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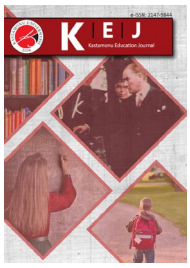

|Araştırma Makalesi / Research Article|

The Analysis of Instructional Behavıor of Inclusive Classroom Teachers in Science Classes

Kaynaştırma Sınıfı Öğretmenlerinin Fen Bilimleri Derslerindeki Öğretim Davranışlarının İncelenmesi [1]

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Keywords

1. Inclusive Education
2. Students with Visual İmpairments
3. Science Classes
4. Instructional Behaviors
5. Effective Teaching

Anahtar Kelimeler

1. Kaynaştırma
2. Görme Yetersizliği Olan Öğrenciler
3. Fen Bilimleri Dersi
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Abstract

Purpose: The present study aimed to describe the instructional behaviors of the inclusive classroom teachers (the provided learning opportunities, whether the teachers conducted a clear and comprehensible instruction, and the inclusion of the students with visual impairments in instructional activities) in science classes attended by students with visual impairments.

Model: The present study was conducted with Single Screening Model. The study participants included 11 classroom teachers employed in primary schools located in the central districts of Ankara Province and 11 visually impaired students who attended their classes. The study data were collected with videos recorded in science classes instructed in the participating teachers' classrooms. The study data were analyzed with the "Instructional Behavior Assessment Tool (IBAT)" developed.

Findings: The study data demonstrated that the instructional behavior of the participating teachers was inadequate based on provided learning opportunities for the students, clear and comprehensive instruction, and inclusion of the students with visual impairment in educational activities

Öz

Çalışmanın Amacı: Araştırmanın amacı, görme yetersizliği olan öğrencilerin kaynaştırma eğitimine devam ettiği sınıflardaki öğretmenlerin fen bilimleri derslerindeki öğretim davranışlarını (öğrencilere sundukları öğrenme fırsatları, öğrencilere öğretimi açık ve anlaşılır bir biçimde sunup sunmadıkları ve görme yetersizliği olan öğrencileri bu derslerde gerçekleştirilen öğretim etkinliklerine katmaları bakımından) betimlemektir.

Materyal ve Yöntem: Bu amaç doğrultusunda araştırma modeli olarak tarama modellerinden Tekil Tarama Modeli kullanılmıştır. Araştırmanın katılımcıları, Ankara İli'ne bağlı merkez ilçelerdeki ilkokullarda görev yapan 11 sınıf öğretmeni ve bu öğretmenlerin sınıflarında eğitimine devam eden 11 görme yetersizliği olan öğrencidir. Verilerinin toplanması için veri toplama aracı olarak, sınıf öğretmenlerinin fen bilimleri derslerinde gerçekleştirilen video kayıtları ve toplanan video kayıtlarının değerlendirilmesi için geliştirilen "Öğretim Davranışları Değerlendirme Aracı (ÖDDA)" kullanılmıştır.

Bulgular: Araştırma bulguları, araştırmaya katılan öğretmenlerin öğretim davranışlarının; öğrencilere sundukları öğrenme fırsatları, öğrencilere açık ve anlaşılır bir öğretim sunmaları ve görme yetersizliği olan öğrencileri öğretim etkinliklerine katmaları bakımından yetersiz olduğunu göstermektedir.

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INTRODUCTION

Visual impairment is a rare disability (Kirk, Gallagher, Coleman, 2017; Tuncer, 2011). Compared to their peers with typical development, the limited use of observation and imitation opportunities by individuals with visual impairment due to their limited eyesight or the lack of it significantly limits their learning through observation and imitation (Tuncer, 2011). This may cause an individual with visual impairment to depend on others to learn about the environment. In the absence of special arrangements during preschool and school-age, children with visual impairment may experience cognitive and social development problems, and their learning skills and personal aptitudes may not develop (Bailey and Wning; 1994, McAlliste and Gray; 2007). In addition to all these developmental and disciplinary areas, one of the areas where individuals with visual disabilities may experience problems in science education (Durre, 2010).

Since the science class content includes complex concepts with a structure that requires the use of eyesight, such as experiments, observation, classification, communication, measurement, and prediction, it could be rather difficult for students with visual impairment to learn science class topics (Fraser and Maguvhe, 2008; Kumar, Ramasamy, and Stefanich, 2001; Penrod, Haley and Matheson, 2006; Schleppenbach, 1996). Durre (2010) explained the limitations of blind students in the science class. These limitations are the examples given only verbally; it takes a lot of time for students to detect visual elements such as graphic maps in printed materials, and teachers are able to study without considering the limitations of the tools (Braille tools, computers, etc.) used by visually impaired students to make notes. The lack of systematic instruction to eliminate these limitations could result in these individuals' unavailability of science classes (Kumar, Ramasamy, and Stefanich, 2001).

In a study conducted by the American Research Institute in 2002, it was reported that the performances of the individuals with sensory loss (visual or auditory) in scientific topics were alarmingly lower when compared to their peers (American Research Institute, cited in Penrod, Haley, and Matheson, 2006). In a similar study, Akkuş (2006) compared the achievement levels of elementary school students with and without eyesight in Mathematics and Science classes in Turkey and concluded that individuals with visual impairment exhibited lower achievement levels when compared to their peers. On the other hand, research has shown that students with visual impairment need physical environment adaptations (seating arrangement, access to materials, lighting, etc.), educational material adaptations (Braille printed materials, etc.), support staff (laboratory assistant, etc.), and instructional adaptations (explicit teaching, alternating assessment technique, effective student-teacher interaction, etc.) to better benefit from a science education (Şahin and Yörek, 2009; Zorluoğlu and Sözbilir, 2017). In this context, science teaching visually impaired students should be capable of meeting different educational needs and maximizing the level of education performance. One of the key principles of educational arrangement for visually impaired students is the setting of the least educational environment.

The inclusion, developed based on the least restrictive educational environment concept, was clearly defined mainly in decree no. Five hundred seventy-three enacted in 1997 in Turkey, and the final form was published in the Special Education Services Directive. The expected benefits of inclusive applications for students with disabilities depend on the quality and adequacy of the supportive special education services (Diken and Batu, 2010; Kargın, 2004; Sucuoğlu and Kargın, 2010). Inclusive education without special education services means bringing together students with special needs and typically developing peers only physically (Kargın, 2004).

It is not possible for inclusive environments that allow only physical equity to adequately meet the needs of students with disabilities (environmental, material, and educational needs). Effective inclusive practices could only lead to expected benefits with the collaboration of experts from various disciplines and systematic planning.

Specific studies in Turkey demonstrated the effectiveness of special education services support for teachers in inclusive classrooms (Duman-Sever, 2007; Timuçin, 2008; Ünal, 2008). However, there is no data on the educational support services available for special education, the responsible parties, and the duration of these services in inclusive classes in Turkey. Furthermore, the findings of the studies where the views of preschool, classroom, and field teachers on inclusive practices are determined revealed that teachers considered themselves inadequate or required training on inclusive practices (Akdemir-Okta, 2008; Atay, 1995; Babaoğlan & Yılmaz, 2010; Battal, 2007; Batu, Kırcaali-İftar & Uzuner, 2004; Bilen, 2007; Bozarslan-Malkoç, 2010; Ertunç, 2008; Gök, 2009; Kaya, 2003; Kaya, 2005; Sanır, 2009; Sart, Ala, Yazlık, & Yılmaz, 2010; Şekercioğlu, 2010; Özengi, 2009), stated that they did not receive related training (Akdemir-Okta, 2008; Aslan-Aydoğan, 2003; Kaya, 2005) and they could not get adequate support from the available experts (Sanır,2009; Saraç and Çolak, 2012; Kaya, 2005), there were no special education teachers at the school (Batu, 1998; Bilen, 2007), the physical properties of inclusive classrooms were inadequate (Bilen, 2007; Kaya, 2005), and the inclusive class sizes were not adequate (Bilen, 2007). These findings suggested that special education support and services were inadequate in Turkey.

The facts mentioned above on inclusive education raise several questions: Are the students affected by disabilities adequately involved in the instructional activities in inclusive classrooms? Could classroom teachers implement adequate methods and techniques that would allow the involvement of the students with disabilities in instructional activities? These and similar questions indicate the nature of the teachers' instructional behavior. Variables such as the teachers' employment of the class hours effectively, their focus on the students during the class hours, the management of teacher-student interaction, and their success in the implementation of the instruction and evaluation stages would determine the quality of the teachers' instructional behavior.

Repeated studies on educational practices in schools demonstrated that instructive behavior exhibited by teachers had a significant impact on student learning (Mastropieri and Scruggs, 2002). Thus, the authors compiled the findings obtained in various studies based on different theories (behavioral, cognitive, social learning, etc.) and converted teacher behavior that improved student achievements into various instruction principles (Borich, 2018; Ellis and Worthington, 1994; Kindswatter, Wilen and Isher, 1988). Teacher behavior, which could be described as the inclusion of practices that improve student achievement and social behavior (Mastropieri and Scrugss, 2002), were categorized into various groups.

Repetitive studies on educational practices in schools demonstrated that the teachers' instructional behavior makes a significant difference on student learning (Mastropieri & Scruggs, 2002). Thus, previous studies compiled the findings obtained based on various theories (e.g., behaviorist, cognitive, social learning, etc.) and transformed teacher behavior that improved student achievement into different instructional principles (Borich, 2018; Ellis & Worthington, 1994; Kindswatter, Wilen, & Isher, 1988). Teacher behavior that could be described as the inclusion of practices that improve student achievements and social behavior (Mastropieri & Scrugss, 2002) has been categorized as follows: (a) student engagement in learning, (b) achievement rate, (c) providing learning opportunities (opportunities to learn), (d) questioning, (e) providing feedback, (f) guided and independent practices, (g) daily, weekly and monthly reviews, and (h) evaluations (Borich, 2018; Ellis et al. Worthington, 1994; Kindswatter, Wilen, and Isher, 1988; Mastropieri and Scruggs, 2002).

Teachers' demonstration of teaching behavior will generally be a factor that increases the quality of education, which will produce valuable results in responding to the needs of students with special needs in classrooms. However, the data obtained in studies that investigated the teacher practices and the environmental and behavioral variables that exist for students with special needs in the inclusion environment in Turkey demonstrated that there were differences in the rules adopted in these classes and further applications that support the instructional behavior of teachers in inclusion classes are required (Akalın, 2007; Sucuoğlu, Akalın and Sazak-Pınar 2008; Sucuoğlu, Akalın and Sazak-Pınar, 2010, Vural and Yıkmış, 2008). There is no study in the literature on what teachers of students with visual impairment have done in educational or environmental regulations and how these students benefit from this instruction. The direct monitoring of the process in inclusive classes will help make more accurate decisions in work carried out to identify problems and requirements. Knowing the **structure** and nature of teachers' teaching behavior in inclusive classes will help determine the type, content**,** and quantity of support services that classes require. This study aimed to describe the instructional behaviors of the inclusive classroom teachers (the provided learning opportunities, whether the teachers conducted a clear and comprehensible instruction, and the inclusion of the students with visual impairments in instructional activities) in science classes attended by students with visual impairments.

METHOD

The Research Model

The current study analyzed various instructional behavior of the inclusive classroom teachers during the class hour. Thus, multiple variables were observed during the instructions. The present study was conducted with the single screening approach. In this approach, the event, item, individual, group, institution, topic, etc., associated with the phenomenon are described individually. Since the study was limited to the science class, a single survey model employed the "sectioning" approach (Karasar, 2009).

Participants

Official approval was obtained from the Ministry of National Education to reach the participants. Then, to determine the fourth and fifth-grade students with visual disabilities who attended Yenimahalle, Keçiören, Mamak, Altındağ, Sincan, Çankaya, and Etimesgut Counseling and Research Centers (CRC) during the 2012-2013 academic year in Ankara province, the authors contacted the CRCs. During the meetings, it was determined that no students with visual disabilities attended these schools' fourth and fifth grades. The efforts to identify the potential participants started in September 2012; however, it took about two months to access the student data in other CRCs due to the lack of records and archives in CRCs. After the data were obtained, all schools were contacted or visited to confirm the students who attended these schools. Because, in the meetings conducted with the schools, it was determined that about 15 students had changed schools.

After the student lists were clarified, the study content and significance were communicated in face-to-face meetings conducted with school administration and teachers in these schools. Their approval was requested to conduct the study. Few teachers agreed to participate since the school administrations or teachers opposed recording the classes or their negative attitudes towards the study. These meetings were conducted in about three months. The author contacted the administrators and teachers in 48 schools while identifying the participants, and 11 classroom teachers volunteered to participate in the study. The demographics of the classroom teachers who participated in the study are presented in Table 1.

Table 1. Teacher demographics

Teacher	Gender	Professional Experience (Year)
1	Female	12
2	Female	16
3	Female	15
4	Female	20
5	Female	31
6	Female	9
7	Female	16
8	Female	14
9	Female	33
10	Female	17
11	Male	12

Table 1 is examined; 10 of the teachers are female, one is male, and the professional experience of all teachers varies between nine and 33 years. In Table 2, the demographic information of the visually impaired students in the teachers' classrooms is presented.

Table 2. Demographic information of the students with visual impairment.

Student	Grade	Gender	Legal Diagnosis	Educational Diagnosis
1	4th grade	Male	Oculacutaneous Albinism + Nystagmus	Low Vision
2	5th grade	Male	Other disorders of the eyeball + Nystagmus	Low Vision
3	5th grade	Female	Psödofak + AKL + Nistagmus	Low Vision
4	5th grade	Male	Nystagmus + Other irregular eye movements + Strabismus	Low Vision
5	5th grade	Male	Okulokutanoz Albinizm	Low Vision
6	4th grade	Female	Congenital cataract aphakic maculopathy	Low Vision
7	5th grade	Female	Hereditary retinal dystrophy	Low Vision
8	4th grade	Male	Optic atrophy	Low Vision
9	4th grade	Male	Optic nerve coloboma + Iris coloboma + Esotropia + Hycrophthalmia + Astigmatism	Low Vision
10	4th grade	Female	Blindness in one eye + Aphakia	Low Vision
11	4th grade	Male	Hereditary retinal dystrophy	Low Vision

Table 2 is examined, six of the students with visual impairment in the classrooms of the teachers participating in the research are girls, and five are boys. Although the legal diagnoses of these students are different, the educational diagnosis of all of them is low vision.

Data Collection Instruments

The research used video recordings and the "Instructional Behavior Assessment Tool (IBAT)" to collect the study data.

The development of the IBAT

The IBAT includes two sections. The first section aims to analyze the learning opportunities offered by the classroom teachers to all students in the science class. Teacher behavior is explored in this section based on

1. The time used for the instruction of academic skills, and
2. Instructional behavior for clear and comprehensive learning:
    a. Presentation of objectives and content before the instruction,
    b. Brief review of prior student knowledge and skills,
    c. Providing corrective and confirmative feedback during this process,
    d. Presentation of new instructional material in steps that would allow the students to examine and practice these materials,
    e. Allowing the students adequate time to react to instructional activities
    f. Providing corrective and confirmative feedback during instruction,
    g. Evaluation of the student comprehension and the outcomes of the instructional activities.

The following teacher behavior is analyzed in the second section of the instrument:

1. The total time spent to include the students with visual disabilities actively in the instruction of academic skills,
2. The total time spent on the academic interaction between the classroom teacher and students with visual disabilities,
3. Instructional behavior to include students with visual disabilities in instructional activities:
    a. Inclusion of students with visual disabilities in the brief review of prior student knowledge and skills,
    b. Providing corrective and confirmative feedback to the reactions of students with visual disabilities during this process,

c. Presentation of new instructional material in steps that would allow the students with visual disabilities to examine and practice these materials
d. Providing corrective and confirmative feedback to students with visual disabilities during the instruction activities, and
e. Control of the student comprehension and inclusion of the students with visual disabilities in the evaluation of the outcomes of the instructional activities

The sections of the IBAT that aimed to determine the time spent were developed in time recording format, and the second section on the instructional behavior of the classroom teachers in science classes and the inclusion of students with visual impairment in the instruction process was developed in rubric format. The rubric development process proposed in the literature was reviewed to develop the rubric section of the data collection instrument, and adequate steps were adopted (Kan, 2007, Kutlu, Doğan & Karakaya, 2010; Stevens & Levi, 2005). During the development of the rubric sections of the IBAT, the primary resources for effective instructional practices, namely Anderson (1989), Carroll (1989), Borich (2004), Ellis and Worthington (1994), Jacobsen, Eggen, and Kauchak (2002), Kindswatter, Wilen and Isher, (1988), Mastropieri and Scruggs (2002), Orlich Harder, Callahan, Trevisan and Brown (2004), and Ornstein and Lasley II (2004) were used to determine the performance criteria.

The Validity and Reliability of the IBAT

The validity of the IBAT was determined based on a literature review and expert opinion on the rubric content, structure, and criteria. Expert opinion was provided by an associate professor in special education with previous studies on academic skills instruction. Based on the expert opinion, the IBAT was revised and finalized after the second tour of views of the same expert.

Inter-observer reliability was measured to determine the reliability of the time records in the first section of the IBAT. Thirty percent of the collected data was selected randomly, and the data were reviewed by a doctoral candidate research assistant to manage the inter-observed reliability data. Inter-observer reliability was calculated with the formula “small number/large number x 100” (Kırcaali İftar & Tekin, 1997). The inter-observer reliability coefficient for the data on the first section item “time allocated for the instruction of academic skills to students” was 99% on the item “the time where the students with visual impairment participated in the instruction of academic skills,” it was 93%, and on the item “the time where the teacher and the students with visual impairment interacted,” it was 97%.

To test the reliability of the scores obtained with the rubrics in the second section of the IBAT, the reliability was calculated with both inter-observer and intra-observer agreement methods. In both inter-observer and intra-observer reliability tests, Cohen's Kappa agreement coefficient was calculated for each rubric item score (Viera and Garret, 2005). The calculations revealed that the inter-observer reliability score for the section on the instructional behavior of the classroom teachers for clear and comprehensible instruction in science class was .73, which was interpreted as “significant agreement.” It was determined that the intra-observed reliability score was. 86. This coefficient was interpreted as “almost perfect agreement.” The inter-observer reliability score for the section on the teachers’ instructional behavior about the inclusion of the students with visual impairment in science classes was .73, and the intra-observer reliability for the same section was .80. These values were interpreted as “significant agreement.”

Data Collection

The video was recorded with the intermittent observation technique. In intermittent observations, the events or phenomena are observed at a specified time interval. The researcher determines the observation interval and duration based on the aim of the research (Karasar, 2009). The present study employed the intermittent observation technique since the research problem was limited to the science class. In the video-recorded classrooms, the video camera was placed to center the visually impaired student and include the rest of the classroom as much as possible during the science classes. All science classes were recorded with a camera. The classroom teachers were told not to alter their instruction before the class and follow their previous methods as closely as possible. They considered that the presence of a camera would affect the teacher and student behavior in the classroom, two or three classes were recorded in each classroom. The last recording was used in the analysis.

Data Analysis

The data collected to describe the instructional behavior of the inclusive classroom teachers in science classes attended by students with visual impairment are presented in the form of tables in the following findings section.

FINDINGS

The Findings and Comments on Instructional Behavior of Classroom Teachers

In this section, findings, and comments on the instructional behavior of inclusive classroom teachers that a) aimed to provide learning opportunities for the students, b) behavior to provide clear and comprehensive instruction, and c) behavior aimed to involve the students with visual impairments in instructional activities are presented.

Instructional Behavior that Aims to Provide Learning Opportunities for the All Students

Table 3. Instructional behavior that aims to provide learning opportunities for all students

Teacher	Class hour (min)	Engaged time in the instruction of academic skills		The time when students with visual disabilities actively participated in the instruction of academic skills		Engaged time in the academic interaction of classroom teachers and students with visual disabilities	
		Minutes	Percentage (%)	Minutes	Percentage (%)	Minutes	Percentage (%)
1	*18:20	*10:39	58,09	*05:51	*31.09	0:42	3.81
2	31:23	22:07	70.47	20:23	64.94	0:28	1.48
3	29:43	23:42	79.75	19:15	64.77	0:16	0.89
4	27:26	23:43	**86.45	12:33	45.74	2:05	**7.59
5	**38:32	24:40	64.01	13:02	33.82	0:15	0.64
6	33:22	24:50	75.25	**22:42	68.78	0:04	0.2
7	32:52	23:52	72.43	17:07	51.94	**2:26	7.38
8	29:23	24:25	84.19	16:01	55.22	0:10	0.57
9	32:18	21:39	67.02	14:14	44.06	0	*0
10	36:19	16:09	*44.46	12:09	33.45	0:14	0.64
11	32:18	**26:20	81.52	22:37	**70.02	0:53	2.73

(*) Lowest time/percentage (**) Highest time/percentage

As seen in Table 3, the duration of the science class was 35 minutes or more only in the classes of two teachers, while it was between 18:20 and 32:18 in the classes of nine teachers.

Three participating teachers engaged time to instruction academic skills in the science class was over 80%, while it varied between 44.46% and 79.75 for eight teachers.

The time where the students with visual disabilities actively participated in the academic skill instruction activities in the science class was 60% in the classes of four participating teachers, and it was between 31.09% and 55.22% in the classes of seven teachers.

The time devoted to the academic interaction between classroom teachers and students with visual impairments in science class was over 7% in the classes of only two teachers, while the same rate was between 0% and 3.81% in the classes of nine teachers.

Teacher behavior that aimed clear and comprehensive instruction

Table 4. Teacher behavior that aimed clear and comprehensive instruction

Teacher	Instructional behavior scale score (Maximum: 3)							Total Score (Maximum:21)
	B-1	B-2	B-3	B-4	B-5	B-6	B-7	
1	0	0	0	0	1	0	0	*1
2	0	0	0	0	1	0	0	*1
3	0	0	0	0	1	2	0	3
4	0	2	3	0	2	2	0	9
5	1	0	0	0	1	1	0	3
6	1	0	0	2	3	3	1	**10
7	0	0	0	0	3	3	2	8
8	0	0	0	0	2	3	0	5
9	0	0	0	0	2	1	0	3
10	0	0	0	0	2	1	0	3
11	3	0	0	0	3	3	0	9

(*) The lowest score (**) Highest score

B-1: Presentation of objectives and content before the instruction.
B-2: Brief review of prior student knowledge and skills.
B-3: Providing corrective and/or confirmative feedback during this process.
B-4: Presentation of new instructional material in steps that would allow the students to examine and practice these materials.
B-5: Allowing the students adequate time to react to instructional activities.
B-6: Providing corrective and/or confirmative feedback during instruction.
B-7: Evaluation of the student comprehension and the outcomes of the instructional activities.

As seen in Table 4, the total instruction behavior scale scores of the classroom teachers on clear and comprehensive instruction in science class were between one and 10. Furthermore, the findings demonstrated that ten teachers did not present the objective and content before the instruction. In contrast, one teacher presented the objective and content with only one sentence (B-1). The findings demonstrated that only one teacher reviewed the students' prior knowledge/skills before instruction (B-2), while other teachers neglected this stage.

The findings on the feedback provided during the activities to mobilize prior knowledge (B-3) indicated that only one classroom teacher provided confirmatory and explanatory feedback to student responses during the above-mentioned short review on prior knowledge/skills, while others did nothing. They do not include review practices or give any confirmatory and/or explanatory feedback. Findings on the review of new material (B-4) demonstrated that one classroom teacher introduced the material after instructing the material or introduced the material briefly without providing details and presenting the material to the students from a distance, while other teachers either did not use any materials or conducted the instruction without presenting the material.

The findings presented in Table 4 demonstrated that four tries allowed the reaction of most students for only a few objectives, while other teachers allowed the response of only a few students on specific instructional goals. The study findings demonstrated that three teachers provided only confirmatory feedback to student reactions (B-6); however, feedback was quite late when compared to the time of the response, and two teachers did not provide any confirmatory or explanatory feedback. Finally, the study findings demonstrated that one classroom teacher evaluated only a few students immediately after the instruction activity (B-7), while one teacher only evaluated a few student reactions after the instruction activity and conducted other applications, while nine teachers did not evaluate student reactions.

Instructional behavior that aimed the inclusion of students with visual disabilities in instructional activities

Table 5. Instructional classroom teacher behavior that aimed the inclusion of students with visual disabilities in instructional activities

Teacher	Instructional behavior scale scores (Maximum: 4)								Total Score (Maximum:32)
	C-1	C-2/a	C-2/b	C-3	C-4	C-5/a	C-5/b	C-6	
1	0	0	0	0	0	0	0	0	*0
2	0	0	0	0	0	0	0	0	*0
3	0	0	0	0	0	0	0	0	*0
4	2	2	1	0	2	2	1	0	**10
5	0	0	0	0	0	0	0	0	*0
6	0	0	0	0	0	0	0	1	1
7	0	0	0	0	2	1	1	2	6
8	0	0	0	0	2	2	1	0	5
9	0	0	0	0	0	0	0	0	*0
10	0	0	0	0	2	2	2	0	4
11	0	0	0	0	2	3	1	0	6

(*) The lowest score (**) Highest score

C-1: Inclusion of students with visual disabilities in the brief review of prior student knowledge and skills
C-2/a: Providing corrective feedback to students' reactions with visual disabilities during this process.
C-2/b: Providing explanatory feedback on students' reactions with visual disabilities during this process.
C-3: Presentation of new instructional material in steps that would allow the students with visual disabilities to examine and practice these materials.
C-4: Allowing reactions of the students with visual disabilities during instructional activities.
C-5/a: Providing corrective feedback to students with visual disabilities during the instruction activities*.*
C-5/b: Providing explanatory feedback to students with visual disabilities during the instruction activities.
C-6: Control of the student comprehension and inclusion of the students with visual disabilities in evaluating the outcomes of the instructional activities.

As seen in Table 5, the analysis of the total scores on the instructional behavior associated with the inclusion of visually impaired students in science class instructional activities revealed that the total scores of the participating teachers varied between zero and 10. The findings demonstrated that only one classroom teacher sometimes included the visually impaired students in the process (C-1). On the other hand, the data showed that ten teachers did not briefly review the students' previous knowledge/skills or did not include students with visual impairments in these practices.

It was determined that only one classroom teacher included students with visual disabilities in the brief review of previous knowledge/skills of the students (C-2/a) and seldom provided confirmatory feedback to the reactions of students with visual

disabilities, while ten teachers who provided feedback either did not review students' previous knowledge/skills or did not provide confirmatory feedback about the reactions of students with visual disabilities.

It was determined that only one classroom teacher provided feedback about the students' reactions to visual disabilities during the activities conducted to mobilize prior knowledge (C-2/b), while one classroom teacher briefly reviewed prior student knowledge/skills. Ten teachers rarely provided confirmatory feedback, neither briefly reviewed prior knowledge/skills nor provided explanatory feedback about students' reactions with visual disabilities.

Furthermore, the findings indicated that the classroom teachers either did not employ any instructional material or conducted the instructional activities without allowing the students with visual disabilities to examine or experiment with the new instructional material (C-3). The other findings demonstrated that five teachers sometimes allowed instructional reactions of students with visual disabilities during instructional activities. In contrast, others did not allow any response from students with visual disabilities.

The study findings on the confirmatory teacher feedback (C-5/a) to the reactions of students with visual disabilities to instruction indicated that one classroom teacher usually, three teachers sometimes, and one teacher rarely provided confirmatory feedback during instructional activities. Six teachers never provided confirmatory feedback on students' reactions with visual disabilities.

It was determined that one classroom teacher sometimes, one teacher rarely, and six teachers never provided confirmatory feedback on students' reactions with visual disabilities to instruction (C-5/b).

Finally, it was observed that only one classroom teacher sometimes evaluated the comprehension of the students with visual disabilities and outcomes during instruction, while one teacher rarely and nine never evaluated the comprehension of the students with visual disabilities and outcomes during instruction or did not include students with visual disabilities in the evaluation.

DISCUSSION

The study aimed to describe the instructional behavior of the inclusive classroom teachers in science classes attended by students with visual impairment. The study data demonstrated that only two teachers instructed the science classes for over 35 minutes, three teachers instructed the science classes for less than 30 minutes and one teacher instructed the science classes for under 20 minutes. In the literature, it was reported that increasing the time allocated for the instruction of a particular topic would improve the learning opportunities for the students (Borich, 2018; Ellis & Worthington, 1994; Özyürek, 2009), while losing time during class would have a negative effect on the learning opportunities.

Since the study was limited to 11 inclusive classes and 11 classes, it could not be suggested that the findings are valid for all classes. However, the findings led to various questions on time use in the classes. It was determined that eight out of eleven participating teachers instructed the class on academic skills during less than 80% of the time allocated for instruction. In certain cases, this rate was 44%. This demonstrated that the time that most of the participating teachers devoted to the instruction of academic skills was about half of the total class hours, namely, approximately 40 minutes. Previous studies reported that effective use of class hours and providing adequate learning opportunities were effective on the improvement of the academic achievements of the students (Blondal & Adalbjarnartottir, 2012; Dotterer & Lowe, 2011; Ladd & Dinella, 2009).

On the other hand, Ellis and Worhtington (1994) stated in the literature that an effective teacher should spend less than 15% of the class hour on task management and classroom organization and more than 50% on interactive activities.

The present study findings demonstrated that the learning opportunities provided for the students in inclusive classes were low level. The punctuality of the teachers is an administrative matter, and the school administration should check it. However, the participating teachers spent significant time taking attendance, for instructional preparations, or controlling the pupils. Supporting teachers on these issues is an essential requirement to provide adequate learning opportunities for the students attending these classes (Blondal and Adalbjarnartottir, 2012; Dotterer and Lowe, 2011; Ellis and Worthington, 1994; Ladd and Dinella, 2009).

The analysis of the instructional behavior of classroom teachers to provide clear and comprehensive instruction in science classes based on their behavior to provide a short introduction to the pre-instruction objectives demonstrated that almost all participating teachers (10 teachers) did not present the objectives and content before instruction. It is stated in the literature that to conduct clear and comprehensible instruction, the teacher should inform the students about the aim and content at the beginning of the class. However, the observations conducted in the present study demonstrated that the teachers usually started the class with the question, "Where were we?" This observation gave the impression that teachers started the class unprepared. (Borich, 2018; Fisher and Frey, 2010; Kluger and Denisi, 1996).

The study findings revealed that almost all classroom teachers (10 teachers) never included brief review practices to activate prior student knowledge. Furthermore, teachers did not provide confirmatory and/or explanatory feedback for student reactions since they did not review the previous student knowledge. However, it is stated in the literature that each class should begin with a daily review, including the review of prior knowledge. These practices allow students to review their knowledge during the class, correct their mistakes, and provide the teacher with feedback, reinforcing learning by repeating the knowledge, skills, and concepts associated with the class. Ellis and Worthington (1994) reported that effective teachers should devote the first five to eight minutes of the class to the repetition of previously learned topics, check the assignments, and review prior student knowledge on the topic (Ellis and Worthington, 1994; Serafini, 2002; Mastropieri and Scrugss, 2002).

On the other hand, the study data showed that almost all participating classroom teachers (10 teachers) did not use any instructional material during the instruction or did not provide adequate opportunities for students to examine the instructional material. Furthermore, the observations demonstrated that the teachers preferred to instruct the entire class verbally or allowed the students to watch a video on the topic during the instruction of the class. It is stated in the literature that effective teachers spend more time on the presentation of new material when compared to others, guiding the students in this process (Ellis and Worthington, 1994; Serafini, 2002; Mastropieri and Scrugss, 2002).

The analysis of the teacher behavior when attempting to get student reactions about the instruction during the instructional activities demonstrated that most teachers (8 teachers) tried to get responses on certain sub-objectives or from only a section of the students during the class. This finding indicated that teachers did not ask questions, conduct activities associated with the topic during the class, or seldom conduct these activities. Even when they conducted these activities, they included only very few students. During the study data analysis, it was observed that the instruction method adopted by a teacher was particular. This teacher instructed the students on some things related to the topic throughout the class. Still, during the whole period, the teachers did not ask the students any relevant or irrelevant questions, did not allow the students to take a note on the topic, and did not conduct any activity. However, it is stated in the literature that the effective use of the question/answer process focuses the student on the learning process and helps the students to be more active in the classroom. Effective use of the question/answer process should include most of the students, even all, when possible, to attract the interest of the students to the topic, instructional activities, and process during the class, and to engage and include the students in the instructional process (Borich, 2018; Fisher and Frey, 2010; Harbour, Evanovich, Sweigart and Hughes, 2015)

The analysis of the classroom teacher behavior of providing regulatory and confirmatory feedback to student reactions during instructional activities in science classes demonstrated that most teachers (7 teachers) did not give feedback to student reactions during instruction, provided feedback later, or only provided confirmatory feedback. However, it is stated in the literature that the feedback on instructional activities should be preorganized and provided immediately after instructional reactions. Feedback should be adapted based on the type of question posed by the teacher, the student performance levels, and the type of the reaction to the question, and the predetermined feedback should be provided immediately after the student reaction, including explanations about the student reaction and in a straightforward way to promote comprehension by all students (Hattie and Timperley 2007; Mastropieri and Scruggs, 2002; Ornstein and Lasley II, 2004; Pisacreta, Tincani, Connell and Axelrod, 2011). These findings suggested that the participating teachers required well-planned support services to adopt accurate and effective feedback strategies.

The teacher evaluations' analysis to check whether students comprehended the instructed topic and to observe the outcomes of the instructional activity demonstrated that almost all teachers (9 teachers) did not conduct post-instructional evaluations. However, it is stated in the literature that for teachers to conduct clear and comprehensible instruction, they should include post-instructional evaluations about the instruction, and the measurement tool they would use in this process should be designed for the instructional goals of the related class (Engellman and Carnine, 2016; Fisher and Frey, 2010; Kindswatter, Wilen and Isher, 1988)

Among the instructional behavior that classroom teachers exhibited, including students with visual impairment in the instructional activities in science classes, the study data demonstrated that the most prolonged time devoted by the teachers to academic interaction with students with visual impairment was 7.38% of the total class hours, the same ratio was below 1% in six classes. It was 0 or close to 0 in two. These data could suggest that most participating classroom teachers almost ignored the students with visual impairment during the instruction. In other words, classroom teachers excluded students with visual impairments when accepting student reactions and providing feedback to these reactions in most classes. This finding was consistent with a report by Akalın (2007). In that study, Akalın reported that teachers addressed the whole class; however, their one-on-one interactions with special needs and typical development students were below 1%.

The analysis of the time where the teachers actively included the students with visual impairment in the instruction of academic skills demonstrated that the most extended period where the classroom teachers allowed active participation of the students with visual impairment in the instruction was 70% of the total class hours. For almost all teachers (10 teachers), the abovementioned process was less than 70%. It is observed that this ratio was below 40% in three teachers' classes. Considering that most of this student behavior includes listening to the instruction and taking notes by students with visual impairment, it could be suggested that classroom teachers did not make adequate effort to include students with visual impairment in the instructional activities. The observations conducted during the data analysis demonstrated that although the students with visual impairment raised their hands to answer questions in most classes, the teachers did not allow them to speak. This data also demonstrated that teachers experienced difficulties in classroom management. Because the periods that excluded the periods where the students with visual impairment actively participated in the class could be considered extra-curricular behavior, which was consistent with the findings reported by Akalın (2007), in that study, it was determined that inclusive students exhibited extracurricular activities in 21% of the class hours.

The analysis of the classroom teacher behavior scores on the inclusion of the students with visual impairment in science classs determined with the instruction behavior assessment instrument demonstrated that almost all participating teachers (10 teachers) did not include short review practices that activate prior student knowledge/skills. Thus, they did not provide confirmatory or explanatory feedback to the student responses during the review practices, and they did not include the students

with visual impairment in these processes. Only one participating teacher provided short reviews that activated prior student knowledge/skills and provided feedback on student responses during these practices. The same teacher was the only teacher who attempted to include the student with visual impairment in these practices. It is unknown whether other participating teachers would include the students with a visual impairment when they make arrangements to include short review practices that activate prior student knowledge/skills when designing their science classes and provide confirmatory and explanatory feedback. However, the efforts of these teachers to include the students with visual impairments during other instructional activities provide certain clues.

The analysis of the other study data on the inclusion of students with visual impairment in science class instruction by participating classroom teachers suggested that none of the teachers utilized new instructional material or did not adequately present the material, allowing the students with visual impairment to examine and practice with the material, most teachers (6 teachers) did not attempt to get a reaction from the students with visual impairment during instructional activities, and accordingly did not provide feedback on the responses of the students with visual impairment. Almost all teachers (9 teachers) did not conduct post-instructional evaluations or did not include the students with visual impairment in the evaluation even when they conducted the post-instructional evaluation. These findings demonstrated that students with visual disabilities predominantly participated as audience members in instructional classrooms. Even the time they listened to the instruction was limited (31.09% - 70.02% of class hours).

CONCLUSION AND RECOMMENDATIONS

The study data analysis demonstrated that the overall view of the instructional behavior of the inclusive classroom teachers in science class was hopeless. It was clear that these teachers required serious support in instructional behavior. Furthermore, the instructional behavior analyzed in the study did include the behavior exhibited towards the students with disabilities and the whole class. This finding revealed that the general instructional behavior in the classrooms should be investigated, and the teachers should be supported in the fields where they require support. Naturally, these findings were limited to the 11 inclusive classrooms, the teachers and students in these classes, and the science class; however, the data on the teachers' instructional behavior in their classes demonstrated that the experienced instructional problems were severe. Thus, it is obvious that teachers require services that would positively support their instructional behavior and solve their classroom problems.

Previous studies reported effective applications to support the professional development of teachers and help them cope with the problems they encounter in educational environments. The previous study findings demonstrated that practices such as coaching (Fidan, 2018; Kıyak, 2020; Tekin-İftar, Collins, Spooner, & Olçay-Gül, 2017), mentoring (Akay & Gürgür, 2018), behavioral counseling (Kurt, 2015), and direct behavioral counseling (Timuçin, 2008) effectively supported the professional development, problem-solving efficacy in the classroom environment, and improved instructional behavior across inclusive classroom teachers. Thus, it could be suggested that establishing school support departments for inclusive classroom teachers and direct support via the strategies proven to improve their efficacy would lead to beneficial outcomes.

On the other hand, given the present limitations, similar studies with a wider population and sample should be conducted, and qualitative and quantitative properties of the instructional practices conducted in inclusive classrooms should be determined. Also, there is a need for further studies that would reveal the fields of support required by the teachers in inclusive classrooms. But most importantly, future studies that would determine the type, quality, and quantity of the support services (in-service training, counseling, in-classroom assistance, etc.) for inclusive class teachers are perhaps the most essential requirement in inclusive education.

Researchers' contribution rate

The research was designed and conducted by the first author.

Ethics Committee Approval

The current paper was based on a dissertation submitted before 2020. The Ministry of National Education approval was obtained for the study; however, ethics committee approval was not. Ethics committee approval was not required for scientific research before 2020.

REFERENCES

Akalın, S. (2007). *An investigation of the teachers' behaviors and the students with and without disabilities* (Unpublished master's thesis). Ankara University, Institute of Educational Sciences, Ankara.

Akay, E., & Gürgür, H. (2018). Professional development of a teacher providing special education support service: Mentoring. *Eğitimde Nitel Araştırmalar Dergisi*, 6(1), 1–28. https://doi.org/10.14689/issn.2148-2624.1.6c1s1m

Akdemir-Okta, D. *Determining special education services provided to hearing impaired students attending mainstream classes and their teachers* (Unpublished master's thesis). Anadolu University, Institute of Educational Sciences, Eskişehir.

Akkuş, Z. (2006). *Comparison of the success of students with visual impairment and not affected by visual impairment in mathematics and science classs* (Unpublished master's thesis). Gazi University, Institute of Educational Sciences, Ankara.

Anderson, L.W. (1989). *Attention, tasks, and time*. Anderson, L.W. (Ed.). *The effective teacher: Study guide and readings.* McGraw-Hill Book Company. New York

Aslan-Aydoğan, S. (2003). *Results of a study conducted on visually impaired students educated with mainstream ones in the schools of Ankara city (*Unpublished master's thesis). Gazi University, Institute of Educational Sciences, Ankara.

Atay, M. (1995). *The Work on teachers attitudes towards integration* (Unpublished doctoral dissertation). Hacettepe University, Institute of Health Sciences, Ankara.

Babaoğlan, E. & Yılmaz, Ş. (2010). Competency of classroom teachers in the inclusice education. *Kastamonu Education Journal,* 18(2), 345-354

Battal, İ. (2007*). The evaluation of the sufficency of the clas and branch teachers on fusion education (sample of Uşak city)* (Unpublished master's thesis). Afyonkarahisar Kocatepe University, Institute of Social Sciences, Ankara.

Batu, S. (1998). *The opinions and suggestions of teachers who have integrated exceptional students in their classes in a secondary vocational school* (Unpublished doctoral dissertation). Anadolu University, Institute of Social Sciences, Eskişehir.

Batu, S., Kırcaali-İftar, G. & Uzuner, Y. (2004). The opinions and suggestions of teachers who have integrated exceptional students in their classes in a secondary vocational school. *Ankara University Faculty of Educational Sciences Special Education Journal*, (2), 33-50

Bilen, E. (2007). *Primary school teacher's opinions about the problems they are facing during the integration activies and their solution proposals* (Unpublished master's thesis). Dokuz Eylül University, Institute of Educational Sciences, İzmir.

Blondal, K. S., & Adalbjarnardottir, S. (2012). Student disengagement in relation to expected and unexpected educational pathways. *Scandinavian Journal ofEducational Research*, 56,85–100.

Borich, G. D. (2018). Etkili öğretmen (H. Aydın & T. Babacan, Çev). Acat, B. (Eds.), *Etkili öğretim yöntemleri: Araştırma temelli uygulama içinde* (ss. 2-33). Ankara: Nobel Yayıncılık

Bozarslan-Malkoç, B. (2010). *Examining the opinions of educators working in private preschools in Eskisehir about inclusion* (Unpublished master's thesis). Anadolu University, Institute of Educational Sciences, Eskişehir.

Brophy, j. & Good, T. (1986*). Teacher behavior and student achievement*. Wittrock , M. C. (Ed.). *Handbook of research on teaching*. Third Edition. Macmillan, New York

Carroll, B. J. (1989). The carroll model: A 25-year retrospective view. *Educational Researcher*. 18(1), 26-31.

Cruickshank, D. R. (1989). *Applying research on teacher clarity*. Anderson, L.W. (Ed.). *The effective teacher: Study guide and readings.* McGraw-Hill Book Company. New York

Çakmak, M. (2017). Student teachers' views regarding the impact of effective teaching strategies on student motivation. *Journal of Teacher Education and Educators*. 6(2), 191-204

Diken, İ. H. & Batu, S. (2010). *Introduction to ınclusion*. Diken, İ. (Ed.). *Inclusion in primary school.* Ankara: Pegem Academy.

Dotterer, A. M., & Lowe, K. (2011). Classroom context, school engagement, and academic achievement in early adolescence. *Journal of Youth and Adolescence*, 40, 1649–1660

Duman-Sever, F. (2007). *The study about the effects of teacher support programme for mainstreaming education on children's development* (Unpublished master's thesis). Dokuz Eylül University, Institute of Educational Sciences, İzmir.

Durre, I. (2010). *Succes for blind students in mathematics and science: The ımportance of thinking outside the box*. Seventh Intertnational Conference on Higher Education and Disability. Innsbruck Austria. *trac.uno.edu/.../SuccessinMathematicsandScienceForBlindStudents-IDurre.doc adresinden edinilmiştir.*

Ellis, S. E. & Worthington, L. A. (1994). *Research Synthesis on effective teaching principles and the desinging of quality tools for education*. Naitonal Center to Improve the Tools of Educators. University of Oregon

Engelmann, S. & Carnine, D. (2016). *Theory of instruction: Principles and applications* (Revised ed.). Eugene, Oregon. NIFDI PRESS

Ertunç, E. N. (2008). *The evalvation of inclusive secondaey school physical education teachers knowledge on inclusive education, their opinion about disabled students in their classrooms* (Unpublished master's thesis). Gazi University, Institute of Educational Sciences, Ankara.

Fidan, A. (2018). *The effects of hybrid coaching on teaching behaviors of middle school teachers and academic outcomes of their students with disabilities in general education settings* (Unpublished doctoral dissertation). Anadolu University, Institute of Educational Sciences, Eskişehir.

Fisher, D. & Frey, N. (2010) *Enhancing RTI: How to ensure success with effective classroom instruction and intervention*. Aleksandria, VA. ASCD

Fraser, W. J. & Maguvhe, O. M. (2008). Teaching life sceiences to blind and visually impaired learners. *Educational Research*. 42(2):84-89

Gök, G. (2009). The opinions and suggestions of preschool teachers about inclusion (Unpublished master's thesis). Erciyes University, Institute of Social Sciences, Kayseri.

Harbour, K., Evanovich, L. L., Sweigart, C. A. & Hughes, L. E. (2015) A brief review of effective teaching practices that maximize student engagement. *Preventing School Failure*. 59(1), 5-13

Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77,81–112.

Houwen, S., Visscher, C., Lemmink, K.& Hartman, E., (2009). Motor skill performance of children and adolecents with visual impairments: A review. *Exeptional Children.* 75(4), 464-492

Jacobsen, D. A., Eggen, P. & Kauchak, D. (2002). *Methods for teaching: Promoting student learning*. *Sixth Edition.* Upper Saddle River. New Jersey.

Kan, A. (2007). An alternative method in the new educational program from the point of performance-based assessment: rubric scoring scales. *Educational Sciences in Theory and Practice*, 7(1), 129-152.

Karasar, N. (2009). *Scientific research methods*. Ankara: Nobel Publishing

Kargın, T. (2004). Inclusion: Definition, development and principles. *Ankara University Faculty of Educational Sciences Journal of Special Education*. 5(2), 1-13

Kaya, İ. (2005). *An evaluation of the teachers' competencies about the application of mainstream education in preschools (Unpublished master's thesis). Selçuk University, Institution of Social Sciences, Konya.*

Kaya, U. (2003). *Examining of school managers classroom teachers and guidance teachers informations, attitudes and applications about mainstreaming (Unpublished master's thesis). Gazi University, Institution of Educational Sciences, Ankara.*

Kırcaali-İftar, G. (1992). Inclusion skills self-evaluation tool. *Journal of Anadolu University Faculty of Education,* 5, 119-123

Kırcaali-İftar, G. & Tekin, E. (1997). Single subject research methods. Ankara: Turkish Psychological Association Publications.

Kıyak, Ü. E. (2020). *Professional development: The effects on teaching behaviors of middle school teachers and academic outcomes of their students with developmental disabilities (Unpublished doctoral dissertation). Anadolu University, Institute of Educational Sciences, Eskişehir.*

Kindsvatter, R., Wilen, W. & Isher, M. (1988). *Dynamics of effective teaching.* New York. Longman Inc.

Kirk, S., Gallagher, J. & Coleman, M. R. (2017). *Görme yetersizliği olan çocuklar* (S. Rakap & S. Kalkan, Çev.). Rakap, S. (Eds.), *Özel gereksinimli çocukların eğitimi içinde* (ss. 387-418). Ankara: Nobel Yayıncılık

Kluger, A. N., & DeNisi, A. (1996). The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin*, 119(2), 254–284.

Kumar, D., Ramasamy, R. & Stefanich, G., (2001). Science instruction for students with visual ımpairments: Teaching suggestions and policy implications for secondary educators. *Electronic Journal of Science Education*, *5*(3) https://wolfweb.unr.edu/homepage/crowther/ejse/kumar2etal.html sayfasından erişilmiştir.

Kurt, M. (2015). *The effectsof behavioral consultation provided in science and technology classes to inclusive class teachers on their instructional behivor (Unpublished doctoral dissertation). Gazi Üniversity, Insitute of Educational Sciences, Ankara.*

Ladd, G. W., & Dinella, L. M. (2009). Continuity and change in early school engagement: Predictive of children's achievement trajectories from first to eighth grade? *Journal of Educational Psychology*, 101, 190–206.

Mastropieri, M. A. & Scrugss, T. E. (2002). *Effective insturction for special education*. U.S.A. Pro-Ed Inc.

McAlliste R, Gray C. (2007). Low vision: mobility and independence training for the early years child..*Early Child Development and Care*. 177(8), 839-852.

Ministry of National Education Strategy Development Presidency (2015). *National education statistics: Formal education*. Ankara: Ministry of National Education Strategy Development Presidency

Montarzino, A., Ambrecht, A., Findlay, C., Julian, H. & Dhillon B., (2007). The impact of mobility and public transport on the independence of visually impaired people. *Visual Impairment Research.* 9, 67-82

Orlich, D. C., Harder, R. J., Callahan, C. R., Trevisan, S. M. & Brown, H. A. (2004). *Teaching strategies: A guide to effective instruction*. *Seventh Edition*. New York. Houghton Mifflin Company

Ornstein, C. A. & Lasley II, T. J. (2004). *Strategies for effective teaching. Fourth Edition*. New York. McGraw Hill.

M.E.B. (2009). Special Education Services Regulation. Retrieved from http://mevzuat.meb.gov.tr/html/66.html

Özengi, S. Ş. (2009). *To determine the opinions and suggestions of school counselors about inclusion practices at the elementary schools where they work in Eskişehir (Unpublished master's thesis). Anadolu University, Institute of Educational Sciences, Eskişehir.*

Penrod, W., Haley, C. & Matheson, L., (2006). A model for improving science teaching for students with visual impairments. *Review*, 37(2), 53-58

Pisacreta, J., Tincani, M., Connell, J. E., & Axelrod, S. (2011). Increasing teachers' use of a 1:1 praise to behavior correction ratio to decrease student disruption in general education classrooms. *Behavioral Interventions*, 26, 243–260.

Sanır, H. (2009). *Evaluation of the problems of the students who are in inclusive education in academic learning according to teacher and family opinions (Unpublished master's thesis). Selçuk University, Institute of Social Sciences, Konya.*

Saraç, T. & Çolak, A. (2012). Elementary school teachers' views and suggestions regarding the problems encountered in the process of inclusive applications. *Mersin University Journal of the Faculty of Education,*8(1), 13-28.

Sart, H.Z., Ala, H., Yazlık, Ö. & Kantaş-Yılmaz, F. (2004). *Where is Turkey in inclusive education? Recommendations for the educator*. XIII. National Educational Sciences Congress, 6-9 July 2004. İnönü University. Malatya.

Schleppenbach, D. (1996). Teaching science to the visually impaired: Purdue University's Visions Lab. Information. *Technology and Disabilities E-Journal*, 3(4).

Serafini, F. (2002). Possibilities and challenges: The national board for professional teaching standards. *Journal of Teacher Education*, 53, 316–327.

Simon. C. & Huertas, C. A. (1998). How blind readers perceive and gather information written in braille. *Journal of Visual Impairment & Blindness.* 92(5), 322-330

Stevens, D. D.& Levi, A. (2005). Introduction to rubrics: An assesment tool to save grading time convey effective feedback and promote student learning . Sterling, Virginia. Stylus Publishing.

Sucuoğlu, B. & Akalın, S. (2010). Eco-behavioral assessment: An alternative method for assessing mainstreamed classrooms in Turkey. *Ankara University Faculty of Educational Sciences Journal of Special Education*. 11(1), 19-37

Sucuoğlu, B., Akalın, S. & Sazak-Pınar, E. (2008). *Evaluation of the instructional features and the classroom management of the teacher of the classes in which inclusive practices are carried out* (TÜBİTAK project final report. Project code:106K/127-105). Ankara.

Sucuoğlu, B., Akalın, S. ve Sazak-Pınar, E. (2010). The effects of classroom management on the behaviors of the students with disabilities in inclusive classrooms in Turkey. *The Journal of the International Association of SpecialEducation.* 11 (1), 64-74.

Sucuoğlu, B. & Kargın, T. (2010). *Inclusive practices in primary school.* Ankara: Kök Publishing

Şahin, M. & Yorek, N. (2009). Teaching science to visually impaired students: A smal-scale qualitative study. *US-China Education Review*. 6(4), 19-26.

Şekercioğlu, B. (2010). *Primary school branch teachers' opinions about problems they are facing during inclusive education (Unpublished master's degree thesis). Gazi Univesity, Institute of Educational Sciences, Ankara.*

Timuçin, U. (2008). The effectiveness of the direct behavioral consultation on the problem behaviors of the handicapped students who were placed regular school settings (Unpublished doctoral dissertation). *Gazi Univesity, Institute of Educational Sciences, Ankara.*

Tuncer, T. (2011). *Children with visual impairment.* Ataman A. (Ed.). *Children with special needs and access to special education.*Ankara: Gündüz Education and Publishing

Uysal, A. (2003). *The opinion of inclusive class teachers on inclusion.* Proceedings of the 13th National Special Education Congress. Ankara: Kök Publishing.

Viera, A. J. & Garret, J. M. (2005). Understanding interobserver agreement: The kappa statistic. *Family Medicine*. 37(5), 360-363.

Zorluoğlu, S. L. & Sözbilir, M. (2017). Learning support needs of visually ipmaired students. *Journal of Trakya University Faculty of Education.*7(2), 659-682.