquiry: New roles for preservice teachers. *Journal of Research in Science Teaching, 37*(9), 916-937.

Cobern, W. W., Schuster, D., Adams, B., Applegate, B., Skjold, B., Undreiu, A., & Gobert, J. D. (2010). Experimental comparison of inquiry and direct instruction in science. *Research in Science & Technological Education, 28*(1), 81-96.

Dewey, J. (1938). *Logic: The theory of inquiry*. New York: Peter Lang Publishing.

Domin, D. S. (1999). A review of laboratory instruction styles. *Journal of Chemical Education, 76*(4), 543-547.

Eastwood, J. L., Sadler, T. D., Zeidler, D. L., Lewis, A., Amiri, L., & Applebaum, S. (2012). Contextualizing nature of science instruction in socioscientific issues. *International Journal of Science Education, 34*(15), 2289-2315.

Egan, K., Cant, A., & Judson, G. (Editors) (2014). *Wonder-full education: the centrality of wonder in teaching and learning across the curriculum*. New York, NY: Routledge.

Eş, H., Mercan, S. I., & Ayas, C. (2016). Türkiye için yeni bir sosyo-bilimsel tartışma: Nükleer ile yaşam. *Turkish Journal of Education*, 5(2), 47-59.

Evagorou, M., & Mauriz, B. P. (2017). Engaging elementary school pre-service teachers in modeling a socioscientific issue as a way to help them appreciate the social aspects of science. *International Journal of Education in Mathematics, Science and Technology, 5*(2), 113-123.

Fischer, K. W. (1980). A theory of cognitive development: The control and construction of hierarchies of skills. *Psychological Review, 87*(6), 477-531.

Flavell, J. (1977). *Cognitive development*. Englewood Cliffs, NJ: Prentice-Hall.

Fowler, S. R., Zeidler, D. L., & Sadler, T. D. (2009). Moral sensitivity in the context of socioscientific issues in high school science students. *International Journal of Science Teacher Education, 31*(2), 279-296.

Green, W. J., Elliott, C. & Cummins, R. H. (2004). Prompted inquiry-based learning in the introductory chemistry laboratory. *Journal of Chemical Education, 81*(2)**,** 239–241.

Kegan, R. (1982). *The evolving self*. Cambridge, MA: Harvard University Press.

Khishfe, R. (2015). A Look into students' retention of acquired nature of science understandings. *International Journal of Science Education, 37*(10), 1639-1667.

Klosterman, M. L., & Sadler, T. D. (2010). Multi-level assessment of scientific content knowledge gains associated with socioscientific issues-based instruction. *International Journal of Science Education, 32*(8), 1017-1043.

King, P. M., & Kitchener, K. S. (1994). *Developing reflective judgment: Understanding and promoting intellectual growth and critical thinking in adolescents and adults.* San Francisco, CA: Jossey- Bass.

King, P. M., & Kitchener, K. S. (2002). The reflective judgment model: Twenty years of research on epistemic cognition. In B. K. Hofer & P. R. Pintrich (Eds.), *Personal epistemology: The psychology of beliefs about knowledge and knowing,* (pp. 37-61). Mahway, NJ: Lawrence Erlbaum.

King, P. M., & Kitchener, K. S. (2004). Reflective judgment: Theory and research on the development of epistemic assumptions through adulthood. *Educational Psychologist, 39*(1), 5-18.

King, P., Kitchener, K. S., & Wood, P. K. (1994). Research on the reflective judgment model. In P. M. King & K. S. Kitchener (Eds.), *Developing reflective judgment: Understanding and promoting intellectual growth and critical thinking in adolescents and adults.* (pp 124- 188). San Francisco, CA: Jossey-Bass.

Kirschner, P. A., Sweller , J., & Clark, R. E. (2006). Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching. *Educational Psychologist, 41*(2), 75–86.

Kitchener, K. S., & King, P. M. (1981). Reflective judgment: Concepts of justification and their relationship to age and education. *Journal of Applied Developmental Psychology, 2*(2), 89-116.

112

Kitchener, K. S., Lynch, C. L., Fischer, K. W., & Wood, P. K. (1993). Developmental range of reflective judgment: The effect of contextual support and practice on developmental stage. *Developmental Psychology*, *29*(5), 893.

Kolstø, S. D. (2001). Scientific literacy for citizenship: tools for dealing with controversial socio-scientific issues. *Science Education, 85*(3), 291-310.

Lee, H., Chang, H., Choi, K., Kim, S. W., & Zeidler, D. L. (2012). Developing character and values for global citizens: Analysis of pre-service teachers' moral reasoning on socioscientific issues. *International Journal of Science Education, 34*(6), 925-953.

Lee, Y. C., & Grace, M. (2012). Students' reasoning and decision making about a socioscientific issue: A cross-context comparison. *Science Education*, *96*(5)*,* 787–807. DOI: 10.1002/sce.21021.

Lee, H., Yoo, J., Choi, K., Kim, S., Krajcik, J., Herman, B., & Zeidler, D. L. (2013). Socioscientific Issues as a Vehicle for Promoting Character and Values for Global Citizens. *International Journal of Science Education, 35*(12), 2079-2113.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry.* Beverly Hills, CA: Sage.

Liu, S. Y., Lin, C. S., & Tsai, C. C. (2011). College students' scientific epistemological views and thinking patterns in social scientific decision making. *Science Education, 95*(3), 497-517.

Maulucci, M. S. R. (2010). Invoking the sacred: reflections on the implications of Ecojustice for science education. In D. Tippins, M. Mueller, M. van Eijck & J. Adams (Eds.), *Cultural studies and environmentalism: The confluence of ecojustice, place-based (science) education, and indigenous knowledge systems* (pp. 43-49). New York: Springer.

MacFarlane, B. (2001). Developing reflective students: Evaluating the benefits of learning logs within a business ethics program. *Teaching Business Ethics, 5*(4), 375-387.

Martín-Gámez, C., & Erduran, S. (2018). Understanding argumentation about socio-scientific issues on energy: a quantitative study with primary pre-service teachers in Spain. *Research in Science & Technological Education*, 1-21.

Merriam, S. B. (2009). Qualitative *Research: a guide to design and interpretation*. San Francisco: Jossey-Bass.

National Research Council. (2012). *National science education standards*. National Academy Press, Washington, DC. 262.

Next Generation Science Education Standards (2012). *Next Generation Science Education Standards: For States, By States.* Washington, DC: The National Academies Press.

Nielsen, G. M. (2012). *The norms of answerability: Social theory between Bakhtin and Habermas.* New York, NY: SUNY Press.

Osborne, J., & Dillon, J. (2008). *Science education in Europe: Critical reflections*. London: The Nuffield Foundation.

Paris, S. G., & Ayres, L. R. (1994). *Becoming reflective students and teachers with portfolios and authentic assessment.* Washington, DC: American Psychological Association.

Perry, W. G. Jr. (1981). Cognitive and ethical growth: The making of meaning. In A.W. Chickering et al. (Eds.). *The modern American college: Responding to the new realities of diverse students and a changing society*. San Francisco: Jossey-Bass.

Piaget, J. (1974). Stages of intellectual development in the child and adolescent. In J. Piaget (Ed.). *The child and reality (A. Rosin, Trans.).* New York: Viking.

Rest, J. (1979). *Development in judging moral issues*. Minneapolis, MN: University of Minnesota Press.

Sadler, T. D. (2004). Moral and ethical dimensions of socioscientific decision-making as integral components of scientific literacy. *The Science Educator, 13*(1), 39-48.

Sadler, T. D., Chambers, F. W., & Zeidler, D. L. (2004). Student conceptualizations of the nature of science in response to a socioscientific issue. *International Journal of Science Education, 26*(4), 387-409.

Stake, R. E. (1995). *The art of case study research*. Thousand Oaks, CA: Sage Publications.

Waight, N., & Abd-El-Khalick, F. (2011). From scientific practice to high school science classrooms: Transfer of scientific technologies and realizations of authentic inquiry. *Journal of Research in Science Teaching, 48*(1), 37-70.

Wood, P.K., Kitchener, K.S., & Jensen, L. (2002). Considerations in the design and evaluation of a paper-and pencil measure of reflective thinking. In B. Hofer and P. Pintrich (Eds.), Personal epistemology: *The psychology of beliefs about knowledge and knowing.* Mahwah, NJ: Lawrence Erlbaum Associates.

Yoonsook, C., Yoo, J., Kim, S-W., Lee, H., & Zeidler, D. L. (2016). Enhancing students' communication skills in the science classroom through socioscientific issues. *International Journal of Science and Mathematics Education, 14*(1), 1-27.

Zeidler, D. L. (2014). Socioscientific issues as a curriculum emphasis: Theory, research and practice. In N. G. Lederman & S. K. Abell (Eds.), *Handbook of research on science education, Volume II* (pp. 697-726). New York, NY: Routledge.

Zeidler, D. L., Herman, B., Ruzek, M., Linder, A. & Lin, S. S. (2013). Cross-cultural epistemological orientations to socioscientific issues. *Journal of Research in Science Teaching, 50*(3), 251-283.

Zeidler, D.L., & Kahn, S. (2014). *It's debatable: Using socioscientific issues to develop scientific literacy*, K-12. Arlington, VA: National Science Teachers Association Press.

Zeidler, D. L., & Sadler, T. D. (2008). The role of moral reasoning in argumentation: Conscience, character and care. In S. Erduran & M. Pilar Jimenez-Aleixandre (Eds.), Argumentation *in science education: Perspectives from classroom-based research* (pp. 201-216). The Netherlands: Springer Press.

Zeidler, D. L., Sadler, T. D., Applebaum, S., & Callahan, B. E. (2009). Advancing reflective Judgment through socioscientific issues. *Journal of Research in Science Teaching, 46*(1), 74-101.

Zeidler, D. L., Sadler, T. D., Simmons, M. L., & Howes, E. V. (2005). Beyond STS: a research-based framework for socioscientific issues education. *Science Education, 89*(3), 357-377.

## TÜRKÇE GENİŞLETİLMİŞ ÖZET

Bilim ve teknoloji çağımızın vazgeçilmez unsurlarındandır. 21. Yüzyıl bilim ve teknoloji alanındaki hızlı değişim/gelişimler ile anılmaktadır. Bu gelişmelerin insan hayatını kolaylaştırdığı, seri üretime katkı sağladığı, ulaşım, iletişim, yeme-içme, giyim gibi birçok alana etki ettiği bilinmektedir. Ancak bu gelişmelerin direkt ve dolaylı etkilerinin her zaman toplum yararına olduğu söylenemez. Bilim ve teknolojideki bu gelişmelerin toplum hayatına olan olumlu olumsuz etkileri sosyo-bilimsel konular (SBK) bağlamında incelenmektedir. Sosyo-bilimsel konuların bireylerin araştırma, inceleme ve bilgiyi aktif olarak değerlendirmelerine imkân tanıdığı ve bu sayede de fen okuryazarlığına katkı sağladığı bilinmektedir. Fen eğitiminin öncelikli amaçlarından biri de fen okuryazarı bireyler yetiştirmektir. Bu bireyler fennin günlük hayattaki yansımalarını bilir, fen ve teknolojinin avantaj ve dezavantajlarını kavrar ve bilim temelli sorunları değerlendirirken çok yönlü ele alırlar. Bireylerin fen okuryazarı olarak yetişmelerini sağlamak amacı ile önerilen yöntemlerden biri de derslerde sosyo-bilimsel konulara yer verilmesidir. Bu konular sayesinde öğrencilerin bilim, teknolojinin ve toplum arasındaki etkileşimi çok yönlü ele almalarını sağlanmakta, etkileşimleri etik ve ahlaki açılardan değerlendirmelerine olanak verilmektedir. Bu noktalardan hareketle bu çalışmada öğretmen adaylarının SBK temelli fen öğretiminde laboratuvar uygulamaları dersindeki yansıtıcı muhakeme becerilerini incelemektir.

Çalışma nitel durum çalışmadır. Katılımcılar, araştırma odaklı bir devlet üniversitesinde öğrenim görmekte olan 20 öğretmen adayından oluşmaktadır. Öğretmen adaylarının yansıtıcı muhakeme becerilerini ortaya çıkarmak amacı ile dört farklı sosyo-bilimsel konu seçilmiştir. Bu konular; gıda katkı maddeleri, alternatif enerji kaynakları, iklim değişimi ve endüstri devrimidir. Her bir konu dört saatlik ders süresince tartışılmış, tartışma sonunda öğretmen adaylarından konu ile ilgili araştırmak istedikleri bir problem cümlesi belirlemeleri istenmiştir. Öğretmen adayları kendi belirledikleri araştırma problemlerini kendi tasarladıkları deneylerle cevaplamaya çalışmışlardır. Deney raporları içerisine entegre edilen 7 adet "Yansıtıcı Muhakeme Modeli Mülakat Soruları" (Prototypic Reflective Judgment Interview Questions) ile öğretmen adaylarının yansıtıcı muhakeme becerileri ortaya çıkartılmaya çalışılmıştır. Bu sorular standart olup (örnek: ….. hakkında ne düşünüyorsun? Bu düşünceye nasıl eriştin? Bu bakış açısını neye dayandırırsın? Bu konudaki tutumunuzun doğruluğundan emin olabilir misin? Bu tür tartışmalı konularda iki kişi birbirine zıt fikirlere sahipse bir tanesi doğru diğeri yanlış diyebilir miyiz? vb.) her deney raporu sonuna eklenmiştir. Deney raporlarına verilen yazılı cevaplar, yarı yapılandırılmış görüşmelerle teyit edilerek veri çeşitlemesi yapılmıştır.

Veriler King ve Kitchener (1994) tarafından önerilen Reflektif Muhakeme Modeli teorik çerçevesi referans alınarak betimsel olarak analiz edilmiştir. Bu modele göre muhakeme becerileri üç seviyede ele alınmıştır. Birinci seviye (pre-reflective) basit düzey muhakemelere karşılık gelmektedir. Bu seviye için puan aralığı 1-3 arasındadır. İkinci seviye (quasi-reflective) orta düzey yansıtıcı muhakemelere karşılık gelmektedir. Orta düzey muhakemeye sahip bireyler birinci düzeydekiler kadar değişmez yargılara sahip değillerdir ancak üçüncü düzeydekiler kadar üst düzey muhakeme becerisine de sahip değildirler. Bu seviye için puan aralığı 4-5 arasındadır. Son seviye (reflective) tam anlamı ile yansıtıcı muhakeme becerilerine sahip bireylerin özelliklerini içermektedir. Bu seviye için puan aralığı 6 ve 7'dir. Teorik çerçeve dikkatle incelendiğinde bireylerin tek bir seviyede sabit görüşler bildirmelerinin mümkün olmadığı, farklı konularda farklı seviyelere ait puan alabilecekleri görülmektedir. Bu yüzden analiz yapılırken öğretmen adaylarının her bir soruya verdikleri cevaplar bağımsız olarak incelenmiş ve puanlanmıştır. Son puanlar hesaplanırken en sık karşılaşılan üç puan ard arda yazılmış (örn. 1-1-4) ilk puanın yüzde ellisi, ikinci puanın yüzde otuzu, son puanın yüzde yirmisi alınarak hesaplama yapılmıştır ve öğretmen adayları bu son puana göre 1. Seviye, 2. Seviye ya da 3. Seviye muhakeme becerisine sahiptir diye belirtilmiştir.

Gıda katkı maddeleri konusunda verilen cevaplar incelendiğinde 1. Seviyede altı, 2. Seviyede 11, 3. Seviyede ise üç öğretmen adayı olduğu görülmüştür. Alternatif enerji konusu için bu değerler sırası ile iki, 15 ve ikidir. İklim değişikliği konusu için bir, 14 ve beş; Endüstri devrimi konusunda ise bir, 10 ve

115

dokuz bulunmuştur. Bu sonuçlara göre öğretmen adaylarının Yansıtıcı Muhakeme Modeli puanlarının birinci deneyden son deneye doğru gelişme gösterdiği görülmektedir. Sonuçlar incelendiğinde 3. Seviyedeki birey sayısı 3 ten 9'a yükselirken, 1. Seviyedeki birey sayısının 6 dan 1'e düştüğü görülmektedir.

Genel olarak dört konuda da 2. seviye muhakeme (quasi-reflective) becerisine sahip bireylerin fazla olduğu görülmektedir. Bu bulgu alan yazında da lisans öğrencilerinin genel olarak sahip olduğu yansıtıcı muhakeme düzeyi olarak görülmektedir. King ve Kitchener (1994) yapmış oldukları 20 yıllık çalışmanın sonucunda lisans öğrencilerinin genelinin 2. Seviye (quasi-reflective) yansıtıcı muhakeme yaptıklarını bulmuşlardır. Özet olarak, sosyo-bilimsel konular öğretmen adaylarının yansıtıcı muhakeme becerilerini ortaya çıkarma konusunda faydalı olmuştur.

116