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Research Article

The impact of authentic materials in the life sciences class on the learning of students at stage with moderate intellectual disability[1]

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Abstract

The aim of this study is to reveal the effectiveness of using authentic materials for teaching daily weather conditions, which is among the learning outcomes of life science class, to special-needs students with moderate intellectual disability who receive education at Stage I in special education practice schools, in a teaching process involving the participation of their parents. In the present study, we used an action research design, which is one of the qualitative research approaches. The study sample consisted of three parents, and three students with moderate intellectual disability who received education at Erzurum Special Education Practice School in the Yakutiye district of Erzurum in the 2019/20 academic year. As a data collection tool, a rough evaluation form was used as a criterion-dependent assessment tool in the pre-application, post-application and general evaluation stages so as to determine the current status of special education students. On the other hand, parent and teacher interview forms were used to determine their views on the practice, video recording to evaluate the processes, and ABC recording (anecdotal recording) to detect the stimuli that appeared before and after the students' behaviour and to predict the function of such behaviour. Descriptive analysis technique was used for the analyses in accordance with the qualitative research approach. In the data obtained at the end of the first four weeks, the number of correct responses before the application was found to be very low, while almost all of the answers given after the application were correct. In the general evaluation phase, the correct responses obtained for all questions used during the activity in which various authentic materials were used indicated a positive contribution to students with moderate intellectual disability with respect to learning about daily weather conditions. It can therefore be recommended that authentic materials be used more in the learning processes of students with moderate intellectual disability.

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Introduction

Access to education and benefiting from public services are regarded as human rights. Education of individuals in need of special education is an inevitable necessity in almost every developed society. In this sense, states should attach

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importance to special education. A special-needs child has some deficits in their cognitive behaviour, communication skills, motor functions, and social-emotional characteristics (Sart, Barış, Sarıışık, & Düşkün, 2016; APA, 2018). Due to these inadequacies, such children cannot perform their daily life functions or benefit from general education environments as required. These children, who are affected by their intense differences in one or more developmental areas, should be treated with different approaches than general approaches in which special education services should be offered. Children who need such services are known as special-needs children (Beckley 2002; Metin 2012). The purpose of this specially planned training is: "To develop the basic life skills of individuals, to meet their learning needs, to ensure their adaptation to the society, and to prepare them for work and professional life" (Eripek, 1998). The purpose of the education given to children with special educational needs is to enable them to acquire skills that will help them to be self-sufficient in the future and get used to living as part of the society. Achieving this goal is possible by determining the educational needs of such individuals, taking into account what they can do with their individual differences, and providing them with educational environments suitable for their needs (Cavkaytar 2000; Hausken & Rathbun, 2002). One of the basic conditions of democratic societies is equality of opportunity in education, and one of the important ways to ensure this in education is to provide special education services for individuals with special needs. In this connection, in the Special Education Services Regulation, special education is defined as "with a similar point of view, employing specially trained personnel to meet the educational and social needs of individuals in need of special education, involving developed education programs and methods in the education system, conducting education in appropriate environments where characteristics of these individuals are considered in all development areas based on their competencies in academic disciplines" (MoNET, 2018).

Among the individuals with special needs, those with intellectual disability have an important place. Intellectual disability "poses significant limitations in current functions. This is a state of markedly subnormal mental functioning, as well as limitations in two or more of the adaptive skill areas associated with mental functioning (communication, self-care, home life, social skills, social usefulness, self-management, etc.)" (Luckasson & Reeve 1992; Eripek 1996). Individuals with intellectual disability are divided into three groups: (1) Mild Intellectual Disability: It is defined as "an individual who needs special education and support education services at a limited level due to his/her mild disability in mental functions and conceptual, social, and practical adaptation skills" (Heward 1999; Eripek, 2009; Çıkılı, 2013); (2) Moderate Intellectual Disability: Many children with moderate intellectual disability have significant delays in their development during the preschool years. As they get older, the differences between them and their peers become more evident in terms of different developmental characteristics. About 30% of these children have Down Syndrome, while about 50% of them have different types of brain injury (Sucuoğlu, 2010); (3) Severe and Very Severe Intellectual Disability: Children with severe and very severe intellectual disability are noticed at birth or immediately after birth. These children, who are usually born with damage in their nervous system, also have other deficits and health problems. Thanks to the technological developments in the field of education, it appears that individuals with severe/very severe intellectual disability can actually learn many skills that were once believed to be hard to be learned by them, and can now fulfil their social responsibilities (Eripek 2009; Friend 2013).

Based on the principle of equal opportunity in education, it is aimed to ensure equality and unity in education by providing students with appropriate materials and different teaching methods and techniques (Kırcaali-İftar, 1998). The ability of children in need of special education to meet their needs, to live independently, and to acquire and develop social life skills is directly related to the education they receive (Bender & Valletutti 1982; Fırat 2010). Using teaching materials facilitates perception and learning. It attracts attention, arouses interest and brings liveliness to the classroom. It shortens the length of learning process, reinforces knowledge, and helps to make learning permanent. In addition, it increases students' participation in the lesson and promotes their desire to read and research. It also enables objects, facts and events that cannot be brought or visited in the classroom environment to be transferred to the classroom environment (Apperson, Laws, & Scepansky, 2006; Çelik, 2007). Instructional materials generally consist of course presentation content made by using different tools in order to ensure that the course achieves its purpose. The importance of the use of such materials has begun to be emphasized more in curricula. Most of the lessons include

acquisitions and activities that require using teaching materials (Lowry 1999; Yanpar, 2007) The development of these materials within the scope of the life sciences class, which has an important place especially in acquiring life skills, will contribute to individuals with special needs in terms of acquiring many skills in daily life. The review of the content and definitions of the life sciences course shows that it undertakes the responsibility of "preparing children for life and raising awareness of life" by selecting and organizing the basic knowledge, skills, attitudes, views, and values required by our age in the field of natural and social sciences (Öztürk & Dilek, 2004).

Considering Piaget's stages of development, students who need special education are regarded to be in the preoperational and concrete operational stages with respect to cognitive skills. In this connection, as the levels of the classes increase, the extent of soft knowledge also increases. There is a need to enrich the materials used to provide these students with soft knowledge and to design authentic course materials. The use of materials is of great importance to ensure permanent learning in special-needs children. The scarcity of literature on the necessity of using materials in teaching such children increases the importance of the present study. Considering the cognitive status of students in need of special education, the educational acquisitions are quite limited. For this reason, when choosing the educational goals, it should be taken into account that these are life-oriented and targeting future learning outcomes (Piaget, 2015).

A review of the literature on special-needs students shows that research especially focuses on teaching science, mathematics, visual arts, music, and literacy, as well as on making such students develop self-care skills. These studies have employed a number of methods and techniques such as computer-assisted teaching, teaching with songs, direct instruction, constant time delay teaching methods and materials (Margalit, 1995; Dündar, 2006; H. Tanju, E., & Gönen, M. 2006; Register, D., Darrow, A., Swedberg, O., & Standley, D 2007; Duman, N., & Çiftçi Tekinarslan, 2007; Mechling, L. C., 2007; Fitzgerald, G., Koury, K., & Mitchem, K. 2008; Vayiç, 2008; Kot, M., Sönmez, S., & Yıkmış, A, 2017; Coşkun, İ., & Geç, H, 2018). No studies have been found on the use of authentic materials in teaching life sciences in special education, for the purpose of ensuring the acquisition of basic concepts and skills regarding daily weather conditions.

Problem of Study

In this respect, the main purpose of this study is to reveal the effectiveness of authentic materials for teaching about daily weather conditions in life science lesson to students with moderate intellectual disability who receive education at Stage I in special education practice schools, with the participation of the parents. In line with this main purpose, answers to the following questions were sought:

- What are the parents' views before the application with authentic materials and the results obtained by the teacher before and after the application with the criterion dependent assessment tool?
- What are the parents' views on the contribution of the use of authentic materials to generalization and the results obtained by the teacher with the criterion dependent assessment tool?
- What are the parents' views regarding the general evaluation made as a result of the use of authentic materials and the results obtained by the teacher with the criterion dependent measurement tool?
- What are the views of the teacher participating in the survey regarding the use and effectiveness of authentic materials?

Method

Research Design

This study has been designed as action research that includes qualitative data collection techniques. In this context, various teaching materials have been developed with a special focus on the necessity of using authentic materials, and applied for teaching daily weather conditions in the life sciences course. The reason for employing an action research design in this study was its suitability for the nature of the situation examined since a teaching activity was developed in order to contribute to the learning of students with moderate intellectual disability in the classroom where the application was made.

Action research has been defined in different ways, some of which can be listed as follows: Action research expresses a systematic approach that enables individuals to find effective solutions to the problems they face (Stringer, 2007). The

main purpose of action research is to examine and try to change the wrong situations and to develop new solutions. According to Mertler (2008), and Gay, Mills and Airasin (2012), action research allows teachers to reveal the real problems they experience in the classroom and to find solutions to those problems, thereby closing the gap between theory and practice. In this respect, action research refers to the process of conducting research in real schools and classroom environments to understand and improve the quality of activities or teaching practice (Johnson, 2014).

Data Analysis

In action research, data is composed of information, situations, or observations that are collected or recorded. Action research is not just about writing down what we believe to be true, but rather the task of collecting data and drawing conclusions based on that data (Johnson, 2014). In this direction, the analysis of the data obtained as a result of this study was carried out in accordance with the qualitative approach.

Simultaneous data analysis while collecting data enables the researcher to form the study and make it more in-depth (Glesne, 2013). The data obtained in this study were analysed both during the process and at the end of the application. The analysis of the data was, therefore, presented in two parts as the analyses made during the process and those made at the end of the process. In this context, descriptive analysis technique was used to analyse the data obtained during and at the end of the process.

Analyses During the Process

Analysing the data in the process evaluates whether the applied action plans solve the problem and guides the researcher about which data is to be reached in the next stage (Johnson, 2014). Thus, analysis comments shed light on the next phase of the action research cycle, which is the action plan development process. Necessary analyses were made during the situational determination and application phase of the research. The data analyses made during the situational determination phase and during the process could be listed as follows:

- Official documents (IEP's, rough evaluation forms, educational evaluation reports provided by the guidance research centre),
- Each student was evaluated according to the checklist developed at the end of the situational determination phase and the students' preliminary knowledge levels were determined regarding the unit of "Our Earth and Celestial Bodies" to be dealt with during the application phase.
- In this process, the data was regularly filed and backups of the data were taken.
- Target students were determined according to the data obtained.

All parent interviews, teacher pre-interviews and post-interviews, video recordings and ABC (Anecdotal) recordings made during the application were examined together with the application teacher. With the help of such data, student performances and existing problems were evaluated from the perspective of both the researcher and the teacher. In line with the anecdotal records, measures were taken in order to ensure the next activity to be more successful. In this connection, it was deemed necessary to ensure that students take a more active role in the course. In addition, the daily evaluation data of the students were examined so as to check whether there was any progress in students, and the general situation was evaluated.

Analysis Performed After Data Collection

Depending on the analyses made during the process, data were collected and analysed. In this direction, the data of the criterion-dependent assessment tool and the practice teacher interview form prepared for general evaluation were analysed. In line with the sub-objectives of the study, the data obtained with the criterion-dependent assessment tool applied by the teacher for general evaluation were analysed. In conformity with the nature of the qualitative research approach, descriptive analysis technique was used, and data were analysed according to predetermined themes. In line with another sub-objective of the study, an interview was held with the teacher who carried out the activity. As a result of the interview, the data were analysed in accordance with the predetermined themes in accordance with the reported descriptive analysis technique.

Ensuring the Validity and Reliability of the Data

In scientific research, two of the most important criteria that ensure the credibility of the results are the concepts of validity and reliability. These criteria need to be present in qualitative research as well as in quantitative research. However, the concepts of validity and reliability are handled in different ways in quantitative and qualitative research (Yıldırım & Şimşek , 2016).

Validity indicates how many of the situations are measured among those that are actually intended to be measured in scientific observations (Johnson, 2014). Guba (1981) emphasized that for the validity of action research, the trustworthiness of the research should be ensured. The author explained the provision of reliability in four stages: credibility, dependability, transferability and confirmability, which can all be explained as follows:

Credibility

Due to their participatory nature, action research includes some different criteria. Some researchers make various criticisms that action research has fewer features. In order to eliminate this criticism, it is necessary to ensure credibility in action research (Mertler, 2019). In order to ensure credibility in the present study, the researcher chose the special education practice school where he worked as the place of survey. All activities carried out during the application process of the study were recorded with videos, and interviews with the prepared forms. Nine different authentic materials were prepared, and activity plans were developed and implemented as regards the authentic teaching materials. The activity plan for each material was planned, implemented and evaluated in the application's systematic cycle. Therefore, the activity planning cycle of the study was repeated nine times during the implementation process.

Dependability

To ensure a strategy of dependability in action research, it is necessary to establish a group that controls the research data. This group should observe whether all the steps of the study are carried out in line with its objectives and make the necessary controls (Uzuner, 2005). In this study, opinions were received from three field experts from the field of dependability, as result of which, five evaluation meetings were held throughout the implementation process.

Transferability

Unlike quantitative studies, the results cannot be generalized in qualitative studies. However, the applicability of the results can be ensured in similar situations and conditions. Therefore, it is necessary to describe the study in detail and ensure its transferability (Stringer, 2007). In order to ensure transferability, the researcher collected in-depth data with different data collection tools by using the parent interview form, the evaluations of the teacher before and after the application, the teacher interview form at the end of the application, the video recordings and the criterion-dependent assessment tool. In addition, the researcher described the implementation processes of the study in detail with ABC (anecdotal) records and frequently included direct quotations for the interpretation of the data.

Confirmability

In order to ensure confirmability in action research, data collected must be unbiased (Uzuner, 2005). The data collected during the study were collected objectively without the interpretation of the researcher so as to ensure the researcher's confirmability. Using different data collection techniques, the researcher compared the scripts and made descriptive analyses on them. In addition, the researcher tried to be impartial during the presentation and interpretation of the findings and gave direct quotations from the data obtained during the study. In order to ensure objectivity in the analysis of the data, the opinions of the field experts were taken.

Results

This section presents the data obtained in accordance with the research questions. The results are shown under the headings indicating the findings related to the parents' opinions prior to the teaching activity with the authentic teaching materials and the teacher's opinions before and after the application in the first four weeks, the findings regarding the effect of the applications made with authentic materials on generalization in the fifth week, the findings related to the general evaluation of teaching with authentic materials in the sixth week, and the findings related to the teacher's opinions about the applications made with the authentic teaching materials in the final week.

Results Based on the Parents' Views Prior to the Teaching Activity Conducted with Authentic Teaching Materials and on the Teacher's Criterion-Dependent Assessment Tool Before and After the Activity

This part presents the answers to the questions asked by the parents to the students with moderate intellectual disability before the application and the assessments made by the practice teacher with the criterion-dependent assessment tool before and after the application. The teaching activities conducted in the first four weeks are given in tables and presented in detail.

Results of the Activities in the First Week

Parents' Views Before the Teaching Activities Conducted with Authentic Teaching Materials

In line with the research question, the answers to the questions asked by the parents to the students regarding the acquisition of "Rain as Part of Daily Weather Conditions" are given in Table 1.

Table 1. Results based on the questions asked by the parents to the students regarding the topic of "rain as part of daily weather conditions"

Statements	P1		P2		P3	
	Yes	No	Yes	No	Yes	No
Does your child look out of the window and respond to the question: "What is the weather like today"?		+		+		+
Does your child demand activities as appropriate to the weather conditions? (Going to the park, playing snowballs, etc.)		+		+		+
Does your child behave appropriately at home in accordance with daily weather conditions? (Like not opening windows in cold weather.)		+		+		+
Does your child notice the changes in daily weather conditions?		+		+		+
Does your child pay attention to the weather conditions when choosing clothes?		+		+		+

Table 1 shows that all parents expressed negative opinions regarding the statements. In this respect, it can be stated that the students do not have any knowledge about the given notifications.

Results Based on the Teacher's Criterion-Dependent Assessment Tool Used Before and After Teaching with Authentic Materials

In line with the research question, Table 2 presents the results based on the teacher's criterion-dependent assessment tool regarding the topic of "*Rain* as Part of Daily Weather Conditions" before and after the application.

Table 2. Results based on the criterion-dependent assessment tool regarding the topic of "rain as part of daily weather conditions" before and after the application

Statements	Pre-application			Post-application		
	S1	S2	S3	S1	S2	S3
The student shows the rainy weather as indicated in the "Felt book" material.	-	-	-	+	+	+
The student shows the rainy weather on the material "Look - see - learn".	+	-	-	+	+	+
The student shows the rainy weather on the material called the "Wheel of Fortune".	-	-	-	+	+	+
The student shows the rainy weather on the material called the "Cube".	-	-	+	+	+	+
Criterion	1/4	0/4	¼	4/4	4/4	4/4

As can be seen in Table 2, the students gave correct answers to only two of the four statements before the application, and they gave correct answers to all of the statements after the application performed through authentic teaching materials.

The general evaluation of the first week practices revealed that before the implementation of the activities, the students with moderate intellectual disability gave incorrect responses to all the questions asked by their parents. In addition, the assessments of the practice teacher with the criterion-dependent assessment tool before the implementation of the activities indicated that the students S1 and S3 gave correct answers to one question and gave incorrect responses to the rest of questions, while the other student (S2) gave wrong answers to all of the questions. After the implementation

of the activities, it was determined that the students gave correct answers to all of the questions as seen in the assessments made by the teacher with the criterion-dependent assessment tool.

Results of the Activities in the Second Week

Parents' Views Before the Teaching Activities Conducted with Authentic Teaching Materials

In line with the research question, the answers to the questions asked by the parents to the students regarding the topic of "*Sunny Weather* as Part of Daily Weather Conditions" prior to the application are given in Table 3.

Table 3. Results based on the questions asked by the parents to the students regarding the topic of "sunny weather as part of daily weather conditions"

Questions	P1		P2		P3	
	Yes	No	Yes	No	Yes	No
Does your child look out of the window and respond the question: "What is the weather like today"?	+		+		+	
Does your child demand activities as appropriate to the weather conditions? (Going to the park, playing snowballs, etc.)		+		+		+
Does your child behave appropriately at home in accordance with daily weather conditions? (Like not opening windows in cold weather.)	+		+		+	
Does your child notice the changes in daily weather conditions?		+	+		+	
Does your child pay attention to the weather conditions when choosing clothes?	+			+		+

As can be seen in Table 3, all of the parents gave positive responses to the following question: "Does your child look out of the window and answer the question "What is the weather like today?", indicating that they received correct responses from all three students (S1, S2, and S3).

In addition to that, it seems that all of the parents received wrong responses from their children (S1, S2, and S3), and thus, they expressed negative responses to the question: "Does your child demand activities as appropriate to the weather conditions? (i.e., Going to the park, playing snowballs, etc.)"

It is also apparent that all of the parents gave positive responses to the following question: "Does your child behave appropriately according to daily weather conditions at home? (Like not opening windows in cold weather)", indicating that they received correct answers from all three students (S1, S2, and S3).

Moreover, the above-mentioned table shows that only one student's (S1) parent mentioned to have observed a negative attitude regarding the following statement: "Does your child notice the changes in daily weather conditions?", while the other two students seemed to have presented positive attitudes (S2 and S3).

The table also shows that only one student's (S1) parent mentioned to have observed a positive attitude regarding the following statement: "Does your child pay attention to the weather conditions when choosing clothes?", while the other parents presented negative responses pertaining to their children's attitudes (S2 and S3).

The Results of the Teacher's Criterion-Dependent Assessment Tool for Before and After the Implementation with Authentic Materials

In line with the research question, the results obtained by the practice teacher based on the criterion-dependent assessment tool before and after the application as regards the topic of "*Sunny Weather,* as Part of Daily Weather Conditions", are presented in Table 4.

Table 4. Results based on the criterion-dependent assessment tool before and after the application as regards the topic of "sunny weather as part of daily weather conditions"

Statements	Pre-application			Post-application		
	S1	S2	S3	S1	S2	S3
The student shows the sunny weather as indicated in the "Felt book" material.	-	-	-	+	+	+
The student shows the sunny weather on the material "Look - see - learn".	-	-	-	+	+	+

The student shows the sunny weather on the material called the "Wheel of Fortune".	-	-	-	+	+	+
The student shows the sunny weather on the material called the "Cube".	-	-	-	-	+	+
Criterion	0/4	0/ 4	0/4	¾	4/4	4/4

As can be seen in Table 4, before the application, the students gave incorrect responses to all four statements, and after the application with the authentic teaching materials, one of them gave a wrong answer to one of the statements, yet all of the students responded correctly to all of the other statements.

The general evaluation of the second week practices indicated that the students with moderate intellectual disability gave correct responses to three of the questions asked by their parents before the implementation of the activities, yet they gave incorrect responses to two of them. Also, it is clearly seen that the students gave wrong answers to all the questions in the assessments made with the criterion-dependent assessment tool before the implementation of the activities. After the implementation of the activities, the assessments made by the teacher via the criterion-dependent assessment tool, one of the students (S1) was found to have given a wrong answer to one of the questions, but responded to the other questions correctly. The other two students (S2 and S3) turned out to have given correct answers to all the questions.

Results of the Activities in the Third Week

Parents' Views Before the Teaching Activities Conducted with Authentic Teaching Materials

Table 5 presents the answers to the questions asked by the parents regarding the topic of "Snowy Weather as Part of Daily Weather Conditions" before starting the application in line with the research question.

Table 5. The results obtained from the questions asked by the parents to the students about the topic of "snowy weather as part of daily weather conditions"

Questions	P1		P2		P3	
	Yes	No	Yes	No	Yes	No
Does your child look out of the window and respond to the question: "What is the weather like today"?	+		+		+	
Does your child demand activities as appropriate to the weather conditions? (Going to the park, playing snowballs, etc.)		+		+	+	
Does your child behave appropriately at home in accordance with daily weather conditions? (Like not opening windows in cold weather.)	+			+	+	
Does your child notice the changes in daily weather conditions?	+		+		+	
Does your child pay attention to the weather conditions when choosing clothes?	+		+			+

The results obtained before the application regarding the children's relevant responses show that all of the students (S1, S2, and S3) gave correct answers according to what their parents stated about the following notification: "Does your child look out of the window and respond to the question: "What is the weather like today"?"

As can be seen in the table given above, one of the students (S3) gave a correct response regarding the statement: "Does your child demand activities as appropriate to the weather conditions? (Going to the park, playing snowballs, etc.)", while the other two (S1, S2) gave incorrect responses.

It was also observed that two of the students (S1, S3) gave correct responses in relation to the statement: "Does your child behave appropriately at home in accordance with daily weather conditions? (Like not opening windows in cold weather)", while one (S2) gave an incorrect response.

It was determined that all of the students (S1, S2, and, S3) responded correctly in relation to the statement: "Does your child notice the changes in daily weather conditions?"

It was found that two of the students (S1, S2) gave correct responses in relation to the statement: "Does your child pay attention to the weather conditions when choosing clothes?", while one of them (S3) gave an incorrect response.

The Results of the Teacher's Criterion-Dependent Assessment Tool for Before and After the Implementation with Authentic Materials

In line with the research question, the results obtained by the practice teacher based on the criterion-dependent assessment tool before and after the application as regards the topic of "*Snowy Weather,* as Part of Daily Weather Conditions", are presented in Table 6.

Table 6. Results Obtained from the Pre- and Post-Application Criterion-Dependent Assessment Tool on the Topic of "Snowy Weather as Part of Daily Weather Conditions"

Statements	Pre-application			Post-application		
	S1	S2	S3	S1	S2	S3
The student shows the snowy weather as indicated in the "Felt book" material.	-	-	-	+	+	+
The student shows the snowy weather on the material "Look - see - learn".	+	-	-	+	-	+
The student shows the snowy weather on the material called the "Wheel of Fortune".	-	-	+	+	+	+
The student shows the snowy weather on the material called the "Cube".	-	-	-	-	+	+
Criterion	1/4	0/4	1/4	4/4	3/4	4/4

The review of the responses of the students to the statements posed pre-application and post-application conducted with the authentic materials showed that they gave correct responses to only two of the four statements before the application, and that they gave incorrect responses to two of the statements after the application with the authentic materials, but correctly to the rest of the statements.

The general evaluation of the third week practices indicated that S1 and S3 gave correct responses to four of the statements before the implementation of the activities, yet they gave incorrect responses to one of the statements, whereas S2 responded three of the statements correctly, but two of them incorrectly. Also, it is clearly seen in the assessments of the teacher via the criterion-dependent assessment tool before the implementation of the activities that S1 and S3 gave correct responses to one statement each, but all the other three statements incorrectly; however, S2 responded to all statements incorrectly. The assessments made by the teacher with the criterion-dependent assessment tool after the implementation of the activities indicated that S1 and S2 gave incorrect responses to one question each, but gave correct responses to the other questions, whereas S3 gave correct responses to all of the statements.

Results of the Activities in the Fourth Week

Parents' Views Before the Teaching Activities Conducted with Authentic Teaching Materials

Table 7 presents the answers to the questions asked by the parents regarding the topic of "Cloudy Weather as Part of Daily Weather Conditions" before starting the application in line with the research question.

Table 7. The results obtained from the questions asked by the parents to the students about the topic of "cloudy weather as part of daily weather conditions"

Questions	P1		P2		P3	
	Yes	No	Yes	No	Yes	No
Does your child look out of the window and respond to the question: "What is the weather like today"?	+		+		+	
Does your child demand activities as appropriate to the weather conditions? (Going to the park, playing snowballs, etc.)	+		+		+	
Does your child behave appropriately at home in accordance with daily weather conditions? (Like not opening windows in cold weather.)		+	+		+	
Does your child notice the changes in daily weather conditions?		+	+		+	
Does your child pay attention to the weather conditions when choosing clothes?	+		+		+	

The results obtained before the relevant application show that all of the students (S1, S2, and S3) gave correct responses according to what their parents stated regarding the following question: "Does your child look out of the window and respond to the question: 'What is the weather like today?'"

As can be seen in Table 7, all of the students (S1, S2 and S3) gave correct responses regarding the statement: "Does your child demand activities as appropriate to the weather conditions? (Going to the park, playing snowballs, etc.)".

It was also observed that two of the students (S2, S3) gave correct responses in relation to the statement: "Does your child behave appropriately at home in accordance with daily weather conditions? (Like not opening windows in cold weather)", while one (S1) gave an incorrect response.

It was determined that two of the students (S2 and S3) responded correctly in relation to the statement: "Does your child notice the changes in daily weather conditions?", whereas one of the students (S1) responded incorrectly.

It was found that all of the students (S1, S2, and S3) gave correct responses in relation to the statement: "Does your child pay attention to the weather conditions when choosing clothes?"

The Results of the Teacher's Criterion-Dependent Assessment Tool for Before and After the Implementation with Authentic Materials

In line with the research question, the results obtained by the practice teacher based on the criterion-dependent assessment tool before and after the application as regards the topic of "*Cloudy Weather,* as Part of Daily Weather Conditions", are presented in Table 8.

Table 8. Results obtained from the pre- and post-application criterion-dependent assessment tool on the topic of "cloudy weather as part of daily weather conditions"

Statements	Pre-application			Post-application		
	S1	S2	S3	S1	S2	S3
The student shows the cloudy weather as indicated in the "Felt book" material.	-	-	-	+	+	-
The student shows the cloudy weather on the material "Look - see - learn".	-	-	-	+	-	+
The student shows the cloudy weather on the material called the "Wheel of Fortune".	-	-	-	+	+	+
The student shows the cloudy weather on the material called the "Cube".	-	-	-	+	+	+
Criterion	0/4	0/4	0/4	4/4	3/4	¾

As can be seen in Table 8, the students gave incorrect responses to all four statements (S1, S2, and S3) before the application, but after the application with the authentic materials, they gave incorrect responses to two of the statements, but correctly to all of the other statements.

The general evaluation of the fourth week practices indicated that S1 gave correct responses to two of the statements posed by her parent before the implementation of the activities, yet gave incorrect responses to three of the statements, whereas S2 and S3 responded to all of the statements correctly. Also, it is clearly seen in the assessments of the teacher via the criterion-dependent assessment tool before the implementation of the activities that none of the students gave correct responses to the statements. The assessments made by the teacher with the criterion-dependent assessment tool after the implementation of the activities indicated that S2 gave an incorrect response to one question, but gave correct responses to the other questions, whereas S1 and S3 gave correct responses to all of the statements.

Results Concerning the Generalization of Activities Conducted with Authentic Materials

Results of the Activities in the Fifth Week

Relevant parent views and the results obtained from the criterion-dependent assessment tool used by the teacher were examined in order to be able to determine the extent of generalization as a result of the four-week activities carried out to reveal the effectiveness of working with authentic materials in teaching daily weather conditions contained in the life science lesson acquisitions of students with special needs at Stage I in special education practice schools.

Parents' Views on the Effect of Applications Conducted with Authentic Materials on Generalization

In this context, the responses of the students to the questions asked by the parents are presented in Table 9 in order to provide findings about whether or not the generalization can be achieved as regards teaching the topic of "daily weather conditions such as rainy weather, sunny weather, snowy weather, and cloudy weather".

Table 9. Results Obtained from the Students' Responses to the Questions Asked by the Parents, to Explore Whether or Not Generalization can be Achieved for Teaching Daily Weather Conditions including, "Rainy Weather, Sunny Weather, Snowy Weather, and Cloudy Weather".

Questions	P1		P2		P3	
	Yes	No	Yes	No	Yes	No
Does your child look out of the window and respond to the question: "What is the weather like today"?	+		+		+	
Does your child demand activities as appropriate to the weather conditions? (Going to the park, playing snowballs, etc.)	+		+		+	
Does your child behave appropriately at home in accordance with daily weather conditions? (Like not opening windows in cold weather.)	+		+		+	
Does your child notice the changes in daily weather conditions?	+		+		+	
Does your child pay attention to the weather conditions when choosing clothes?	+		+		+	

As can be seen in the table given above, the results obtained before the relevant application show that all of the students (S1, S2, and S3) gave correct responses according to what their parents stated regarding the following question: "Does your child look out of the window and respond to the question: 'What is the weather like today?'"

It is also clearly seen that all of the students (S1, S2, and S3) gave correct responses according to what their parents stated regarding the following question: "Does your child demand activities as appropriate to the weather conditions? (Going to the park, playing snowballs, etc.)"

It can also be observed that all of the students (S1, S2, and S3) gave correct responses in relation to the statement: "Does your child behave appropriately at home in accordance with daily weather conditions? (Like not opening windows in cold weather)".

In addition, all of the students (S1, S2, and S3) gave correct responses in relation to the statement: "Does your child notice the changes in daily weather conditions?"

Also, all of the students (S1, S2, and S3) gave correct responses in relation to the statement: "Does your child pay attention to the weather conditions when choosing clothes?"

The Results of the Criterion-Dependent Assessment Tool Regarding Generalization After the Implementation with Authentic Materials by the Teacher

In line with the research question, the results of the criterion-dependent assessment tool consisting of the following materials, namely the "Felt notebook, look-see-learn, wheel of fortune, and cubes" were presented in tables, based on the activities applied by the teacher for the purpose of generalizing the method of using authentic materials for teaching "rainy weather, sunny weather, snowy weather, cloudy weather" conditions.

Table 1. Results Obtained from the Criterion-Dependent Assessment Tool in Relation to the Teaching Material of "What is the Weather Like Today?" After the Activities Carried out by the Teacher Regarding the Generalization of Learning Rainy Weather, Sunny Weather, Snowy Weather, and Cloudy Weather Conditions

Statements	Post-application		
	S1	S2	S3
The student shows the rainy weather on the teaching material of "What is the weather like today?"	+	+	+
The student shows the sunny weather on the teaching material of "What is the weather like today?"	+	+	+
The student shows the snowy weather on the teaching material of "What is the weather like today?"	+	+	+
The student shows the cloudy weather on the teaching material of "What is the weather like today?"	+	+	+
Criterion	4/4	4/4	4/4

As shown in Table 10, after the application conducted through authentic teaching materials, the students turned out to give correct responses to all of the statements (S1, S2, and S3).

Table 2. Results Obtained from the Criterion-Dependent Assessment Tool in Relation to the Teaching Material of "Felt Book" After the Activities Carried out by the Teacher Regarding the Generalization of Learning Rainy Weather, Sunny Weather, Snowy Weather, and Cloudy Weather Conditions

Statements	Post-application		
	S1	S2	S3
The student shows the rainy weather on the "Felt Book".	+	+	+
The student shows the sunny weather on the "Felt Book".	+	+	+
The student shows the snowy weather on the "Felt Book".	+	+	+
The student shows the cloudy weather on the "Felt Book".	+	+	+
Criterion	4/4	4/4	4/4

As can be seen in Table 11, the students turned out to give correct responses to all of the statements (S1, S2, and S3) after the application conducted through authentic teaching materials.

Table 3. Results Obtained from the Criterion-Dependent Assessment Tool in Relation to the Teaching Material of "Look-See-Learn" After the Activities Carried out by the Teacher Regarding the Generalization of Learning Rainy Weather, Sunny Weather, Snowy Weather, and Cloudy Weather Conditions

Statements	Post-application		
	S1	S2	S3
The student shows the rainy weather on the material named "Look-See-Learn".	+	+	+
The student shows the sunny weather on the material named "Look-See-Learn".	+	+	+
The student shows the snowy weather on the material named "Look-See-Learn".	+	+	+
The student shows the cloudy weather on the material named "Look-See-Learn".	+	+	+
Criterion	4/4	4/4	4/4

As seen in Table 12, the students turned out to give correct responses to all of the statements (S1, S2, and S3) after the application conducted through authentic teaching materials.

Table 4. Results Obtained from the Criterion-Dependent Assessment Tool in Relation to the Teaching Material of "Wheel of Fortune" After the Activities Carried out by the Teacher Regarding the Generalization of Learning Rainy Weather, Sunny Weather, Snowy Weather, and Cloudy Weather Conditions

Statements	Post-application		
	S1	S2	S3
The student shows the rainy weather on the material named the "Wheel of Fortune".	+	+	+
The student shows the sunny weather on the material named the "Wheel of Fortune".	+	+	+
The student shows the snowy weather on the material named the "Wheel of Fortune".	+	+	+
The student shows the cloudy weather on the material named the "Wheel of Fortune".	+	+	+
Criterion	4/4	4/4	4/4

As shown in Table 13, the students turned out to give correct responses to all of the statements (S1, S2, and S3) after the application conducted through authentic teaching materials.

Table 14. Results Obtained from the Criterion-Dependent Assessment Tool in Relation to the Teaching Material of "Cubes" After the Activities Carried out by the Teacher Regarding the Generalization of Learning Rainy Weather, Sunny Weather, Snowy Weather, and Cloudy Weather Conditions

Statements	Post-application		
	S1	S2	S3
The student shows the rainy weather on the material named the "Cubes".	+	+	+
The student shows the sunny weather on the material named the "Cubes".	+	+	+
The student shows the snowy weather on the material named the "Cubes".	+	+	+
The student shows the cloudy weather on the material named the "Cubes".	+	+	+
Criterion	4/4	4/4	4/4

As shown in Table 14, the students turned out to give correct responses to all of the statements (S1, S2, and S3) after the application conducted through authentic teaching materials.

The general evaluation of the fifth week practices indicated that all three students with moderate intellectual disabilities gave correct responses to all of the statements posed by their parents before the implementation of the activities. After the implementation of the activities, it was found that all of the students gave correct responses to all questions in the assessments made by the teacher with the criterion-dependent assessment tool, indicating that the generalization was successful in the studies carried out.

Results Concerning the General Evaluation of Activities Conducted with Authentic Materials Results of the Activities in the Sixth Week

As a result of the activities carried out to reveal the effectiveness of working with authentic teaching materials in teaching daily weather conditions contained within the life science lesson acquisitions of students with special needs studying at Stage I in special education practice schools, the opinions of the parents and the results of the criterion-dependent assessment tool used by the teacher were included in order to make a general evaluation.

Parents' Views on the General Evaluation Regarding the Effect of Applications Conducted with Authentic Materials

Table 15 presents, in line with the research question, the students' responses to the questions asked by their parents for the purpose of a general evaluation of the "daily weather conditions such as rainy weather, sunny weather, snowy weather, and cloudy weather" are presented in.

Table 15. Results obtained from the students' responses to their parents in the context of a general evaluation of the rainy weather, sunny weather, snowy weather, and cloudy weather conditions

Statements	P1		P2		P3	
	Yes	No	Yes	No	Yes	No
Does your child look out of the window and respond to the question: "What is the weather like today"?	+		+		+	
Does your child demand activities as appropriate to the weather conditions? (Going to the park, playing snowballs, etc.)	+		+		+	
Does your child behave appropriately at home in accordance with daily weather conditions? (Like not opening windows in cold weather.)	+		+		+	
Does your child notice the changes in daily weather conditions?	+		+		+	
Does your child pay attention to the weather conditions when choosing clothes?	+		+		+	

As can be seen in the table given above, the results obtained before the relevant application show that all of the students (S1, S2, and S3) gave correct responses according to what their parents stated regarding the following question: Does your child look out of the window and respond to the question: "What is the weather like today"?

It is also clearly seen that all of the students (S1, S2, and S3) gave correct responses according to what their parents stated regarding the following question: "Does your child demand activities as appropriate to the weather conditions? (Going to the park, playing snowballs, etc.)"

It can also be observed that all of the students (S1, S2, and S3) gave correct responses in relation to the statement: "Does your child behave appropriately at home in accordance with daily weather conditions? (Like, not opening windows in cold weather)".

In addition, all of the students (S1, S2, and S3) gave correct responses in relation to the statement: "Does your child notice the changes in daily weather conditions?"

Also, all of the students (S1, S2, and S3) gave correct responses in relation to the statement: "Does your child pay attention to the weather conditions when choosing clothes?"

The Results of the Criterion-Dependent Assessment Tool Regarding the General Evaluation After the Implementation with Authentic Materials by the Teacher

In line with the research question, Table 16 shows the results of the criterion-dependent assessment tool obtained after the activities (materials including picture cards, a wheel, a stacking game, a play mat) were applied by the teacher in the context of a general evaluation of using them for teaching the "rainy weather, sunny weather, snowy weather, and cloudy weather" conditions. Within the scope of the general evaluation, the findings were obtained by using different materials from the materials used in the first five weeks.

Table 16. Results Obtained from the Criterion-Dependent Assessment Tool in Relation to the Teaching Material of "Picture Cards" After the Activities Carried out by the Teacher Regarding the General Evaluation of Learning Rainy Weather, Sunny Weather, Snowy Weather, and Cloudy Weather Conditions

Statements	Post-application		
	S1	S2	S3
The student shows the rainy weather on the "Picture Cards".	+	+	+
The student shows the sunny weather on the "Picture Cards".	+	+	+
The student shows the snowy weather on the "Picture Cards".	+	+	+
The student shows the cloudy weather on the "Picture Cards".	+	+	+
Criterion	4/4	4/4	4/4

As shown in Table 16, all of the students (S1, S2, and S3) gave correct responses to each of the statements after the application conducted through authentic teaching materials.

Table 17. Results Obtained from the Criterion-Dependent Assessment Tool in Relation to the Teaching Material of "Wheel" After the Activities Carried out by the Teacher Regarding the General Evaluation of Learning Rainy Weather, Sunny Weather, Snowy Weather, and Cloudy Weather Conditions

Statements	Post-application		
	S1	S2	S3
The student shows the rainy weather on the "Wheel".	+	+	+
The student shows the sunny weather on the "Wheel".	+	+	+
The student shows the snowy weather on the "Wheel".	+	+	+
The student shows the cloudy weather on the "Wheel".	+	+	+
Criterion	4/4	4/4	4/4

As can be seen in Table 17, all of the students (S1, S2, and S3) gave correct responses to each of the statements after the application conducted through authentic teaching materials.

Table 18. Results Obtained from the Criterion-Dependent Assessment Tool in Relation to the Teaching Material Named "Stacking Game" After the Activities Carried out by the Teacher Regarding the General Evaluation of Learning Rainy Weather, Sunny Weather, Snowy Weather, and Cloudy Weather Conditions

Statements	Post-application		
	S1	S2	S3
The student shows the rainy weather on the "Stacking Game".	+	+	+
The student shows the sunny weather on the "Stacking Game".	+	+	+
The student shows the snowy weather on the "Stacking Game".	+	+	+
The student shows the cloudy weather on the "Stacking Game".	+	+	+
Criterion	4/4	4/4	4/4

As it is given in Table 18, all of the students (S1, S2, and S3) gave correct responses to each of the statements after the application conducted through authentic teaching materials.

Table 19. Results Obtained from the Criterion-Dependent Assessment Tool in Relation to the Teaching Material Named "Play Mat" After the Activities Carried out by the Teacher Regarding the General Evaluation of Learning Rainy Weather, Sunny Weather, Snowy Weather, and Cloudy Weather Conditions

Statements	Post-application		
	S1	S2	S3
The student shows the rainy weather on the "Play Mat".	+	+	+
The student shows the sunny weather on the "Play Mat".	+	+	+
The student shows the snowy weather on the "Play Mat".	+	+	+
The student shows the cloudy weather on the "Play Mat".	+	+	+
Criterion	4/4	4/4	4/4

As shown in Table 19, all of the students (S1, S2, and S3) gave correct responses to each of the statements after the application conducted through authentic teaching materials.

The general evaluation of the sixth week practices indicated that all three students with moderate intellectual disabilities gave correct responses to all of the statements posed by their parents before the implementation of the activities. Following the implementation of the activities with the materials different from the previous sessions, it was determined that all of the students gave correct responses to all questions in the assessments made with the criterion-dependent assessment tool. Thus, it was concluded that the students successfully achieved the desired goals.

Results Obtained from the Teacher's Views on the Activities Conducted with Authentic Materials

The results obtained from the interviews held with the practice teacher in order to determine her relevant views about the activities conducted with authentic materials were gathered and analysed under five themes in conformity with the interview questions.

Teacher's Views on How the Presence of Someone Other than the Students in the Class Affects Teaching

The participation of the parents was ensured during the implementation of the activities and the teacher's views were taken so as to determine the impact of parent participation. The relevant teacher views are presented as follows: "There was a slight influence on the teaching in the first week. The students made eye contact with the guests in the class. We observed a slight shyness while they were answering the questions. In the following weeks, this was not the case. The general flow of the teaching was not negatively affected. I even observed a self-confidence development in the students." Based on the above-mentioned view, it was seen that the students were influenced by the presence of their parents in the first week and hesitated while expressing their opinions, but this problem disappeared in the following weeks.

Teacher's Views on Possessing the Prerequisite Skills for Learning Daily Weather Conditions: "Saying and Showing the Concepts of Sun, Rain, Snow, and Cloud"

The teacher's views were taken regarding whether the students had the skills of "saying and showing the concepts of sun, rain, snow, and cloud", which are the prerequisite skills for learning about daily weather conditions. The relevant teacher views are presented as follows: "They can say the concepts of 'sun, rain, snow, and cloud' in relation to daily weather conditions." The practice teacher was of the opinion that the students could talk about the daily weather conditions and the basic concepts related to them.

Teacher's Views on Whether the Changes in Rainy, Sunny, Snowy, and Cloudy Daily Weather Conditions Attract Students' Attention

The teacher's views were taken on whether the changes in weather conditions attracted the students' attention. The relevant teacher views are presented as follows: "Changes in daily weather conditions caught the attention of the students. For example, they say that the house is brighter in sunny weather. They have observed that the sun is warmer, while the sky is greyer in rainy weather. It has drawn their attention since the whole place got wet when it rained as if it had been washed with water." It can be seen that students become aware of the changes in daily weather conditions and can express this verbally. In addition, it was determined that they made mention of the characteristics of daily weather conditions as a result of their observations and said that "the sun is warmer, and the sky is greyer in rainy weather". It is remarkable that the students seemed to have associated daily weather conditions with events from daily life, on which the teacher commented as follows, "It has drawn their attention since the whole place got wet when it rained as if it had been washed with water."

Teacher's Views on the Contribution of Students' Learning about Daily Weather Conditions to their Daily Life Skills

The teacher's views were taken regarding the contribution of learning about daily weather conditions to the daily life skills of the students in the sample. The relevant teacher views are presented as follows: "They are aware that we are now in the 'winter season', and when they go out to play snowballs, they always put on their gloves, scarves, berets and coats. They say they do not want to go out if it is too cold. Their families also say that they choose appropriate clothes by considering the weather conditions while choosing clothes at home." The teacher's opinion indicated that the students

exhibited behaviours in conformity with daily weather conditions. In this regard, it is seen that they acted depending on the particular weather condition, and chose their clothes accordingly, a situation which was also mentioned by their families.

Teacher's Views on Whether the Students Demanded Activities As Appropriate to the Weather Conditions

The teacher's views were taken as to whether the actions requested by the students were in conformity with the weather conditions. The relevant teacher views are presented as follows: "They ask for weather-appropriate activities at school, such as going out to the garden and playing snowballs according to the weather conditions." Based on the practice teacher's view, it is seen that the students acted in line with the weather conditions and demanded for outdoor or indoor activities accordingly.

Discussion and Conclusion

The aim of this study is to reveal the effectiveness of working with authentic teaching materials in teaching about daily weather conditions, which are included in the achievements of life studies lesson, with the participation of parents of students with special needs who receive education at Stage I in special education practice schools. In this respect, the results were discussed in line with the relevant literature and the results were presented.

When the parents' views collected before the application conducted with authentic teaching materials in the first four weeks and the results reached by the teacher before and after the application with the criterion-dependent assessment tool are evaluated in general, the relevant outcome can be listed as follows:

Considering the parents' views before the application, it was determined that the students gave correct responses to a significant portion of the questions in the other weeks (two, three and four) except the first week. This can be explained by the fact that the students grasped the subject and the learning started, since the parents asked the same questions to the students before each application about the daily weather conditions. Students were required to demonstrate their observation skills while answering the questions. Observation is one of the important skills needed to ensure that learning can take place. It can be assumed that this activity method also improves the observation skills of the students.

The results obtained by the teacher before and after the application with the criterion-dependent assessment tool in the first four weeks indicated that the number of correct responses before the application was very low, whereas almost all of the responses given after the application were correct, revealing that the use of authentic materials was effective in learning daily weather conditions for students with moderate intellectual disabilities.

Today, one of the most important factors that are directly influencing the education processes is the rapidly advancing and developing technology (Yarar Kaptan & Beldağ, 2021). The need to develop and use materials to support curricula is increasing in order to make learning easier and to ensure permanence, as well as to improve the quality of education and training (Nalçacı & Ercoşkun, 2005). The use of methods, techniques, tools and materials in educational processes is among the most studied concepts in the literature. Similarly, it has been stated in the literature that the creation of multiple learning environments for the effectiveness of the learning-teaching processes with the use of tools and materials will appeal to both the eye and the ear, so that permanent learning will take place (Şimşek, 2002). Since the use of teaching materials involves more sense organs in the learning process, it helps to ensure permanent learning, increases the quality of education and efficiency. In addition, it will possible to create an effective learning environment by offering richer experiences to students in the course environment (Doğdu & Arslan, 1993).

As seen in the relevant literature, the use of authentic materials proves to have a significant impact on the learning capacity of students with moderate intellectual disabilities. In a study called "Investigation of the Impact of Materials Developed in the Scope of 'Social Life Module' for Mildly Mentally Retarded Students" by Kosif (2019), the researcher reported that the materials used for teaching some of the achievements in the social life module to the mildly mentally retarded students contributed positively to their academic success and motivation. On the other hand, Arpacık (2014) concluded that using interactive multimedia materials for teaching students with intellectual disabilities would make significant contributions to learning in his study titled "Development Process of Multimedia Materials for Students with Learning Disabilities and the Effect on the Teachers and Students". Çiftçi (2009) concluded that the computer aided

material developed for the purpose of the study had a positive impact on students' learning. Similarly, İlanbey (2018) reported that the computer-assisted instructional material she developed for students with intellectual disabilities had a significant impact on their learning capacity. Avcıoğlu (2012) stated that the use of materials developed by teachers is effective on students' cognitive and affective behaviours as well as improving their academic achievement. The literature review shows many other relevant academic studies in the field (Gürsel, 1993; Yıkmış, 1999; Diler, 2000; Atik Çatak, 2006; Avcıoğlu, 2012; Bülbül, 2014; Mutlu, 2016; Keser, 2017; Gündüz, 2019; Hersh, Meng-Fen & Georgette 2003; Boster, Meyer, Roberto & Inge 2011). It is seen that the results obtained in line with the applied activities covering the first four weeks largely overlap with the relevant literature. In this framework, it has been concluded that the use of authentic teaching materials makes a significant contribution to the learning processes of students with moderate intellectual disability.

To achieve generalization, a skill or behaviour learned under instructional conditions must be able to be exhibited in different environments or in case of need so that it gains functionality (Taubman, Leaf, & Kuyumjian, 2011; Collins, 2012; Alberto & Troutman, 2015). In the relevant literature, generalization is expressed as "performing a certain kind of behaviour in different circumstances such as the environment, materials, persons, and time when it is not taught after it is learned under certain conditions, or the display of a behaviour that is similar to the learned behaviour and has the same function in different situations" (Sulzer-Azaroff & Mayer 1991; Scheuermann &Webber 2002; Tekin-İftar 2012).

The general evaluation made as a result of the generalization practices in the fifth week shows that the students with moderate intellectual disability gave correct responses to all the questions asked by their parents before the implementation of the activities. After the implementation of the activities, all of the students were found to give correct responses to all questions in the assessments made by the teacher with the criterion-dependent assessment tool. According to these results, it was concluded that the relevant activities were successful, that the activities carried out in the first four weeks were permanent, and that learning was achieved according to the generalization results.

As a result of the activities conducted for the general evaluation, it was seen that the students with moderate intellectual disabilities responded to all of the questions correctly before the implementation of the activities. It was concluded that all of the students gave correct responses to all questions in the assessments made with the criterion-dependent assessment tool after the activities conducted with the materials used differently from the previous sessions. As a result of the activities conducted by parents and teachers, the success in the generalization phase was also seen in the general evaluation phase, in which it was concluded that the use of materials different from the authentic materials used thus far and receiving correct responses to all questions made a positive contribution to students with moderate intellectual disability with respect to learning about daily weather conditions.

The relevant literature review also shows that the use of materials with different characteristics in the learning processes of students with special needs has positive effects on the generalization of learning and general evaluation. In this context, İlanbey (2018) investigated the effectiveness of the computer-assisted instructional material developed in order to teach the concepts of "many" and "a few" to students with intellectual disabilities in the study titled "The Effectiveness of Computer Assisted Instructional Material for Teaching 'Many Objects versus 'A Few Objects' Concepts to Students with Intellectual Disabilities". The study reported that the computer-assisted instructional material developed for the learning of students with intellectual disabilities affected learning and ensured the permanence of the behaviours. Dağseven (2001) stated that with the use of materials developed for students with intellectual disabilities in teaching processes, generalizability, which is one of the basic indicators of learning, is achieved as well as ensuring the acquisition of some mathematical skills. As a result of the study named "The Investigation of the Effect of the Teaching Material Designed for the Dressing Skill as Part of Gaining Self-care Skills", Arslan (2018) determined that the group to which the designed teaching material was applied progressed faster in acquiring the dressing skill. In like manner, in the relevant literature, there are many other studies conducted in different disciplines regarding the contribution of material use to permanent learning in the learning processes of students with intellectual disabilities and learning difficulties (Karahüseyinoğlu, 2002; Erben, 2005; Gınalı Göriş, 2006; Atik Çatak, 2006; Arslan, 2018).

As a result of the generalization and general evaluation practices carried out in the fifth and sixth weeks, it was concluded that the use of authentic materials in the learning processes of students with moderate intellectual disability contributed to achieving permanent learning.

The results obtained from the interview with the teacher about the activities made with authentic materials revealed that the students were influenced and they felt hesitant from the parents' presence in the first week, while this problem disappeared in the following weeks as expressed by the teacher. This is likely to contribute to the more unbiased answers given by the students and to further strengthen the results of the study. Parents' participation appears to enable them to spend time with their children, contribute to the discovery and development of children's interests and talents, a situation which positively affects children's success and increases the quality of education (Akkaya, 2007). In addition, Yücetaş Artan (2019) reviewed 144 studies consisting of articles, master's and doctoral theses written between 2000 and 2018 on parent participation in education and concluded that if the school and family cooperated, students would feel more secure at school and would be more successful in the academic field. In the study conducted by Azap (2011), which evaluated special education practice schools in terms of purpose, structure, and process within the framework of parents' opinions, the learning process stood out as the most positive evaluation of parents, a situation which coincides with the result of the present study. The relevant literature review demonstrates similar results being repeated in many other studies (Keçeli-Kaysılı, 2009; Ayral et al., 2012; Dinç 2017; Ertem & Gökalp 2020). Yücetaş Artan (2019) reported that "Education that starts in the family continues at school and the family is always the complement of the school", thereby supporting the results of this study. In this regard, it was concluded in the sub-problems of the study that the activities carried out by parents at home and parents' participation in the classroom contributed positively to the learning of students with moderate intellectual disability.

This study found out that expressing the basic concepts about daily weather conditions, noticing the changes in daily weather conditions and making observations about them contributed positively to the learning of such phenomena by students with moderate intellectual disability.

Based on the activities contained in this study, it was concluded that the students behaved according to the daily weather conditions and acted according to a particular weather condition, they made their clothing preferences accordingly, a situation which was also indicated by their families. In addition, the students appeared to act according to the weather conditions while expressing the actions they demanded and were seen doing their actions accordingly. It was found that students preferred clothes according to daily weather conditions and expressed their wishes according to weather observations. In this direction, the transformation of students' learning into behaviour can be explained by the complete achievement of learning.

According to the teachers' views, it is seen that learning has been achieved to a great extent as a result of the practices carried out by using authentic teaching materials. Avcıoğlu (2012) reported that the use of various equipment in the lessons would positively affect the success and development of the students at school, that such students were interested in the use of different tools and equipment, and that the use of tools and equipment led to a significant increase in the interest of students with intellectual disabilities towards lessons and the school. In addition, teachers are often of the opinion that the use of tools and materials in the lessons supports education in terms of visual aids, embodies the subjects, allows learning by doing, draws the attention of the students, arouses interest and attention in the lessons and ensures their active participation, makes the children less bored and prevents the formation of problem behaviours accordingly, makes learning easier and enjoyable, increases students' success, makes learning more permanent and long-lasting, and alleviates the burden of teachers. Research shows that the use of materials with different characteristics has a positive effect on the learning of students with special needs (Keser & Özdemir, 2017; Mete & Yıldırım, 2018; Özlem Yazlık, 2018; Çay, Yıkmış & Sola Özgüç, 2020; Yıldız & Yıkmış, 2020).

The results obtained from the teachers' views in relation to the use of authentic materials for teaching daily weather conditions contained within the life science class acquisitions of the students with moderate intellectual disability at Stage I in special education practice schools reveal that the students were able to express the basic concepts about daily

weather conditions and notice the changes in the weather conditions. It appeared that they behaved according to daily weather conditions, a situation which can be explained by the effectiveness of the materials used in this study.

Recommendations

This Section presents the following recommendations for practitioners and researchers in line with the results of the study:

- Considering the effect of authentic materials on the learning processes of students with moderate intellectual disability, such materials should be included more in the teaching practices.
- In order to ensure learning and generalization, it can be recommended to ensure the participation of parents in the education processes of students with moderate intellectual disability.
- In order to monitor, control and evaluate the learning processes of students with moderate intellectual disability in a systematic way, it can be suggested that special education teachers prepare and use a criterion-dependent assessment tool specific to each learning acquisition.
- In order to achieve learning, generalization, and permanence, it can be recommended to use different types of authentic materials, taking into account the characteristics as regards the students' disability. In order for learning, generalization and permanence to take place, it is recommended to use realistic materials that show different types of weather events, traffic rules and help them gain daily life skills, taking into account the disability characteristics of the students.
- It can be recommended that authentic materials be designed in accordance with daily life in order to transform the learning processes of students with moderate intellectual disability into permanent behaviour.
- It can be suggested that the teaching materials developed for use in the learning processes of students with moderate intellectual disability should be modular so that they can be used in different acquisitions.
- In this study, the students with moderate intellectual disability appeared to be very interested in the features such as inserting and removing in stacking games. It can be recommended that these features be included in the materials developed in this context.
- The relevant literature shows that there are not enough studies on teaching geographical concepts in particular for students with moderate intellectual disability, and on social sciences, life studies and social studies in general. In this respect, it can be recommended to increase the number of practical academic studies.

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Statements of Publication Ethics

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References

Akkaya, M. (2007). The evaluation of family involvement activities implemented in the preschool institutions based on teachers and parents opinions. Unpublished Master's Thesis, Anadolu University-Eskişşehir, National Thesis Center of the Council of Higher Education.

Alberto, P., & Troutman, A. (2015). *Applied behavior analysis for teachers.* (H. Sarı, Çev.) Nobel Academy Publishing.

APA. (2018). *Dıagnostıc and statıstıcal manual of mental dısorders, 5th edition (DSM 5).* American Psychiatric Association. https://www.hakjisa.co.kr/common_file/bbs_DSM-5_Update_October2018_NewMaster.pdf adresinden alındı

Apperson, J., Laws, E., & Scepansky, J. (2006). The impact of presentation graphics on students' experience in the classroom. *Computers & Education, 1*(47), s. 116-126.

Arpacık, Ö. (2014). *Development process of multimedia materials for students with learning disabilities and the effect on the teachers and students.* Unpublished Doctoral Thesis, Atatürk University-Erzurum, National Thesis Center of the Council of Higher Education.

Arslan, H. (2018). Examining effects of teaching materials designed for dressing skills on acquring self-care skills. Unpublished Master's Thesis, Gazi University-Ankara, National Thesis Center of the Council of Higher Education.

Atik Çatak, A. (2006). *The effect of powerpoint software on educable mentally retarded students' reading comprehension skill.* Unpublished Master's Thesis. Abant İzzet Baysal University-Bolu, National Thesis Center of the Council of Higher Education.

Atik Çatak, A. (2006). *The effect of powerpoint software on educable mentally retarded students' reading comprehension skill.* unpublished Master's Thesis, Abant İzzet Baysal University-Bolu, National Thesis Center of the Council of Higher Education.

Avcıoğlu, H. (2012). Intellectual dısabılıty class teachers' opınıons onthe use of materıals. *International Journal of New Trends in Arts, Sports & Science Education, 1*(2).

Ayral, M., Bozkurt, E., Özdemir, N., Sadıç, Ş., Özarslan, H., Türedi, A., & Ünlü, A. (2012). The Effect of Parental Participation to the Succes of Students in Mathematic. M. Eryaman, A. Kılınç, A. Cerrahoğlu, E. Yolcu, & G. Ergen içinde, *IV. International Turkey Educational Research Congress.* Nobel Academic Publishing.

Azap, S. (2011). Special education centers purpose, structure and process in terms of evaluation of parent opinions. Unpublished Master's Thesis. Yeditepe University-İstanbul, National Thesis Center of the Council of Higher Education.

Baumfield, V., Hall, E., & Wall, K. (2008). *Action research in the classroom.* Sage Publications Inc.

Beckley, H. (2002). Capability as Opportunity: How Amartya Sen Revises Equal Opportunity. *The Journal of Religious Ethics, 1*(30), s. 107-135.

Bender, M., & Valletutti, P. (1982). *Teaching Functional Academics: A Curriculum Guide for Adolescents and Adults with Learning Problems.* University Park Press.

Boster, F., Meyer, G., Roberto, A., & Inge , C. (2011). *Report on the effect of the unitedstreaming application on educational performance.* United Learning. http://www. ncrel.org/sdrs/areas/issuesmethods/technlgy/te800.htm#researchresult adresinden alındı

Bülbül, M. (2014). *The effect of enriched course materials about motion on nineth grade sighted and totally blind students' achievement, motivation, attitude, perception of learning environment and interaction in inclusive classes.* Unpublished Doctoral Thesis, Middle East Technical University-Ankara, National Thesis Center of the Council of Higher Education.

Cavkaytar, A. (2000). Zihinsel engellilerin eğitim amaçları. *Anadolu University Journal of Education Faculty, 10*(1), 115-121.

Collins, A. (2012). *Systematic instruction for students with moderate and severe disabilities.* Brookes Publishing.

Coşkun, İ., & Geç, H. (2018, 10 11). Vowels Teaching through Sentence Analysis Method for the Mild Intellectual Disabilities: Action Research. *The Journal of Limitless Education and Research, 3*(3), 61-79.

Çay, E., Yıkmış, A., & Sola Özgüç, C. (2020). Experiences and Opinions of Special Education Teachers Regarding the Use of Technology. *Journal of Qualitative Research in Education, 8*(2), 629-648.

Çelik, L. (2007). Öğretim materyallerinin hazırlanması ve seçimi. Ö. Demirel, & E. Altun içinde, *Öğretim teknolojileri ve materyal tasarımı.* PagemA Publishing.

Çiftçi, E. (2009). Designing, implementation and evaluating material developed for improving deaf students' writing skill. Unpublished Master's Thesis, Karadeniz Technical University-Trabzon, National Thesis Center of the Council of Higher Education.

Çıkılı, Y. (2013). Zihinsel yetersizliği olan çocuklar. S. Vuran (Dü.) içinde, *Özel eğitim.* Maya Akademi.

Dağseven, D. (2001). The effectiveness of instructional materials that were designed according to direct instruction and interactive unit in acquization, maintanence and generelization of addition and telling time skills in students with mental retardation. Unpublished Master's Thesis, ,Gazi University-Ankara, National Thesis Center of the Council of Higher Education.

Diler, N. (2000). *The Effectiveness of 'individualized instructional materials that objectives were designed according to the whole task and forward chaining strategies in acquiring the skills' in students with mental retardation.* unpublished Master's Thesis, Gazi University-Ankara, National Thesis Center of the Council of Higher Education.

Dinç, F. (2017). *Relatıonshıp between level of partıcıpatıon ın educatıon and student success.* Unpublished Master's Thesis, Pamukkale University-Denizli, National Thesis Center of the Council of Higher Education.

Doğdu, S., & Arslan, Z. (1993). *Eğitim teknolojisi uygulamaları ve eğitim araç gereçleri (Educational technology applications and educational tools).* Tekışık A.Ş. Veb Ofset Tesisleri.

Duman, N., & Tekinarslan, İ. (2007). The Effects of the Story-Mapping Method on Mild Mentally Retarded Students' Reading Comprehension Skills. *Ankara University Faculty of Educational Sciences Journal of Special Education*, 33-35.

Dündar, R. (2006). Comparison of the effectiveness methods of sound-based sentence and sentence analysis in secondary teaching of reading to the moderate mentally retarded children. Unpublished Master's Thesis, Hacettepe University-Ankara. National Thesis Center of the Council of Higher Education.

Erben, S. (2005). *Montessori materyallerinin zihin engelli ve işitme engelli çocukların alıcı dil gelişiminden görsel algı düzeyine etkisi.* Unpublished Master's Thesisi, Selçuk University-Konya, National Thesis Center of the Council of Higher Education.

Eripek, S. (1996). *Zihinsel Engelli Çocuklar (Mentally Handicapped Children)* (2 b.). Anadolu University Publications.

Eripek, S. (1998). Özel gereksinimli bireyler ve özel eğitim. S. Eripek içinde, *Özel eğitim.* Anadolu University.

Eripek, S. (2009). *Zihinsel yetersizliği olan çocuklar (Children with intellectual disabilities).* Maya Akademi.

Ertem, H., & Gökalp, G. (2020). Parents' Perceptions of School Climate and Parent Involvement in terms of Education Levels of Parents and Grade of Their Children. *Hacettepe University Journal Of Education*, 78-91.

Fırat, T. (2010). *The evaluation of primary school social studies teaching program which was prepared for the educable mentally handicapped sutudents by teacher views.* Unpublished Master's Thesis, İnönü University-Malatya. National Thesis Center of the Council of Higher Education.

Fitzgerald, G., Koury, K., & Mitchem, K. (2008). Research on computer-mediated instruction for students with high incidence disabilities. *Journal of Educational Computing Research*(33), 201-233.

Friend, M. (2013). Special education: Contemporary perspectives for school professionals. *Pearson Higher Education*.

Gay, L., Mills, G., & Airasian, P. (2012). *Educational research. competencises for analysis and applications.* Pearson Education Inc.

Gınalı Göriş, Ş. (2006). *Determine the effectiveness of the insructional materials that were designed according to adaptive stewise insruction upon acquisition, maintenance and generalization of basic subtraction skills in autistic children.* Unpublished Master's Thesis, Gazi University-Ankara, National Thesis Center of the Council of Higher Education.

Glesne, C. (2013). *Nitel araştırmaya giriş (Introduction to qualitative research).* (A. Ersoy, & P. Yalçınoğlu, Çev.) Anı yayıncılık.

Guba, E. (1981). Criteria for assessing the trustworthiness of naturalistic inquiries. *Educational Communication and Technology Journal*.

Gündüz, K. (2019). *The effects of musical materials on first reading and musical development in disabled kids at secondary education level.* Unpublished Master's Thesis, Kırıkkale University-Kırıkkale, National Thesis Center of the Council of Higher Education.

Gürsel, O. (1993). *Zihinsel engeli çocukların doğal sayları gerçek nesneleri kulanarak eşleme resmleri işaret ederek gösterme rakamlar gösterldiğnde söyleme becerilernin gerçekleştrlmesnde bireyseleştrilmiş öğretim materyalnin basamaklandrılmış yöntemle sunulmasnın etkiliği.* Unpublished doctoral thesis, Anadolu University-Eskişehir, National Thesis Center of the Council of Higher Education.

H Tanju, E., & Gönen, M. (2006). The Effects of Computer Assisted Education on the Acquisition of Shape concept by the Mentally Handicapped Children Between the Ages of 4-5. *Journal of Child and Development*, 81-91.

Hausken, E., & Rathbun, A. (2002). Adjustment to kindergarten: Child, family, and kindergarten. *Paper presented at the Annual Meeting of the American Educational Research*.

Hersh, C., Meng-Fen, L., & Georgette, M. (2003). *A meta-analysis of the effectiveness of teaching and learning with technology on student outcomes*. http://www.ncrel.org/: http://www.ncrel.org/tech/effects2/abstract.htm adresinden alındı

Heward, W. (1999). *Exceptional Children: An Introduction to Special Education* (6 b.). Prentice Hall.

İlanbey, G. (2018). *The effectiveness of computer assisted instruction material for teaching 'many objects' versus 'a few objects' consepts to students with intellectual disabilities.* Unpublished Master's Thesis, Adnan Menderes University-Aydın, National Thesis Center of the Council of Higher Education.

Johnson, A. (2014). *Eylem araştırması el kitabı (Action research handbook).* (M. Anay, & Y. Uzuner, Çev.) Ankara: Anı Publishing.

Johnson, A. (2014). *Eylem araştırması el kitabı (Action research handbook).* (Y. Uzuner, & M. Anay, Çev.) Anı Publishing.

Karahüseyinoğlu, B. (2002). *Efficieney of personalized education materials to remove reading problems.* Unpublished Master's Thesis, Marmara University-İstanbul, National Thesis Center of the Council of Higher Education.

Kargın, T. (2016). Bireyselleştirilmiş eğitim programı (IEP) hazırlama ve öğretimin bireyselleştirilmesi (Preparing an individualized education program (IEP) and individualizing teaching. İ. Diken içinde, *Özel eğitime gereksinimi olan öğrenciler ve özel eğitim.* A Pegem Akademy.

Kargın, T., & Sucuoğlu, B. (2006). *İlköğretimde kaynaştırma uygulamaları: yaklaşımlar, yöntemler, teknikler (Inclusion practices in primary education: approaches, methods, techniques).* Morpa Publications.

Keçeli-Kaysılı, B. (2009). Parent Involvement to Improve academic achievement. *Ankara University Faculty of Educational Sciences Journal of Special Education*, 69-83.

Keser, H. (2017). *A case study on the application of computer assisted vocabulary teaching material developed for hearing impaired students.* Unpublished Master's Thesisi, Fırat University-Elazığ, National Thesis Center of the Council of Higher Education.

Keser, H. (2017). *A case study on the application of computer assisted vocabulary teaching material developed for hearing impaired students.* Unpublished Master's Thesis, Fırat University-Elazığ National Thesis Center of the Council of Higher Education.

Kırcaali-İftar, G. (1998). Özel gereksinimli bireyler ve özel eğitim (Individuals with special needs and special education). S. Eripek (Dü.) içinde, *Özel eğitim.* Anadolu Üniversitesi Yayınları.

Kosif, H. (2019). *Investigation of the impact of materials developed in the scope of 'Social life module' for mentally disabled students.* Unpublished Master's Thesis, Recep Tayyip Erdoğan University-Rize, National Thesis Center of the Council of Higher Education.

Kot , M., Sönmez, S., & Yıkmış , A. (2017). Comparison of touch math and number line strategy presented. *Ankara University Faculty of Educational Sciences Journal of Special Education, 2*(18), 253-269.

Lowry, R. (1999). Electronic presentation of lectures. *University Chemistry Education, 1*(3), s. 18-21.

Luckasson, R., Borthwick-Duffy, S., & Buntinx , W. (1992, February). *Mental retardation: Definition, classification, and systems of supports* (9 b.). Washington DC: American Association on Mental Retardation. doi:https://doi.org/10.1352/0047-6765(2001)039<0047:NDACIM>2.0.CO;2

Margalit, M. (1995). Effects of social skills training for students with an intelectual disability. *İnternational Journal of Disabilitiy, Devolopmental And Education*(42), 75-85.

Mechling, L. (2007). Assistive technology as a self-management tool for prompting students with intellectual disabilities to initiate and complete daily tasks: A literature review. *Education and Training in Developmental Disabilities*(3(42)), 252-269.

Mertler, C. (2008). *Action research. Teachers as researchers in the classroom* (2 b.). Sage Publications.

Mertler, C. (2019). *Action research: Improving schools and empowering educators.* Sage Publications.

Mete, P., & Yıldırım, A. (2018). Selection Process of Instructional Materials for the Teaching of "Hard - Soft" Materials to Intellectually Disabled Students. *Kastamonu Education Journal*, 1527-1538.

Metin, E. (2012). Özel gereksinimli çocuklar (Children with special needs). E. Metin (Dü.) içinde, *Özel gereksinimli çocuklar (Children with special needs).* Maya Academy.

Mills, G. (2003). *Action research: A guide for the teacher researcher.* Prentice-Hall, Inc.

MoNET. (2008). *https://orgm.meb.gov.tr*. https://meb.gov.tr: https://orgm.meb.gov.tr/meb_iys_dosyalar/2013_09/04010347_zihinselengellibireylerdestekeitimprogram.pdf adresinden alındı

MoNET. (2018, 7 7). 30471 Legal Gazette No. *Special education services regulation*. Ankara: Prime Ministry Printing House Revolving Fund.

Mutlu, Y. (2016). *The investigation of the effects of computer assisted instruction materials on the number perception skills of students with dyscalculia.* Unpublished doctoral thesis, Atatürk University-Erzurum, National Thesis Center of the Council of Higher Education.

Nalçacı, A., & Ercoşkun, H. (2005). The materials used in primary education social studies lesson. *Journal of Kazım Karabekir Education Faculty*(11), 141-154.

Özlem Yazlık, D. (2018). The views of teachers about use of concrete teaching materials in mathematics teaching. *OPUS International Journal of Society Researches, 8*, 776-805.

Öztürk, C., & Dilek, D. (2004). Hayat Bilgisi ve Sosyal Bilgiler Öğretimi. C. Öztürk, & D. Dilek içinde, *Hayat bilgisi ve sosyal bilgiler öğretim programları.* İstanbul: Pegem A publishing.

Özyürek, M. (2015). *Özel eğitimde ölçümleme ve değerlendirme.* Kök Publishing.

Piaget, J. (2015). *Le Jugament Moral Chez l'Enfant "Moral Judgment in Children"* (1 b.). (İ. Dündar, Çev.) İstanbul: Pinhan Publishing.

Register, D., Darrow, A., Swedberg, O., & Standley, D. (2007). The use of music to enhance reading skills of secand grade secand grade studants andstudents. *Journal Of Music Therapy*(44), 23-27.

Sart, Z., Barış, S., Sarıışık, Y., & Düşkün, Y. (2016). *Engeli olan çocuklarin Türkiye'de eğitime erişimi: Durum analizi ve öneriler.* İstanbul: Eğitim Reformu Girişimi.

Scheuermann, B., & Webber, J. (2002). *Autism: Teaching does make a difference.* Wadsworth Publishing Company.

Stringer, E. T. (2007). *Action esearch (3. Ed.).* Sage Publications.

Sucuoğlu, B. (2010). Zihin engeli tanımları sınıflandırma ve yaygınlık (Definitions of intellectual disability, classification and prevalence). B. Sucuoğlu içinde, *Zihin engelliler ve eğitimleri.* Kök Publishing.

Sulzer-Azaroff, B., & Mayer, G. (1991). *Behavior analysis for lasting change.* Wadsworth Thomson Learning.

Şimşek, N. (2002). *Derste eğitim teknolojisi kullanımı (Use of educational technology in the lesson).* Nobel Academic Publishing.

Taubman, M., Leaf, R., & Kuyumjian, A. (2011). Crafting connections contemporary applied behavior analysis for enriching the social lives of persons with autism spectrum disorder. M. Taubman, R. Leaf, & J. McEachin içinde, *Teaching interactions* (s. 7-25). DRL Booksinc.

Tekin-İftar, E. (2012). Davranış kayıt teknikleri (Behavior recording techniques). E. Tekin-İftar içinde, *Eğitim ve davranış bilimlerinde tek denekli araştırmalar (Single-subject studies in education and behavioral sciences).* Turkish Psychological Association.

Timuçin, E. (2013). Özel eğitim ve kaynaştırma sınıflarının etkili yönetimi (Effective management of special education and inclusive classrooms). S. Vuran içinde, *Özel eğitim (Special education).* Maya Academy.

Uzuner, Y. (2005). Özel eğitimden örneklerle eylem araştırmaları. *Ankara University Faculty of Educational Sciences Journal of Special Education*, 1 - 13.

Vayiç, Ş. (2008). Comparison of use direct instruction and graphic organizers in teaching of life science to students with mental retardation. Unpublished Master's Thesis, Gazi University-Ankara, National Thesis Center of the Council of Higher Education.

Yanpar, T. (2007). *Öğretim teknolojileri ve materyal tasarımı (Instructional technologies and material design).* Anı Publishing.

Yarar Kaptan, S., & Beldağ, A. (2021). Sosyal bilgiler öğretiminde materyal kullanımı ve örnek uygulamalar (Material use and sample applications in social studies teaching). V. Aktepe, M. Gündüz, N. Kurtdede Fidan, & E. Yalçınkaya içinde, *Kuramdan uygulamaya sosyal bilgiler öğretimi (Social studies teaching from theory to practice)* (s. 166-193). Pegem Academy.

Yıkmış, A. (1999). *Effect of resveratrol in the prevention of postoperative adhesion formation in a rat uterine horn adhesion model.* Unpublished doctoral thesis Anadolu University-Eskişehir, National Thesis Center of the Council of Higher Education.

Yıldırım, A., & Şimşek , H. (2016). *Sosyal Bilimlerde Nitel Araştırma Yöntemleri (Qualitative research methods in the social sciences)* (11 b.). Seçkin Publishing.

Yıldız, K., & Yıkmış, A. (2020). Teacher's vıews on computer use ın educatıon of students wıth ıntellectual dısabılıtıes. *Journal of Uludag University Faculty of Education, 33*(1), 37-66.

Yücetaş Artan, G. (2019). Parent involvement in education: A review of the literature. Unpublished Master's Thesis, Gaziantep University-Gaziantep, National Thesis Center of the Council of Higher Education.

Appendix 1. Interview Form

Meeting date and time:
Interviewer name and surname:
My dear teacher; I need your opinions for my study titled "The impact of authentic materials in the life sciences class on the learning of students at stage i with moderate intellectual disability" We hope that the results of this study will contribute to the field of special education.
Everything you tell us during the interview process is confidential. It is not possible for anyone other than the researchers to see this information.
It is up to you whether to attend the meeting or not.
Before we start, do you have a thought or a question you would like to ask about what I have said?
I would like to record the conversation in writing, if you allow me. Is this a problem for you? If you'll excuse me, I'd like to start the questions.

Questions

Q1. How did the presence of a foreigner other than the students in the classroom during the teaching affect the teaching? Please explain.

Q2. What was the contribution of the student's learning about daily weather events to their daily life skills?

Q3. Are the actions requested by the student appropriate to the weather? (Going out to the garden, playing snowballs, etc.)

Q4. Did he/she have the skills of "Saying and showing the concepts of sun, rain, snow, cloud", which are the prerequisite skills of daily weather events?

Q5. Did the changes in rainy, sunny, snowy, cloudy daily weather events catch the student's attention?

Appendix 2. Material Introduction

How is the weather today? (Rainy weather)

How is the weather today? (Sunny weather)

How is the weather today? (Snowy weather)

How is the weather today? (Cloudy weather)

Felt Notebook (Rainy)

Felt Notebook (Sunny)

Felt Notebook (Snowy)

Felt Notebook (Cloudy)

Look-See-Learn

Plug in