



ISSN: 2148-9955

## International Journal of Research in Education and Science (IJRES)

[www.ijres.net](http://www.ijres.net)

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#### To cite this article:

Erturk Kara, H.G. (2018). The role of in-class physical arrangements in supporting preschool children's behavior regulation skill. *International Journal of Research in Education and Science (IJRES)*, 4(1), 14-29. DOI:10.21890/ijres.369209

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## The Role of In-class Physical Arrangements in Supporting Preschool Children's Behavior Regulation Skill

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### Article Info

#### Article History

Received:  
18 September 2017

Accepted:  
20 December 2017

#### Keywords

Preschool education  
Behavior regulation  
Classroom physical environment  
Classroom routines  
Learning centers

### Abstract

The purpose of this research is to understand the role of physical arrangements within the classroom in the development of behavior regulation skill of preschool children. From among the types of action research, the technical/scientific/cooperative action research was employed in the current study. In the selection of the participants, one of the purposive sampling methods, the typical case sampling method was used. The study group consists of 12 children aged at 60-84 months. The data collection tools used in the study are observation form regularly used by the teacher, structured written interview forms (before and after the action plan) and the Head Shoulders Knees and Toes (HSKT) scale. As a result of the action process, it was found that the physical arrangements related to learning centers positively affected the children's three of the behavior regulation skills that are independent acting, active participation and task completion skills. The physical arrangements regarding classroom routines were found to have positively affected the following behavior regulation skills of the children; perseverance, retention, protecting classroom order, taking responsibility, making effort to be successful and preferring the suitable behavior to the negative behavior, active participation, recall, independent acting. When the Head Shoulders Knees and Toes scores of each child before and after the action plan were examined, it was found these scores improved. When the teacher's evaluations made after the action plan were examined, it was found that the action plan made positive contributions to the teacher and the children in the themes of classroom order, concentration, social adjustment, classroom management, productivity, problems and widespread effect and also affected three more teachers and made them involved in the plan.

### Introduction

One of the key components of a qualified preschool education is classroom management. The dimensions of classroom management can be identified as physical arrangement of the class, plan-program activities, time management, positive relations and behavior management. The physical arrangement of the classroom can affect the quality of the other dimensions because every variable involved in the physical arrangement can be a support or hindrance to education (Başar, 2006).

In the arrangement of the physical environment, an important role should be assumed by the preschool education teacher. First of all, the teacher is expected to be well informed about child development and all his/her practices should be conducive to this development. In addition to this, he/she is expected to organize the classroom environment in such a way as to respond to children's interests and needs, to allow children to exhibit new behaviors, to allow children to be active in the learning process and to provide them with opportunities to develop their creativity, problem-solving, independent acting and self-regulation skills (MoNE, 2013; Aral and Can Yaşar, 2015). Research has revealed that a qualified physical environment is influential on the child's achieving the objectives as well as on the teacher's self-efficacy (behavior management, productivity, classroom management etc.) (Veltri, Banning and Davies, 2006; Pulay, 2010; Hannah, 2013).

In the Preschool Education Program of the Ministry of National Education, the effective use of learning centers is emphasized in the explanations made as regards the physical arrangement of the class. Teachers are expected to establish various learning centers (book, block, science, dramatic play etc.) according to children's individual needs and interests considering the physical features of the class and the number of children (MoNE, 2013). Learning centers are seen as areas where children can work in small groups, interact with each other and develop their skill of starting and finishing plays. The effective use of these centers is closely related to the order

established in the class. There are materials belonging to these centers in the cupboards located in the areas of each center and these materials are kept in a certain order. In the storage of the materials, one of the most effective methods is the usage of transparent and labeled boxes or baskets (Chang, 2004). In this way, the child can easily see the content of the box. By placing symbols/pictures and explanations related to the materials on these labels, students can be encouraged to read. The teacher's being an active participant on children's play in learning centers and enabling them to organize this process by using various methods directly affect the efficiency of the play in relation to the gain of the objectives by children (Güler, 2007).

One of the main areas in the class is the exhibition grounds (Heroman and Coppel, 2006). Exhibition areas in preschool classes are usually class walls. Classroom walls also serve an important educational function, besides motivating children by letting them hang their activities. Walls allow the concretization of the learning with the visual items on them. For preschool children, visual elements serve as an interesting learning tool that makes it easier to remember and focus attention. When walls are painted with a light paint, it becomes easier for children to distinguish the visuals on them. At that point, the question of which visuals should be displayed on walls and to what extent they should be displayed arises. According to Tarr (2004), most of the classes display an image that is cluttered with commercial posters and goods on the walls, and all these materials are in front of children's own pictures and writings. Barrett et al. (2013) concluded that classes with colorful, exaggerated decorations, often decorated with cartoon heroes, distract children and children look around more than at what they are doing. Like these commercial products, visuals with the didactic features (such as seasons board, colors, shapes) prepared by the teacher are also considered to be materials not encouraging children to participate or imagine (Dahlberg, Moss, & Pence 1999; Rinaldi 2001; Tarr, 2004 cited in Tarr, 2003). Sahin Sak, Sak and Tunçer (2013) stated in their study that most of the teachers in the study group used visuals with didactic features to explain concepts such as numbers, shapes, colors in the decoration of class walls. Some of the teachers stated that they also hung children's products together with these visuals. According to Shapiro and Kirby (1998), the visual to be used by the teacher should not serve the passive reception of the knowledge by the child but should serve the active participation of the child. According to Chang (2004), on class walls, at the door, and so on, visuals related to routines that help students understand what is expected of them in the class, show them how to do some certain tasks on their own, facilitate functioning in the class and increase efficiency should be placed. These routines help the teacher both in terms of classroom management and promotion of children's behavior regulation skills.

When the relevant literature is examined, it is seen that researchers emphasized that a well-organized physical environment allows the establishment of positive interactions between teachers and students and prevents the occurrence of negative behaviors (Visser, 2001; Martella, Nelson, Marchand- Martella, 2003). On the other hand, there is a small amount of research looking at the effects of physical environment on the behaviors of a child (Schilling and Schwartz, 2004; Guardino and Fullerton, 2010). In this limited research, it was found that the undesired behaviors of the child are reduced and his/her active participation in education increases. Active participation in education and reduction of undesired behaviors are the result of developing behavior regulation skill. Behavior regulation is described as a behavioral manifestation of cognitive skills such as delay of gratification, impulse control, attention regulation and working memory (Wanless, McClelland, Tominey and Acock, 2011; McClelland, Cameron Ponitz, Connor, Farris, Jewkes & Morrison, 2007). Children having behavior regulation skill in the classroom environment can be said to demonstrate the following behaviors: follow the instructions without needing repetition, obey the rules, make effort to be successful, complete the tasks, focus on the activity/task on hand, use time effectively, protect classroom order, display the skill of retention, act in line with the purpose, display independent acts and participate actively (Bronson, Goodson, Layzer and Love, 1990). Like many other cognitive skills, the ability to regulate behavior also develops dramatically in the first years of life, and this development leads to identification of the preschool period as a critical period in the growth process (Blair, 2002). Research conducted in recent years has revealed that acquisition of high levels of behavior regulation skill has a positive influence on future academic and social lives (Smith-Donald et al., 2007; Fabes and Eisenberg, 1992; Gestsdottir et al., 2012; Ponitz et al., 2009; McClelland et al., 2007; Ragnarsdottir, 2012; Sektnan et al., 2010). Yet, in the literature, there is a limited amount of research on the subject of Turkish children's behavior regulation in the preschool period (Sezgin and Demiriz, 2015; Ertürk Kara, 2017; Ertürk Kara, 2017b; Fındık Tanrıbuyurdu and Güler Yıldız, 2014; Doğruyol, Türküler Aka and Enisoğlu Tilbe, 2017; Akın Sarı et al., 2012). These studies seem to be limited to the evaluation of this skill and elicitation of its relationship with other skills. On the other hand, some cases examined within the context of behavior regulation (obeying the rules, protecting the classroom order etc.) have also been addressed by studies focusing on the development and maintenance of desired behaviors. When these studies are examined, it is seen that some preventive programs designed to nurture children's emotions and behaviors have been adapted to the conditions of Turkey and efforts have been made to make them widespread in our country (Anlık and Arda, 2011; Coşkun, 2008; Dinçer, 1995). There is a very limited amount of research

exploring how behavior regulation skill can be developed in the classroom environment. Therefore, the purpose of the current study is to understand the role of physical arrangements made in the class in the development of preschool children's behavior regulation skill. To this end, answers to the following questions were sought:

1. How is the behavior regulation skill of the participating children before the action plan?
2. How do the physical arrangements made in the class affect children's behavior regulation skill?
3. What is the contribution of the physical arrangements made in the class to the teacher?
4. What are the opinions of the teacher about the preparation and application process of the action plan and its sustainability?

## Method

The study employed the action research, one of the qualitative research methods. The action research is type of research conducted either directly by a person who is in the application area or together with a researcher. The research process includes the stages of posing the research question or description of an existing problem, data collection and analysis to find solution to this problem (Yıldırım and Şimşek, 2013). Berg (2001) has proposed three types of action research: technical/scientific/cooperative, application/cooperation/discussion-focused and liberating/improving/critical action research.

### Design of the Study

In the current study, from among the types of the action research proposed by Berg (2001), the technical/scientific/cooperative action research was preferred. The purpose of this type of action research is to try an application or to evaluate an application in the light of a theoretical framework designated in advance. This theoretical framework is reflected into practice by the researcher working in cooperation with the teacher. Throughout the application process, the teacher is in interaction with the researcher (Yıldırım and Şimşek, 2013). During the research process, the behavior regulation skill of the children in the class of the teacher was evaluated and as a result of this evaluation, an action plan prepared on the basis of the relevant literature on behavior regulation was offered to the teacher. The teacher implemented this action plan in his/her class and then the researcher analyzed the action plan and made evaluations about its effectiveness.

### Participants

In the determination of the participants, the typical case sampling method, one of the purposive sampling methods, was used. According to this method, the following cases were considered to be typical in the current study: the school where the research was conducted is an independent preschool institution, one of the most widespread institutions of preschool education; this school is located in a city with a moderately intense population; the families whose children are attending this school are at the medium income level; the teacher is a graduate of a preschool teacher training department and the children are showing normal development. The typical case sampling is preferred to show what is typical, normal and average (Bütün and Demir, 2014).

In this regard, the sampling of the current study is comprised of 12 children aged at 60-84 months and attending an independent preschool institution located in the city of Kayseri in 2017-2018 school year. Of the participating children, five are boys and seven girls. The school is located in a district where families of middle-income level are living. There are a total of seven classes in the school. In the class where the current study was conducted are there four learning centers. These are music, science, book and block centers.

The teacher, who is in the role of implementer in the current study, graduated from the Department of Preschool Teacher Education of Hacettepe University in 2013. He/she has worked in preschool classes (rural and urban) for four years.

### Data Collection Tools

Though qualitative data collection is at the forefront in action research, quantitative data can also be capitalized on (Yıldırım and Şimşek, 2013). In the current study, in order to find an answer to the first research question, the Head Shoulders Knees and Toes Scale, which is a systematic measurement tool to evaluate children's behavior regulation skill, was used. The original version of the scale was developed by McClelland and Pointz

(2011) and it was adapted to Turkish by Sezgin and Demiriz (2015). There are 3 parts and 30 tasks in the whole scale (10 tasks in each part). These tasks simultaneously measure children's attention, working memory, use of preventive control skills and ability of producing behavior within a social interaction. In any task, the child is expected to give a behavioral response to four different verbal instructions; these responses are observed and noted (2 points for correct answers, 1 point for corrected answers and 0 for false ones). Then the total score taken from the scale is calculated for the child. The child must *remember the rules, follow the instructions without needing repetition and complete the tasks* to succeed in the scale. The scale which was gathered as single factor had .96 Cronbach's alpha value. The degree of consistency between the rates was found to be  $K=0.82$  ( $p=0.00<0.01$ ). Corrected item-total correlation ranged between 0.40 and 0.8. Also, all the differences between the item average scores of the top 27% and the bottom 27% groups was seen to be significant (Sezgin and Demiriz, 2015).

In order to elicit responses to the second, third and fourth research questions, observation form which was developed by the researcher and regularly reported by the teacher day by day, the structured written interview forms (before and after the action plan) and HSKT scale scores were used. The observation form consists of behavior regulation indicators for each physical arrangement so that the teacher can see the elements she must pay attention clearly while she was taking observation notes every day. Two structured interview forms were developed to be implemented before and after the implementation of the action plan. Determined questions were reformed in parallel with the views of two experts on early childhood education (Yıldırım and Şimsek, 2013). The interview form used before the implementation of the action plan is comprised of two questions: 1) What kind of states related to children's behavior regulation have you observed in your previous experiences with preschool children? Explanation: The behavior regulation skill is explained in detail. 2) What kind of methods have you been using to promote children's behavior regulation skill? The interview form used after the implementation of the action plan includes these questions:

- How can you evaluate this action plan? In general, what kind of effects did it generate in your class?
- Do you think that the action plan has made contributions to teaching skills? If yes, what?
- Did you have any problems experienced during the preparation and implementation processes of the action plan?
- Did you share it with other teachers? If yes, what kind of reactions did you receive? Did any other teacher decide to use it?

### Data Collection Process

Data collection process occurred in fall semester of 2017. HSKT scale was conducted one by one in a silent part of the class by the teacher during the free play time. Researcher attended the process with the teacher and observed whether the teacher does the implementation properly during the first 5 implementations. Because other children were all busy in free play time, no interruptions occurred during the implementations. Each implementation took approximately 5 minutes. Additionally, the teacher took observation notes regarding children's behaviors against each new physical arrangement in the class and prepared a detailed report for the researcher. After the teacher realized that children got used to the implementation and exhibited the same behaviors during the observations, she called the researcher and wanted to share her notes. Then, the last interview regarding her evaluation of action process was conducted. This process took two months.

### Data Analysis

HSKT scale scores, obtained before the action process, were calculated for each child. The observation form was read several times and reviewed in order to make sure about the clarity and completeness. According to Bronson, Goodson, Layzer and Love (1990), behavior regulation indicators in the classroom can be stated as following; observes rules and follows directions without requiring repeated reminders, attempts new challenging tasks, completes tasks successfully, concentrates when working on a task, is not easily distracted by surrounding activities, takes time to do his/her best on a task, finds and organizes materials and works in an appropriate place when activities are initiated, responds to instructions and then begins an appropriate task without being reminded, sees own errors in a task and corrects them. As an initial step for the data analyses, data obtained by observation were coded according to these themes. Additionally, several examples for each theme were recorded. Data obtained by interviews were also read several times and reviewed. In the light of the examination



of interview before action process, themes were formed and in the light of the examination of interview after action process, themes, categories and subcategories were formed.

In triangulation which is one of validation strategies researchers make use of multiple and different sources, methods, investigators and theories to provide corroborating evidence (Miles & Huberman, 1994; Creswell, 2007). Creswell (2007) mentions that this process involves collecting evidence from different sources to shed light on a theme or perspective. In the research, HSKT scores were calculated before and after action plan, interviews with the teacher were conducted and observation reports of the teacher were used for the method triangulation. To strengthen the validity, direct quotations of teacher views were used. Instead of children names, codes such as C1, C2, C3... C12 were used to describe the participants in HSKT scores table.

In qualitative research reliability often refers to the stability of responses to multiple coders of data sets (Creswell, 2007). To provide with the reliability, data analysis process was conducted by two independent coders. These coders have studied at early childhood education before. All coding was done independently and separately. It was found that interrater reliability value for the data obtained from observation report is .92; for the data obtained from interviews it is .98 (interview before action plan) and .96 (interview after action plan). It is seen that values are enough for interrater reliability.

### **Research Process**

Research process was completed in reference of Bassey's (1998) eight phases (as cited in Köklü, 2001).

#### *1<sup>st</sup> Stage Description of the Research*

The purpose of the research can be defined as understanding the role of physical arrangements in the class in developing preschool children's behavior regulation skill. The idea of doing this research emerged during a conversation between the teacher and the researcher. During this conversation, the teacher said that she had experienced problems in dealing with some problems in the class throughout her four years of teaching experience. For instance, she stated that children in the class could not act independently in some classroom routines, they experience problems in keeping materials orderly, they are bad at time management, cases in which the instruction should be given many times are frequently experienced, they experience problems in issues requiring perseverance/waiting. And then the teacher asked for a preventive intervention from the researcher not to experience these problems with new students in new term. The researcher explained that all the problems mentioned by the teacher seemed to be related to behavior regulation skill and wanted teacher to fill an interview form which consist of these explanations. The research was initiated in the fall term of 2017 in the school where the teacher was working in the city of Kayseri and in the class where there were students aged at 60-84 months.

#### *2nd Stage Explanation of the State of Education*

This research attempted to create a classroom environment that would support children's development of behavior regulation skill. In the creation of this classroom environment, physical arrangements were capitalized on. This approach is supported by the Ministry of National Education 2013 preschool curriculum in that in this preschool curriculum, it is underlined that one of the most important responsibilities of the teacher is to create a quality physical environment (MoNE, 2013).

#### *3rd Stage Data Collection and Analysis*

During a conversation taking place between the teacher and the researcher it became clear that the teacher needs support to develop children's behavior regulation skill. In addition to this, the researcher wanted the HSKT scale, frequently used to evaluate children's behavior regulation skill and adapted to Turkish by Sezgin and Demiriz (2015), to be administered. The teacher administered this scale to each child separately two weeks after the school was opened and the results were sent to the researcher through e-mail.

#### *4th Stage Examination of the Data and Looking for Problem*

As a result of the analysis, it was found that the children's scores taken from the HSKT scale are low. Thus, the action research was organized and was initiated in the last week of September.

### 5th Stage Seeking solutions for the problems by starting the change

The action plan covers a set of in-class physical arrangements aiming to enhance the children's behavior regulation skill.

Organization of the learning centers: The already existing learning centers in the class have been physically organized in such a way that children can effectively regulate their behaviors. For each center, an area is established through small cupboards or bands placed on the ground. Great care was taken for the areas allocated for the centers to be large enough for students to move freely. The centers are located in such places that the children can easily reach the other centers, the door and the toilets. In this way, the children can walk between the centers and around the class without disturbing other children (Pattillo and Vaughan, 1992). The materials in each center are placed on shelves within boxes and the boxes are tagged with the name and picture of the material inside (Chang, 2004).

The use of concrete mediators in the functioning of the learning centers: For each center, cards were prepared to represent the materials found in this center and they were hung on the wall or the cupboard in the center. A particular color was determined to represent each center. The cards were pinned with the fasteners in this color (The number of students in the class/the number of centers). The fasteners serve the function of a mediator in the functioning of the center. Before starting the time of free play, each child selects the center where he/she will play and goes to this center and takes a fastener and attaches it to his/her clothes. In this way, the center selection process enables the child to start the process by deciding on his/her own without needing the teacher. Moreover, through the fasteners, children who are always playing in the same center with the same peers are encouraged to select a different center and play with different peers (there might be no fastener left in the center a child has selected; thus, the child is encouraged to regulate his/her behavior and select another center as a manifestation of proper behavior). The fasteners also allow the teacher to observe the children more comfortably; thus, helping the detection of the children who cannot regulate their behaviors (children who are not in the center represented by the color of the fastener they have selected, could not initiate a game). Finally, this supports the development of the behaviors of waiting in line and showing patience, which are parts of behavior regulation in that the child has to wait for one fastener to be empty for the center where he/she wants to play. Only when one child in this center has completed his game in this center, then he/she can play in this center.

Use of the visuals related to the classroom routines: In order for the control of some certain classroom routines to shift from the teacher to the children, the flowing visuals were prepared and placed in suitable places in the classroom. The fixed visuals on the walls of the classroom were thus replaced by dynamic and functional visuals. The following visuals were used to serve the promotion of children's active participation in education, independent acting during the functioning of the program, paying attention, showing perseverance, making effort, complying with the functioning of the class, managing time, protecting the order of the class, taking responsibility, completing the assigned task and developing the suitable behavior. All the visuals were developed on the basis of Chang (2004), teaching2and3yearolds, 2017 and Pinterest (2017).

1. Getting in the line: Provision of opportunities for children to experience this behavior inside the class will help them to internalize the behavior of waiting in line by controlling their impulses and showing perseverance. In the class, when the time for eating and playing outside comes, all the children are expected to get in the line and leave the class. The teacher was said that she should use some tools to reinforce this behavior in the children. The children put their feet on a piece of paper in pairs and then draw the shape of their feet with a pen on this paper. Then each student colors their foot prints by using any color they wish and then cuts. The teacher sticks these foot prints on the floor in such a way as to make a line. When it is time to get in the line, each student finds their foot prints and stand on them. At certain intervals, the teacher changes the places of the foot prints to surprise the children. This activity helps the children develop their skill of paying attention. When the children come back to the class, they find their foot prints removed, which will stimulate their recall/retention skill. In their return to the class, the responsibility of finding their place in the line is assigned to the children.

Another problem experienced by the teacher is to decide who will be at the front of the line. As a solution to this problem, the chart "Who will be in the front of the line today" is attached to the door of the class. In this chart, the children's photographs are stuck in pairs. At the end of the day, the two photographs at the beginning are replaced with the two photographs at the end of the list. In this way, each following day, two different children will be at the front of the line. Thus, the children will be able to experience the obligation of waiting to come to the front of the list. The task of changing the place of photographs in the list will be one of the classroom tasks of the children.

2. Classroom tasks: This refers to children's taking active role in the applications to be conducted in the class rather than the teacher and their sharing the responsibility for the functioning of the program. To this end, the teacher was asked to prepare a table of classroom tasks. In addition to routine tasks related to attendance, weather conditions and days of the week, there are other tasks such as gathering, cleaning, control of the lamps not switched off and taps not turned off, control of the list "who is at the front of the line". In the visuals, tasks are assigned by using the pictures related to them, and the paper hands including the photos of the children are hung on the string on the top. The teacher takes some hands from the string, and sticks these hands on the tasks so that the assignment of the tasks is performed. Updating this table and changing the children who will perform the tasks every day is the responsibility of the teacher and checking the table when they come to the class to see whether they have any task to do is the responsibility of children.

3. Taking attendance: Taking attendance is an activity that should be done together with children and some responsibility should be assigned to children to promote their active participation. The teacher was asked to prepare a table by using the figures she wanted. Two tags were placed on this table as the ones who are present and the ones who are absent today in the class. The figures including the photographs of the children were placed next to the table in a basket/box. When the child comes to the class, he/she takes the figure belonging to him/her from the basket and sticks it in the section that is the ones who are present in the class today. At the beginning of the class, the attendance check is announced to the class by the child who is assigned as responsible by the teacher.

4. Classroom rules: For children to be able to effectively regulate their behaviors, some rules should be laid down to be followed in the class. Visualization of these rules helps children to remember the rules and supports the manifestation of the desired behaviors in the class. The teacher was asked to discuss the classroom rules with the children to determine some certain classroom rules. Some sample visuals related to possible rules were shared with the teacher. A great care was taken for visuals to include figures, colors etc. that would draw the attention of the children.

5. Days of the week: Through this routine application to be conducted at the beginning of the class, children will be able to take an active role throughout the year. By hanging the related visual on the wall of the classroom, children are allowed to see the names, order and number of the days. Each day, the responsible student places the figure determined by the teacher on the related day. At the beginning of the class, the teacher and children look at this visual and talk about which day it is, how many days are left to the weekend, and the concepts of yesterday and tomorrow.

6. Weather conditions: Another routine of the class is the discussions conducted on the weather condition at the beginning of the class. For this routine, a visual similar to the one given below can be used. The child responsible for the weather condition of the day decides what the weather is like when he/she comes to the class and then brings the arrow on the wheel to the suitable place.

7. Daily schedule: When young children know what the next step will be, they feel secure. Showing the daily flow of instruction on a table hung somewhere in the class will help children to feel secure and raise their awareness of the concept of time. In this regard, the teacher was asked to design a flexible visual demonstrating the activities to be done. Samples of such a visual were shared with the teacher.

8. The question of the week: The teacher was asked to prepare a table and to place a tag "the question of the week" on this table. Depending on the question, under the table, columns in a suitable number are created. For example, which ice cream do you like the most? Strawberry, vanilla, chocolate etc. Children can respond to the question by sticking their photographs on the related column.

9. Use of toilets: Another visual was prepared to establish the order in the class and to support children's independent behaviors in relation to the use of toilets. In this visual, in a table including the figures of a girl and a boy, the sign "Is toilet full or empty?" in hung. When a child wants to go to the lavatory, he/she checks this table, if the places of figures are empty, he/she places his/her own photo under the related figure. The teacher was asked to prepare this visual by leaving as many empty places as the toilets used by her class.

*6<sup>th</sup> Stage Monitoring the change:*

At the end of this action research, the data related to the development of the children's behavior regulation skill were collected by using the observation notes systematically recorded by the teacher. In addition to this, in order



to elicit the teacher's evaluation of the research, interview was conducted with the teacher. In this interview, a structured written interview form was used by the researcher.

#### *7<sup>th</sup> Stage Analysis of the data about the change:*

When the teacher's evaluations in the interview form and HSKT results obtained before and after the action plan regarding the behavior regulation skill were compared, it was concluded that it had positive effects on the children's behavior regulation skill. They are supported with the samples from the observation notes. More detailed information is given in the findings section.

#### *8<sup>th</sup> Stage Revising the change and deciding what to happen then:*

As a result of the action plan, it was determined that a progress occurred in the children's behavior regulation skill. The teacher and the researcher came together and agreed that in addition the effect created by the arrangements related to the organization of the centers and the use of mediators in their functioning on the children's behavior regulation skill, these arrangements also played a role in enhancing the quality of the free play time. They also talked about the necessity of increasing the number variety of the materials in the learning centers. During this interview, it was revealed that the visuals used for the routines in the classroom not only had positive effects on the children's behavior regulation skill but also on the teacher's classroom management and the efficiency of the classroom. The teacher mentioned the research process to her six colleagues. Three of these teachers were affected from the results of the research and made the same arrangements to put the action plan into effect in their classes, too.

## **Findings**

In this findings section, the findings are reported as the findings obtained before the action plan and as the findings obtained after the action plan.

### **Findings Obtained Before the Action Plan**

#### *Findings Obtained from the Interview Before Action Process*

The idea of conducting this research came from the conversation between the teacher and the researcher. During this conversation, the teacher talked about the problems experienced in the class in relation to the children's behavior regulation skill. Then, the researcher wanted teacher to fill an interview form which consist of these experiences. The teachers' opinions on the form were examined under the themes of behavior regulation indicators proposed by Bronson, Goodson, Layzer & Love (1990).

Following the instructions without needing repetition: After the interview with the teacher, it was determined that many of the children needed to repeat the given instructions. The teacher stated that this need generally arises when they are engaged in routines such as eating, going to the toilets.

Retention: The teacher stated that some of the children experience difficulty in remembering the rules orally explained. Her statement in this regard is as follows: *"I have had many students so far who experienced difficulty in recalling and keeping in the mind. I have continuously had to remind the rules of the classroom and their responsibilities in the class (keeping the class clean, switching of the lights while leaving the class)"*.

Effective use of time: The teacher stated that during the daily schedule, she experiences problems in the effective use of time. Her statement in this regard is as follows: *"We could not keep up with the time allocated for our activities and thus, the day used to end before we completed our daily activities. As we could not start the activities on time, the time allocated for them came to be inadequate. It was very difficult to gather the children and read them a story, teach them a song and get them to produce some works of art"*.

Independence/Making effort to be successful: The teacher stated that she had some students avoiding acting independently and experiencing difficulty in completing the given tasks without the support of the teacher. Her statement in this regard is as follows: *"Even if we sat at the desk on time, some children did not want to do the activities on their own and they preferred to talk with their friends"*.

Protecting the classroom order: The teacher stated that though she had some children putting away the materials, trying to protect the general order of the classroom and to establish good relationships with their friends, she also encountered children using the materials badly and intentionally destroying them.

Active participation/completion of the activity: The teacher stated that she experienced problems related to the children's participation and willingness to complete a given activity. She explained her opinions about this issue as follows: *"Some children did not make eye-contact with me, did not participate in the activities. I had great difficulty in drawing the attention of some students. There were children not wanting to do anything and go home immediately"*.

It was found that the method most frequently used by the teacher to deal with the above-mentioned problem was to orally remind them what the proper behavior should be. In addition to this, she also stated that she used the drama method to prevent some negative behaviors (hitting, spitting etc.).

Before the action plan, also HSKT scores of the children in the classroom where the action plan would be initiated were examined. The children's scores are given in Table 1.

Table 1. The children's behavior regulation scores before the action plan

Total score	C.1	C.2	C.3	C.4	C.5	C.6	C.7	C.8	C.9	C.10	C.11	C.12
	0	0	2	5	0	11	2	3	1	17	12	12

The maximum score to be taken from HSKT scale is 60. When the children's scores are examined, it is seen that their performance is low in general. It was found that the number of children responding to the items in the second part of this scale made up of three parts is only four.

## Findings Obtained after the Action Plan

### *Findings Obtained from the Observation Form*

### *Findings Obtained from The Teacher's Observations Related to The Learning Centers*

When the teacher's observation notes were examined, it was observed that the areas of the learning centers were determined, the materials were grouped, learning center selection was performed through fasteners and the children easily adapted to this physical order. When the teacher's notes about the effect of the learning centers on the children were examined, three themes referring to the behavior regulation skill emerged: Independent acting skill, active participation and completing the activity. Independent acting skill: high majority of the children (11/12) were observed to have selected the center where they would play in their free play time, attached their fasteners, wanted a piece paper from the teacher and set up the play they would play and shared their plays with the teacher. The teacher expressed her opinions about this issue as follows: *With the implementation of this new system, the children's behavior of continuously asking me what they will do is reduced. Children completing their play in a center used to come to me and say that they would like to change the center. I asked them how they could handle this issue on their own without asking me. Then, if there was an empty fastener in the center where they would like to play or if there was a friend having completed his/her play in the center, they talked to each other and changed their centers. Then I observed that the children waited for their friends to finish their plays to change their centers. The new changes such as the selection of centers during the free play time, organization of the play, maintaining the play, children's communicating with each other to change their centers have been accomplished in about ten days"*. Active participation: *"In the first days of my introducing the new organization related to the centers, I realized that the children wanted to change centers frequently. Thinking that this might be because of their lack of experience on the issue of organizing play, I worked with them in the centers until I became sure that each child could organize a play. At the end of a nearly ten-day period, the children tried to organize plays in their selected centers"*. *"The greatest moment was when one of the children having great difficulty in adapting to this new functioning as he/she always wanted to play in the dramatic play center, C.8, wanted to play with the new material I placed in the science center at the end of the eighth week and invited me to play with him/her"* Completing the activity: All of the children were determined to have maintained the plays they organized in the centers after the ten-day adaptation period and to have completed their play and then changed the centers. The teacher expressed her opinions in this regard as follows: *"The time spent by the children in a center was nearly 10-15 minutes. This was highly pleasing because especially C.8 and C.9 were the children who did not want to change the center and always play with the same friends. I observed that these children played in different centers with different friends"*.

### *Findings Obtained from The Observation Notes Related to The Used Classroom Routines Visuals*

**Getting in the line:** When the teacher's observation notes about the effect of the visual related to getting in the line were analyzed, it was found that since the day in which the visual was first placed in the class, the children stood on their foot prints on the ground when they were invited to get in the line. The teacher's explanations show that this routine supported the children's skills of showing perseverance, retention and protecting the classroom order: *"With these simple foot prints placed on the ground, the children get used to this new arrangement very easily. I can say that since I started to use these visuals, I have almost never had to remind them what they should do". "The table I hung at the entrance of the classroom showing who is at the front of the line at first led the children to frequently feel offended. However, over time, I realized that they started to calculate how many days later they would be at the front of the line. When I told him/her that he/she would be at the front of the line three days later, C.12 responded that it is a short time. Observing that the children started to be patient was considerably pleasing". "Some of the children were more willing to check who is at the front. They informed each other about who would be at the front of the line on that day. This behavior of theirs showed that I am not alone in ensuring the order in the class any more"*.

**Classroom tasks:** When the observation notes related to the effect of the classroom tasks on the children were analyzed, it was found that this visual supported the children's skills of taking responsibility, making efforts to be successful, preferring a suitable behavior to a negative behavior. In addition to this, though the classroom tasks were determined together with the children, very few children (2/12) frequently asked to do the same task and did not want the other tasks. Nearly two weeks later, these two children also adapted to this new system. The teacher explained her opinions about the classroom tasks visual as follows: *"Though we hung the tasks on the tasks table and determined the responsibilities of that day, C.1 and C.3 objected to the tasks assigned to them. The other children willingly accepted their tasks. Most of the children are highly willing to do their tasks". "Though the tasks visual caused offence and cries at first, I believed that the children would get used to. Indeed, two weeks later, objections to tasks ceased. I think as whatever the children wanted had been done up to that time, they had some difficulty on adapting to doing what they were asked to do". "Being responsible for the days of the week and weather conditions became the most popular tasks. I am trying to make the other tasks appealing; yet, being responsible for these two routines is found more interesting by the children"*.

**Taking attendance:** When the teacher's observation notes related to the visual of taking attendance were examined, it was found that the children adapted to this routine easily from the first day. The observation notes revealed that the children's skills of taking responsibility and active participation were enhanced. The teacher explained her opinions as follows: *"When each child came to the school, without needing to be reminded, attached his/her photograph on the school building I had drawn. This visual became the most effectively used visual and source of the routine which the children never forgot from the first day". "One of the classroom tasks was to tell who is absent and who is present. The children were highly eager to do this task. The children's talk has increased in the class; they are now more willing to be part of the daily functioning"*.

**Classroom rules:** When the observation notes related to the classroom rules were analyzed, it was found that visual of rules had a positive effect on the children's behavior of protecting the classroom order. Though the children themselves laid down the rules to be followed from the first day, it was observed that they had difficulties in adapting to these rules. At the end of the second month, few children (3/12) frequently needed to be reminded of the rules. On the other hand, the observation notes showed that the children demonstrated the behavior of regulating each other in relation to this routine. The teacher's opinions about this visual are as follows: *"I prepared this visual helping me maintain the order in the class together with the children. We promised that we would obey these rules. At the end of the second month, I had to remind only three children of the rules. I am observing that the children are warning their friends. For example, "we mustn't run in the class, if you want to run, please go out"*.

**Days of the week:** When the teacher's observation notes were examined, it was found that the routine of the days of the week supported the children's skills of retention, recall, making efforts to be successful. The teacher expressed her opinions about this issue as follows: *"It has always been difficult for me to teach the days of the week to children. This visual has become quite popular in the class and the children feel impatient to do this task. I think the owl figure has drawn their attention. Initially, when the task of the days of the week had to be done by C.1, C.2, C.4 and C.12, they first sang its song to remember the days and then brought the owl figure on that day. They were helped by the song to remember the days. At the end of the second week, C.1, C.4 and C.12 were able to place the owl on the days. At the end of the first month, it was pleasurable to observe that C.2 was also able to tell the names of the days and place the owl on the correct day"*.

Weather conditions: When the teacher's observation notes were examined, it was found that the routine of weather conditions supported the children's skills of taking responsibility, active participation and adopting a positive behavior instead of a negative behavior. It was determined that all of the children were willing to do the task of turning the wheel of weather conditions and from the first day of the execution of this task, there has been no need to remind the children of the task of turning the wheel of weather conditions. The teacher's opinions about this visual are as follows: *"When it was not his/her turn to do this task, C.9, who wanted to this task every day, responded by crying. The other children have adapted to this task from the first day, we haven't experienced any problems. In the last days of the first month, when C.9 saw how determinant I and his/her peers were, he/she started to adapt; though he/she felt unhappy when this task was not assigned to him/her, he/she ceased the act of crying"*.

Daily schedule: When the observation notes related to daily schedule were examined, it was found that almost all of the children (11/12) followed the visual of daily schedule, reminded the teacher of some details and maintained the classroom order during transition from one activity to another. At the end of the first week, it was determined that this visual helped a child to demonstrate a proper behavior instead of a negative behavior. The teacher's initial opinions about this child were as follows: *"I am using the daily flow of instruction effectively. C.12 and C.3 are crying and they are looking at the clock to understand when they will go home or looking at flow chart to understand what they will do in the next activity; thus, they feel calm"*. At the end of the first week, her opinions changed as follows: *"We are actively using the routine of daily schedule in the class. C.3 has ceased crying. At the beginning of the class, we are repeating our daily flow. C.12 has completely adapted to this routine. The children now feel more comfortable while preparing for the next activity and transition between activities has become easier"*.

The question of the week: When the questions of the week found in the observation notes of the teacher were examined, it was found that the teacher asked open-ended questions encouraging children's active participation in the instructional process, aiming to develop the children's thinking and problem-solving skills and to elicit their daily experiences. The teacher stated that all the children were eager to answer the question of the week.

Use of toilets: When the teacher's observation notes were examined, it was found that the visual placed in the class in relation to the use of toilets drew the interest of the children and positively affected their skill of acting independently. This routine was used by all the children without needing to be reminded from the first day. The teacher's opinions about this issue are as follows: *"From the first day, they adapted to the toilet routine. They do not have to ask for my permission to go the toilet anymore. Thus, they feel more independent. C.9 at first always wanted to go to the toilet without checking whether it is available or not. We realized then the reason for this is his/her playing with water and bubbles when he/she goes there. I had to remind our rules several times. Nearly one week later, C.9 also adapted"*.

#### *Findings Obtained from the Interview Conducted with the Teacher*

The data obtained from the interview conducted with the teacher after the action plan were analyzed under the themes of general evaluation (interview form question 1), contribution to professional development (interview form question 2), experienced problems (interview form question 3) and widespread impact (interview form question 4).

The teacher's opinions about the categories addressed under the theme of the general evaluation are as follows: *"In general, I am of the opinion that routines have brought order to the class. The children have started to follow the instructions without needing repetition. Nearly ten days later, I realized that some improvement occurred in the behaviors of protecting the classroom order and obeying the rules. The children found that visuals I had prepared interesting and felt eager to use them. I managed to draw their attention. The frequency of some children's crying and feeling offended decreased over time. They learned to wait for their friends, respect them and to be patient. When there was a child breaking the rules or forgetting his/her responsibilities, they warned him/her"*. The teacher's opinions about the contribution to professional development are as follows: *"As children actively participated in routines, I observed that they talked more than me in the class. They have given up asking questions about transition to another activity, use of toilets, getting in the line and the time in which they act independently increased. I used to get tired of making oral explanations about the rules and functioning in the class. Visuals have reified all these things. Adaptation to the school and class has become easier. I do not spend much time any more warning and reminding"*.

Table2. Categories and sub-categories list of the teacher's views on action plan

Themes	Categories	Sub-categories	
General Evaluation	Classroom order	Fewer repetitions of the instructions.	
		More motivated in obeying the rules.	
	Concentration	Willing to take responsibility. Paying attention during the activity Finding visuals interesting	
	Social adjustment	Respecting each other Learning being patient Other- regulation Preferring a proper behavior instead of a negative behavior	
Contribution to professional development	Classroom management	Decreasing complaints The behavior of acting independently Increasing child talk relative to the teacher talk Reification of instructions by visuals	
		Productivity	The time of transition to the next activity is shortened Less reminding Effective use of time Active participation
		Prior habits	Being used to playing in the same learning center Being used to playing with the same friend Being used to playing with the same material
Widespread impact	Physical conditions of the class	Restricted classroom area	
	School management	Support	
	Colleagues	Demoralize Support	

The teacher's opinions about the categories addressed under the theme of problems: *"I have experienced difficulties in the application stage from time to time. The presence of children from the previous year made the functioning of the centers more difficult. Some of the children wanted to play always in the play center or in the block center and with the same children. These children's objection to the new classroom order in the first weeks challenged me". "As our classroom areas and walls are small, we have experienced problems in finding suitable places and unfortunately we have not been able to solve this problem of lack of space yet. Therefore, we have used the back of the door for "the question of the week". Until the children got used to it, I hung the visual of the flow of instruction at their eye level, then I raised it".* The teacher's opinions about the categories addressed under the theme of widespread impact are as follows: *"The visuals I had prepared and the design of the learning centers drew the attention of my colleagues. First, they could not make sense of them and said that they were unnecessary. Our school principle positively reacted and supported. Though I received some negative feedbacks from some of my colleagues and I did not feel discouraged. On the other hand, three of my colleagues exactly copied my practices. They reported positive improvements in their classes. They also said that the number of children obeying the rules increased and their classroom order became more fixed. There are a total of seven teachers including me at the school and four of us are maintaining this new order".*

The children's HSKT scores were also calculated after the action plan. When the HSKT scores of each child before and after the action plan were examined, it was found these scores improved.



Table 3. The children's HSKT scores after the action plan

Total score	C.1	C.2	C.3	C.4	C.5	C.6	C.7	C.8	C.9	C.10	C.11	C.12
	2	3	4	8	0	15	3	3	5	26	17	19

When Table 1 and 3 were examined, it can be seen that children's scores were increased. High scores in this scale refer that the child is able to pay attention and concentrate on task, follow the instructor, remember the rule and complete the task. It can be concluded that action process made a contribution on children's above-mentioned skills.

## Discussion, Conclusion and Recommendations

According to Australian Children's Education & Care Quality Authority (2016), the teacher should revise some environmental factors to nurture the child's behavior regulation skill, to facilitate his/her adaptation to the class and to help him/her establish positive relationships. For instance, is enough space allocated for activities? are there activities challenging and interesting for students? are there opportunities for children to work in small groups according to their interests and speed? are the transitions between the activities short? are there many and various materials offered to children to cater to their interests? does the sound and light level of the classroom indicates a peaceful environment? The strategies to be used by the teacher to solve these problems can be; use of different means of communication besides oral communication; being a model for the development of independent behaviors; adopting the role of a guide rather than a problem solver; by creating meaningful borders, making students feel secure; providing them with the opportunities of choice; demonstrating motivating and encouraging attitudes towards children. The physical arrangements in the action plan prepared within the context of the current study are parallel to these strategies supportive to the teacher.

Before action plan, there were cases regarding learning centers that teacher don't know how to deal with such as; active participation of children in free play, acting independent during the play, completing the play. In light of the findings obtained after the action plan, it can be argued that the physical arrangements related to the learning centers led to improvements in the children's skills of acting independently, active participation and completing the activity. Similarly, it was determined by Ertürk, Ayranç and Çoksoyluer Kılıç (2016) that physical arrangements made in relation to learning centers and use of mediators such as fasteners in their functioning promoted the children's active participation and independent behavior developing skill. In the Ministry of National Education's Preschool Curriculum (2013) the positive effect of the effective use of learning centers during the free play time on the development of the child is emphasized. The results of the research conducted by Aysu and Aral (2016) to investigate the preschool teachers' views and practices related to learning centers revealed that the teachers in the study group did not effectively use learning centers. Thus, it can be suggested that preschool teachers should be given in-service training about the physical order of learning centers, storage of the materials, utilization of many and various materials, designing of the play process, enhancing the play process for children and development of scaffolding skills.

According to Kern & Clemens (2007), the presence of certain routines in the class and making consistent use of them encourage children to participate actively in the learning process and reduce the likelihood of problem behaviors in the classroom because routines inform students exactly what to expect, what is expected of them, and what is acceptable behavior in the classroom (Burden, 2003). On the other hand, studies show that teaching routines to children at the beginning of the year and enforcing them consistently across time increases academic achievement and reduces the frequency of problem behaviors (Johnson, Stoner, & Green, 1996; Ostrosky, Jung, Hemmeter, & Thomas, 2008). Raver et al. (2011) conducted a study in the Chicago School Project 32 head start kindergarten with the participation of a total of 602 children. In the study, some instruction was given to teachers about the construction of some certain routines in the class such as rewards for positive behavior and redirection for negative behavior. Results of their study showed that some improvements were observed in the children's skills of inhibitory control, attention and working independently. In the current study, there were some cases regarding children's behaviors that teacher don't know how to deal with such as; following the instructions without needing repetition, retention, effective use of time, independence/making effort to be successful, protecting the classroom order, active participation and completing the activity before the action plan. In light of the findings obtained after the action plan, it can be argued that the physical arrangements related to the physical arrangements regarding the classroom routines were found to have positive effects on above mentioned skills and more, such as; perseverance, taking responsibility, preferring a proper behavior instead of a negative behavior.

When the HSKT scores of each child before and after the action plan were examined, some improvements were observed in the scores after the action plan. It can be argued that children paid attention on task, followed the instructor and remembered the rule more than they did before action process. When the teacher's evaluations after the action plan were examined, it was determined that the action plan made positive contributions to the children and the teacher in relation to the themes of classroom order, concentration, social adaptation, classroom management, productivity, problems and widespread effect and convinced three more teachers to be involved in the same process. According to the results, it can be suggested that teachers should set up certain routines in line with the interests and needs of their students and enforce these routines consistently throughout the school year.

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