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The methods applied by pre-school teachers to raise the curiosity of children and their views

Sema Büyüktaşkapu Soydan* and Filiz Erbay

Faculty of Education, Department of Preschool Education, Mevlana University, Konya/Turkey.

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The purpose of this study is to determine the strategies used by pre-school teachers in order to raise curiosity in children. Based on this aim, sample is composed of 52 pre-school teachers working in kindergartens affiliated to Ministry of National Education. Study data were collected via qualitative research methods. Research data were gathered in face to face manner by asking questions to teachers in a semi-structured interview form developed by researchers. Teachers were asked open-ended questions in which activities and methods they try to evoke curiosity; which subjects/activities most easily and hardly arouse curiosity; their self-perception of competency in provoking curiosity. As a result of this study, techniques used by teachers for provoking curiosity were identified and suggestions were made regarding the process of curiosity arousal in children.

Key words: Pre-school teacher, pre-school education, a sense of wonder.

INTRODUCTION

Curiosity can be defined as the will that motivates one to dive into research experience to the ends of knowing, seeing or obtaining novel information (Collins et al., 2004; Litman and Jimerson, 2004; Litman and Spielberger, 2003; Loewenstein, 1994; Litman and Silvia, 2006; Reio et al., 2006). In addition to the definitions accompanied by novel knowledge acquisition process, curiosity is often defined with its relation to stimulus. Children are naturally eager to pay attention to anything novel. However, curiosity is about a child's decision to be attracted by a certain kind of stimulus. In other words, stimulus leading to curiosity carries some features like originality, unclearness and challenge (Berlyne, 1960, 1978).

Curiosity does not seem to require that one's attention is initially drawn to the topic in any particular way. It does, however, require that the drawing of attention is accompanied by a motivationally original desire to know the topic (Lahroodi, 2007). For this reason, it is possible to see the link between knowledge acquisition and curiosity because curiosity is an intense desire to get information (Berlyne, 1960, 1978). Although curiosity is related to inner motivational force to acquire knowledge, for children, evoking of curiosity depends on environment. Curiosity is largely influenced by environmental factors including children's interaction with materials and adults (Renninger, 1990).

Adults' role to support different states of curiosity in children including cognitive, social and emotional is important. In other words, teacher's efforts to keep children's curiosity and interest alive and to prevent clutter influence curiosity of children. Adults surrounding the children are generally aware of curiosity of children mainly due to children's desire for questioning. Parents' and teachers' response to behavioral results of curiosity are evident in their perception of curiosity and the way they organize environment. If encouraged properly, children's natural eagerness to know which is accompanied by curiosity can be strong motivational force in education. Even though this natural characteristic of children has been neglected in education field, it is

*Corresponding author. E-mail: sbuyuktaskapu@mevlana.edu.tr. Tel: +90 332 444 42 43/1333.

certain that curiosity can be nurtured not only at home but also at school settings (Chak, 2007).

To encourage curiosity of children, teachers may benefit from particular methods in school settings. One of the most important of these methods teachers use is by questioning which evokes interest and curiosity toward environment and which encourages children to be curious (MacNaughton and Williams, 2004; Cheminais, 2008; Warner and Sower, 2005; DeVries et al., 2002).

However, recent studies (Hestenes et al., 2004; Massey et al., 2008; Blatchford and Mani, 2008; Tsung-Hui and Wei-Ying, 2008) revealed that preschool teachers do not adjust their questions according to individual level of students but they usually ask questions simply requiring children to remember and repeat previous knowledge; also they prefer low-level questions instead of high-level ones which would necessitate children to think at cognitively higher level.

Children's individual ability level and their interests are as influential as teachers' questions on arousal and maintenance of curiosity. Renninger (1990) reports that all children experience curiosity but difference is resulted because there are individual differences between children toward the object and event or because children reveal their curiosity in different ways.

For this reason, by recognizing individual differences in curiosity preschool teachers should seek answers to the questions: "In early childhood classes how can I keep alive the innate feeling of curiosity?" and "How can I provide children with appropriate experiences and counseling?" (Chak, 2002).

On that account teachers in pre-school education should not be merely "teachers" who transfer certain knowledge to students while guiding but they should also be "instructors and counselors" who, by harmonizing the attributions of children, assist them maturating in all relevant fields of life and raising interest and curiosity towards learning (Dağlıoğlu, 2010a). For this reason, teachers should provide children with opportunity to follow their own curiosity and allow them to test their own hypothesis instead of forcing them to obey scripts. By this way, children would develop better understanding of subject matters and their interest ensuring the maintenance of their wish to learn be motivated when (Cook et al., 2011; Wirkala and Kuhn, 2011).

Besides, teachers can make use of this natural curiosity in children to teach them further comprehensive knowledge (Malcom, 2003). To achieve this, teachers should lead them to make use of their senses, ask questions and explore their surrounding by providing them as many diversified activities as possible including all daily activities which have curiosity-evoking quality (Armga et al., 2002; Faulkner-Schneider, 2005). According to Montessori, children's natural curiosity toward the environment including their sensitivity to the shapes of leaves, colors of flowers, can be easily activated in all daily activities through concrete materials, ideas or any invitation to observe something (Montessori, 1964). While exploring the surrounding of children, teachers should be sensitive towards their questions and they should structure the natural curiosity of children through activities which are developmentally appropriate, attracting and appealing to children. While deciding on their activities they should benefit from the subject that raises the curiosity of children, supports the kids to develop new ideas and research their own questions (Worth and Grollman, 2003). Teachers should encourage children's curiosity by adding concrete materials to the settings in order to help children investigate subjects they are interested in. Concrete experiences and materials that appeal to senses keep alive interest of preschool age children and raise curiosity. Teaching children concepts, such as hot and cold; ice and hot water can raise their curiosity and motivation. Moreover, many researches revealed that children's curiosity cannot be evoked if concrete stimuli are not presented (Loewenstein, 1994; Koçyiğt and Kök, 2011).

Teachers use of body language which indicates their willingness and motivation to investigate is important in evoking children's curiosity. Modeling of teachers by using body language helps children acquire positive attitudes towards learning (National Research Council, 1996). These methods and techniques not only help children use high-level thinking skills but also support the development of their problem-solving skills (Duster, 1997; Johnston et al., 2007; Klein et al., 2000). In the light of this information, it can be argued that teachers should take individual differences into account; and activities and methods employed by teachers to promote the curiosity of children have positive effects on them.

For children to grow up as creative, productive, investigating and highly thinking individuals, they should be provided with opportunity to participate in educational programs from the early years on that value and foster child curiosity. However, today, early childhood education is led by daily plans consisting of teachers' predetermined activities. Very few teachers consider children's individual interest and curiosity while most of the teachers carry out educational process via predetermined large-group activities. It is very difficult to educate children based on their own interest when teachers employ educational programs relying on large-group activities in classroom. Thus, it is important to investigate preschool teachers who apply these educational programs in terms of their competence in fostering children's curiosity. In other words, it is crucial to investigate to what extent teachers can provoke children's curiosity under existing conditions and to give recommendations based on obtained results. When relevant literature is scanned, no research findings manifesting the activities of pre-school teachers in Turkey to raise the curiosity in children have been found. It is thus considered that present research shall be supportive of further studies and light the road for the ensuing

researches related to this field. Thus it is deemed that this research matters substantially on that account. Additionally detecting the adequacy perceptions of teachers in curiosity-raising issue and their relevant practices shall put forth accurate and inaccurate practices of teachers. Findings that shall be obtained from this research shall lay the base to establish activities and programs to the ends of raising curiosity in children. On all these accounts the main objective of this research is to analyze the methods employed by preschool teachers to raise the curiosity of children and teachers' views on curiosity-raising activities.

In line with this main objective, the followings are,

1. Perceptions of adequacy in raising curiosity feelings of children,
2. Methods they employ in raising curiosity feelings of children,
3. The activities through which they try to attract the greatest curiosity,
4. Their views on which activities at most students' feelings of curiosity must be raised,
5. The activities and subjects children express their feelings of curiosity most easily,
6. The activities and subjects children face the greatest difficulty in expressing their feelings of curiosity.

METHOD

In this part, some information has been provided on research pattern, participants and data gathering process.

Research model

Research pattern follows qualitative research method. Qualitative researches are selected in systematic analysis of the meanings originating from the experiences of people being researched or planned to be researched (Ekiz, 2003). Within that context designation of participants, preparation of research questions, gathering of data and analysis of data have been implemented in line with qualitative research method and techniques.

Participants

In choosing participants, purposeful sampling method was employed. The study covered a total of 52 female pre-school teachers employed in central districts and nursery classes operating in Konya Provincial Directorate of National Education. In determining the participants, the criteria were: to participate in the study voluntarily, to have at least bachelor's degree, and to work in private or state schools affiliated to Ministry of National Education.

51 teachers who participated in the study were females and 1 of them was a male. 24 teachers work in autonomous preschools and 28 teachers are employed in nursery classes affiliated to national primary education schools. Of all the participant teachers 44 hold bachelor degree and 8 teachers hold postgraduate degree. The length of service of teachers varies between 3 to 18 years (11 years in average).

Instrument

In this study, semi-structured interview form was used for data gathering. Prior to an interview relevant literature has been scanned and a draft form comprising interview questions has been prepared. Next, this draft form has been presented to the views of 3 field experts. Upon receiving experts' views and feedbacks, the interview form was in its final mode. The interview form contained personal information and 6 main questions. Preschool teachers were asked in which activities did they try to raise the curiosity of children and what kind of methods did they use, in which activity and subject they had the smallest and biggest obstacle in curiosity-raising and what were their perceptions about adequacy.

Data gathering

The interview involved the data gathering method of current research. Patton (2002) advocates that interview is the best appropriate method in unraveling the thoughts, feelings and emotions of participants. In data gathering semi-structured open-ended interview method has been implemented to analyze the views of participants in depth. This method enables consistency towards interviewer, minimizes the variations in interview, provides means to conduct similar studies and provides assistance to researcher in the analysis of obtained data. Besides, interview aims to make us see from another person's perspective and the hypothesis of a qualitative interview is that other people's perspectives can be meaningful, familiar and recognize.

Researchers interviewed the participants during data collection process with tape recorder in order to prevent waste of time in note taking and to record information exactly and accurately (Yıldırım and Şimşek, 2005). Teachers were asked for permission to use tape recorder and all the teachers accepted its use during interview. Interviews were held at the time the teachers chose. Researchers interviewed teachers individually in the place that teachers chose in their school.

A pre -interview has been conducted amidst participants to make sure that they all volunteered to participate. Face-to-face interviews with each participant lasted roughly 35 min.

Data analysis

For data analysis, first of all tape recorded interviews were transcribed and computerized. Then, these computerized data were read several times by researchers both alone and together. On one hand, codes related to main themes were formulated, and on the other hand, six questions in semi-structured interview form were directly coded. Finally, two main themes were further identified based on the common opinion of researchers. In generating sub-themes, word-repetition technique was used. For this, key words listed by researchers together and individually were utilized and frequency of codes guided the formation of sub-themes. Researchers wrote the findings according to the codes that they reached at a consensus. As a result of the coding, main and subthemes were identified as follows:

1. Competence
perception - Competent
- Incompetent
- Partially competent

2. Methods
- Use of visual material
- Use of voice and body language
- Questioning
- Chosing activity that arouse curiosity

- Drama
- Other

3. Activities teachers try to arouse curiosity mostly in and reasons
- Science
- Turkish language
- Preparation to literacy
- Drama
- Free time
- Art
- Play
- All activities

4. Activities requiring curiosity to be aroused mostly in and reasons
- Science
- Turkish language
- Preparation to literacy
- Art
- Play
- Drama
- Free time
- All activities

5. Activities that curiosity is most easily aroused - Science
- Play
- Art
- Other activities

6. Topics that curiosity is most easily aroused in
- Concrete topics and concepts
- Topics that children have knowledge
- Topics related to daily life
- Other topics (animals, space and sky)

7. Activities that curiosity is most hardly aroused
- Preparation to literacy
- Turkish language
- Other activities

8. Topics that curiosity is most hardly aroused
- Abstract topic and concepts
- Uninteresting topics and topics above children's development level
- Number concept

Validity and relability

For valid qualitative studies, direct quotations by interviewed individuals should be included in the study and results should be explained based upon these direct quotations (Yıldırm and Şimşek, 2005). In this study, teacher' quotations have been used to generate codes and categories, and direct quotations by teacher, have been reported as examples to each code. By this way, validity has been increased. Reliability in qualitative researches means that different observers are agree on the categories that events are found to be related or it means that the same observer agrees on the categories upon examining at different times (Altınışık et al., 2008). In this study, data is analyzed into codes and categories and this process is tested by two instructors.

RESULTS

Perceptions of preschool teachers about their adequacy to raise curiosity feelings of children

Findings regarding preschool teachers' perception about adequacy to raise curiosity feelings of children are shown in Table 1.

Table 1. Findings of preschool teachers' adequacy perception.

Competence perception	N	%
Competent	35	67.3
Incompetent	13	7.6
Partially competent	4	25

Of participant preschool teachers 67.3% (35 teachers) stated that they felt adequate in raising the curiosity feeling of children, 25% (13 teachers) stated that they felt inadequate and 7.6% (4 teachers) stated that they felt partially adequate.

Preschool teachers stated with the expressions here in after that they love their jobs, they feel adequate as regards their professional experiences, selecting curiosity-raising activities, employing a variety of methods, value the thoughts of children. T13. *"….. I respect the ideas, values and thoughts of children; I listen; understanding and listening the children, asking questions and integrating them to an activity raises curiosity to a certain extent ……".* T19. *"I feel adequate because I love my job."*

Teachers who find themselves partially adequate stated that they feel adequate in subjects relevant to their own interests but inadequate in subjects that fall out of the scope of their interest. For instance T25. *"I feel adequate only in certain situations; particularly subjects that I am also interested in are easy to raise the curiosity of children."*

Teachers who felt inadequate stated that they felt so due to the lack of materials and resources. One of the teachers reported as regards this event, T8*. "We have scarcity of resources and materials that is why I do not feel adequate"*.

The statements of teachers reveal that as regards curiosity-raising more than half of teachers feel adequate, a particular portion of teachers feel partially adequate and only a small portion feels inadequate.

Methods employed by preschool teachers to raise the curiosity feeling of children

Findings regarding methods employed by preschool teachers to raise the curiosity feeling of children are shown in Table 2.

The interviews conducted to analyze the methods employed by teachers to raise curiosity have manifested that teachers implemented multiple methods to raise the curiosity of children. 44.2% of participants (23 teachers) use visual materials, 36.5% of participants (19 teachers) employ tone of voice and body language and 30.7% of participants (16 teachers) employ question-raising

Table 2. Findings regarding preschool teachers' using of methods to raise curiosity feeling of children.

Methods	N	%
Use of visual material	23	44.2
Use of voice and body language	19	36.5
Questioning	16	30.7
Drama	9	17.3
Chosing activity that arouse curiosity	4	7.6
Other	9	17.3

technique. When the expressions of teachers were examined it surfaced that they presented differing views:

T14. "*I ask questions….".* T27.*"…..I bring an unfamiliar material to class and ask questions such as what can we do with this, do you have any idea what I am going to do with it? "*

T9. *"So as to raise their curiosity I try to change the tone of my voice at first, employ gestures and mimics concrete and noticeable materials. By asking questions, I raise their curiosity level one more time. To illustrate, I put inside a noticeable box a few cards on the subject to be explored. When they see the box, their curiosity heightens. Once I direct the question related to the contents of the box, their curiosity and attention reach summit."*

T10. *"…. During Red Crescent Week, for the concept of Red Crescent to be captivating, a picture depicting the misery of people having lost their houses after an earthquake was used to raise curiosity….."*

T17. *"Upon seeing the materials to be employed in the activity, they become extremely curious and they all start to ask what they should do and how to do it."*

T18. *"To gain the interest of children, I put the material inside a box and ask them to predict. I leave the class and ask them what I shall bring to class. I adjust my voice tone to raise curiosity amidst them."*

T13. *"The first step I take to raise curiosity involves myself. I start the activity with enthusiasm, smile and adjusted voice. …. I act consciously in selecting the subject or word I am going to explain. I adjust my voice tone very well."*

T40. "First of all, I employ materials and tools that are helpful in boosting the focus level of students; activities that address a wider range of sensory organs attract their attention more. I use delineascope frequently."

Aside from these methods, it has been detected that teachers employ drama techniques (9 teachers, 17.3%) and activities that raise the curiosity of students (4 teachers, 7.6%).

Of the participant teachers, T11 reported that: *"To raise the curiosity of children before conducting an activity I gain their attention by acting-out the particular subject in a drama applicable to the activity I am going to perform."*

T40: *"In Turkish language activities I perform drama by using materials such as masks and costumes; I give attention to emphasis and tone while narrating the story." T18: ""To gain the interest of children, I put the material inside a box and ask them to predict. I leave the class and ask them what I shall bring to class. I adjust my tone of voice to raise curiosity amidst children." T14: "I speak in a whispering tone, I employ visual aids…." T6 "I hold interesting activities, ask riddles and encourage students' participation."* These are some of the examples given.

Additionally very few numbers of teachers stated that (9 teachers, 17.3%) they implemented methods such as valuing the ideas of children, physical contact, organizing surprised activities, selecting words attentively while raising the curiosity of children, performing interesting activities from the internet, stories, puppet plays, group chats, tongue twisters-riddles, songs, finger play, games, clue giving, sample case, preresearching on the subjects children are curious about most.

Teacher statements exemplifying this situation: T.13: *"I respect the ideas, values and thoughts of children; I listen; understanding and listening to the children, asking questions and integrating them to an activity raise curiosity to a certain extent and the children feel safe and comfortable."*

T37. *"We give clues. Whenever a small word, image or film is given as an example children start to ask related questions and the rest will follow."*

T20. *" I ask the children questions on a particular subject. I show them pictures. I tell stories on the subject. I set a setting for family participations and focus on group chats.*

T31. *"I play several games with children for any given subject. I collect interesting activities from the internet and raise their curiosity via games."*

The statements reported by teachers exhibit that in order to raise the curiosity of children the methods they employ most frequently are visual aids, different tones of voice and question-raising; aside from these methods there are few other means they apply.

The activities in which preschool teachers try very hard to raise the curiosity of children

Findings regarding the activities preschool teachers try very hard to raising the curiosity of children are shown in Table 3.

As the statements of teachers on the activities they try very hard to raise the curiosity of children are analyzed, it suffices that not just one but in many numbers of activities they try very hard to raise curiosity. These activities are most prevalent in science courses (24 teachers, 46.1%) and Turkish courses (22 teachers, 42.3%), preparation to reading and writing activities (8 teachers, 15.3%), drama (5 teachers, 9.6%), free time (4 teachers, 7.6%), art (3 teachers, 5.7%) and play (3 teachers, 5.7%). 10 teachers (19.2%) stated that they try hard to raise curiosity in all activities.

Teachers' explanations on the reasons why they

Table 3. Findings regarding the activities preschool teachers try hardest to raise the curiosity

Activities teachers try to arouse curiosity mostly and its reasons	N	%
Science	24	46.1
Turkish language	22	42.3
Preparation to literacy	8	15.3
Drama	5	9.6
Free time	4	7.6
Art	3	5.7
Play	3	5.7
All activities	10	19.2

Table 4. Findings of preschool teachers' views on which activities curiosity feelings of children must be raised

Activities requiring curiosity to be aroused mostly and its reasons	N	%
Science	24	46.1
Turkish language	14	26.9
Preparation to literacy	9	17.3
Art	4	7.6
Play	5	9.6
Drama	4	7.6
Free time	2	3.8
All activities	16	30.7

selected Turkish activity in raising curiosity feeling of children: T40. *"Because stories are mostly based on things that are in their immediate surrounding and children like these things around them."* T10. *"In Turkish language activities it is essential to raise the curiosity of children and maintain their interest and curiosity till the end of activity."*

Teachers' explanations on the reasons why they selected science activity in raising curiosity feeling of children: T12. *"Experiments are the most appropriate activities to raise the curiosity of children and assist them in making predictions."* T38. *"That is because children love environment, nature, living beings, plants and land. And mostly they are curious."* T18. *"Since science activity is experiment oriented I ask them to predict the experiment and finding."* T44. *"In science activities I demand to raise the curiosity of children. That is because I try to give children an opportunity to comprehend, discover and love science in early ages to uncover their inherent skills."*

Teachers' explanations on the reasons why they selected Turkish-Science activity in raising curiosity feeling of children: T11. *"Since Turkish and science activities are one-to-one visual they enable the students to comprehend the subjects more easily. Since I can provide the subjects they need to understand only through these two activities I attempt to raise higher level of curiosity in these activities."* T50. *"That is because children's participation in these activities is more passive. To ensure more active participation I try to raise further curiosity during these activities."*

Teachers' explanations on the reasons why they selected Reading-Writing Preparation activity in raising curiosity feeling of children: T23. *"… I believe children lack motivation during reading-writing activities."* T17.

"That is because students may at certain times get bored easily. Teaching becomes easier when I raise their curiosity and attract their attention." T45 *"I try hard in Reading and Writing Activity 'concept teaching' to raise their curiosity because I present concept training not through any printed materials but with my own practice texts. Nonetheless, practice texts are the last stage of activity. Personally, I at first dramatize the concept or play games and legos to raise their curiosity. Finally I enhance their learning via my personal practice texts".* Teachers' explanations on the reasons why they try to raise the feelings of curiosity in all activities: *T9. "I try to raise curiosity in almost all activities because when children are curious fun time and learning comes inevitably." T*33. *"I feel curiosity is essential in all activities because students show no interest in anything they feel no curiosity towards." T* 51 *"I try to raise curiosity in all activities because the activities make up a whole all together." T*48. "*Actually I believe in preschool education each activity is an outcome of curiosity. I try to raise curiosity in all essential activities."*

It has been observed that science activities are widely selected since subjects dealt with are enjoyed by all students; experiments, nature visits and animals are interesting for children; Turkish language activities are selected on accounts of having capacity to integrate a wide range of subjects and require attention. Activities that fall out of this scope are less commonly selected in curiosity raising.

The views of preschool teachers on which activities curiosity feelings of children must be raised

Findings regarding preschool teachers' opinion about the activities curiosity feeling must be raised are shown in Table 4.

As the views of teachers on which activities curiosity feelings of children must be raised are analyzed, it has been observed that they have stated their views on more than one activity. As these activities are examined individually it shows that teachers emphasized the need to raise curiosity mostly in science (24 teachers, 46.1%) and Turkish (14 teachers, 26.9%) activities; secondly in Reading- Writing preparation (9 teachers, 17.3%), Art (4 teachers, 7.6%), Plays (5 teachers, 9.6%), Drama (4 teachers, 7.6%), Free time (2 teachers, 3.8%) activities. 16 teachers (30.7%) hold the belief that it is necessary to raise curiosity in all activities.

Table 5. Findings regarding activities preschool teachers face the smallest difficulty in raising curiosity feelings of children

Activities that curiosity is most easily aroused	N	%
Science	25	48.07
Play	13	25
Art	14	26.9
Other activities	17	32.6

Below are some parts from the views of preschool teachers on this issue.

T40. *"I think it is necessary to raise curiosity mostly in science and nature activities since students have great enthusiasm to understand nature and real phenomena around…*" T33. *"In science-nature activities enable children's research and exploration skills as well as their active participation…"* T18. *"In science activities, children learn through experience and come across the phenomena personally…"* T36. *"It is necessary to raise curiosity in storytelling. It is necessary to receive the opinions of students while narrating a story before its conclusion. In that way we grasp a chance to see what s/he thinks about this subject and what s/he must do …"*

T10. *"In Turkish language activities it is essential to raise curiosity and keep their interest at peak till the end of the activities."* T17. *"They feel less motivated to participate in activities they are not curious about; hence curiosity is a prerequisite in all activities.."* T38. *"Actually, in all activities curiosity feeling must be cultivated via appropriate tools. It should not be limited to single activity."* T25. *"In all activities where children have no interest or desire to participate in, their feelings of curiosity must be raised."* T23. *"In the kinds of activities that are not interesting to students, it is necessary to raise their curiosity."* T22. *"I think curiosity should be raised not by forcing the student to focus on a particular activity but by making use of any opportunity."* T17. *"It is necessary to raise curiosity in reading and writing activities which may be at most times extremely boring for children",* T15. *"Mostly in drama activity children can be instructed in almost all subjects permanently."* T49.

"Raising curiosity via certain activities depends on the age group of children: children in age 6 group in science and mathematics activities where scientific researchers are conducted, Turkish language activities where Turkish language skills are improved and reading-writing preparation activities that are preparatory courses for primary education. T42. *"We should raise curiosity irrespective of the type of activity because unless children interested in any particular subject they cannot learn it thoroughly or permanently."*

A good majority of preschool teachers argue that students' curiosity must be raised mostly in science and Turkish activities and then in all activities. The number of teachers who believe it is necessary to raise curiosity in other activities is rather low.

The activities in which preschool teachers face the smallest difficulty in raising curiosity feelings of children

Findings related to the activities preschool teachers face smallest difficulty in raising curiosity feeling of children are shown in Table 5.

Preschool teachers stated that they face the smallest difficulty in raising curiosity feelings of children during science activities (25 teachers, 48%). Particularly in experiments and nature visits they said to raise their curiosity most easily. Following science activities plays (13 teachers, 25%) and art activities (14 teachers, 26.9%) come. Other activities hold the last row (17 teachers, 32.6%) according to the views of teachers.

Below are some parts from the views of preschool teachers on the reasons why they face the smallest difficulty in raising curiosity feelings of children during science, play and art activities:

T9. *"When it is time to conduct an experiment I can grasp their attention much easily. That may be related to the fact that the results are obvious in a short time. They learn easily and have fun concurrently."* T22. *"… Since children themselves conduct the experiments they learn through performance. They ask more questions and learning becomes further permanent."* T12. *"It is easier to raise their curiosity through nature trips and tracking. Familiarizing with the environment as well as living and non-living beings through personal contact satisfy their curiosity."* T10. *"I face the smallest difficulty in raising children's curiosity during artistic activities. These are already the kind of activities they love to participate in and have fun."* T18. *"I take children's curiosity most easily in play activities because children participate in this activity voluntarily at all times. As a natural consequence of their development playing games is always the kind of activity they love to do and have fun."* T46. *"According to their interests and needs in all subjects and activities"* T41. *"Children are more curious about subjects and activities appropriate to their interests and needs. Therefore I face no difficulty in raising curiosity in any activity and subject appealing to their interest."*

The subjects in which pre-school teachers face the smallest difficulty in raising curiosity feelings of children

Findings related to the subjects preschool teachers face smallest difficulty in raising curiosity feeling of children

Table 6. Findings regarding subjects preschool teachers face the smallest difficulty in raising curiosity feelings of children.

Topics that curiosity is most easily aroused	N	%
Concrete topics and concepts	19	36.5
Topics that children have knowledge	13	25
Topics related to daily life	9	17.3
Other topics (animals, space and sky)	10	19.2

Table 7. Findings regarding the activities preschool teachers face the greatest difficulty in raising curiosity feelings of children.

Activities that curiosity is most hardly aroused	N	%
Preparation to literacy	23	44.2
Turkish language	17	32.6
Other activities	11	21.1

are shown in Table 6.

Teachers reported that they face the smallest difficulty mostly in raising curiosity feelings of children towards concrete subjects and concepts (19 teachers, 36.5%), subjects that they have previous knowledge leastwise (13 teachers, 25%), events that they encounter in daily life (9 teachers, 17.3%). Furthermore teachers reported that (10 teachers, 19.2%) it was easier to raise the curiosity of children towards subjects such as animals, space, sky and colors that children are already interested in. Below are some parts from the views of preschool teachers on this issue:

T25. *"In subjects they feel poised and motivated at all times it is easier to raise their curiosity."* T20. *"Animals and colors are subjects that they are naturally attracted to. In activities involving these subjects it is easier to raise their curiosity."* T37. *"I raise curiosity much easily in concrete subjects because children feel more curious about subjects they know leastwise. ……. Space and sky relevant subjects attract them greatly. They ask more questions on these subjects and provide interesting answers as well."* T 18. *"Since they are curious about daily life subjects more I am much more comfortable in raising their curiosity in such subjects."*

The subjects in which preschool teachers face the smallest difficulty in raising curiosity feelings of children are concrete subjects that already attract them and witnessed in daily life.

The activities in which preschool teachers face the greatest difficulty in raising curiosity feelings of children

Findings related to the activities preschool teachers face the greatest difficulty in raising curiosity feelings of children are shown in Table 7.

Teachers reported that they face the greatest difficulty in raising curiosity feelings of children during reading-writing preparatory activities (23 teachers, 44.2%). Next teachers reported Turkish language activities (17 teachers, 32.6%) and other activities (11 teachers, 21.1%). Below are given teachers' views on the reasons why they face the greatest difficulty in raising curiosity feelings of children during these activities:

T 11. *"During reading writing preparatory activities, while conducting cognitive activities at certain times subjects based on concrete meanings are narrated which in turn triggers a decline in students' interest ,"*

T 10. *"The stabile subjects where students are inactive are the hardest ones to raise their curiosity. The majority of children are enthusiastic at the beginning of story but they lose interest in due time. If that happens they should be motivated towards the subject and curiosity-raising questions and songs must be presented."*

T 48. *"I face the greatest difficulty in free time activities which is due to the age level."*

Preschool teachers face difficulty in raising curiosity of children in reading&writing preparatory activities and Turkish language activities.

The subjects where preschool teachers face the greatest difficulty in raising curiosity feelings of children

Findings related to the subjects where preschool teachers face the greatest difficulty in raising curiosity feelings of children are shown in Table 8.

Teachers reported that they face difficulty in raising curiosity of children mostly in abstract subjects and concepts (28 teachers, 53.8%), subjects that fall out of their scope of interest and beyond their development level (20 teachers, 38.4%). Additionally they reported that it was hard to raise their curiosity towards number concept (10 teachers, 19.2%). Below are some parts of teachers' views on relevant topic:

T 37. *"It is harder to raise the curiosity of children towards abstract concepts because these concepts are hard to explain, illustrate and put into their minds. Abstract concepts really push us hard. They are hard to exemplify in children's minds. It is hard to raise curiosity in a 6-year old and it is also hard to picture them in their minds".* T 1. *"It is hard to raise their curiosity towards subjects beyond their developmental level and also abstract subjects."* T 10. *""It is hard to raise curiosity towards subjects children are unfamiliar with and also abstract subjects. Despite that, it is also necessary to raise curiosity towards*

Table 8. Findings regarding the subjects preschool teachers face the greatest difficulty in raising curiosity feelings of children

Topics that curiosity is most hardly aroused	N	%
Abstract topic and concepts	28	53.8
Uninteresting topics and topics above children's development level	20	38.4
Number concept	10	19.2

subjects children are unfamiliar with and also abstract subjects."

T 40. *"…The greatest difficulty is in explaining and raising their curiosity towards subjects that are not familiar to them or objects and things that are not observed physically in real life; like electricity, heating tools, also letter and telegram which are no longer used but still found in books. When there are activities that are beyond their age and development level there is no curiosity and they feel no motivation towards those activities."*

T 25*. "I fail to raise their curiosity towards activities that they are not interested in or activities that fall out of the scope of their interest."*

T *20. "……it is hard to attract their attention in subjects involving numbers."*

Preschool teachers face the greatest difficulty in raising curiosity feelings of children towards abstract subjects and concepts, subjects that are beyond their development level and concepts related to numbers.

All in all, it is found that in evoking curiosity more than half of the teachers feel adequate, some of them feel partially adequate and only a small portion of them feel inadequate. They use visual materials, different voices and questioning strategies at most in order to raise curiosity in classroom setting. In terms of activities related to curiosity, teachers feel willing and required to encourage curiosity of children during science and Turkish language activities. According to teachers, play and art are the easiest activities, whereas literacy activities are the most difficult activities in raising curiosity. With respect to subjects, teachers report that concrete and previously known subjects are easy; however, abstract concepts and subjects which children are not interested in or beyond their development level are hard to provoke curiosity.

DISCUSSION

Findings obtained from present research reveal that a great majority of teachers consider themselves adequate in raising curiosity of children, a smaller majority feel partially adequate and quite a small portion of teachers feel completely inadequate. Teachers who define themselves as experienced, loving both the kids and their profession, paying respect to the ideas, behaviors and interests of children are the ones feeling adequate. Therefore, these teachers are ready and motivated to try new methods and activities to raise the curiosity feeling in children. Teachers who consider themselves inadequate attribute this failure to the scarcity of materials and resources.

As evidenced with this finding, teachers feel adequate due to reasons related to themselves and children while they attribute their inadequacy to the causes not connected to them or children. There are a variety of research findings focusing on the contributions of positive relationship and communication between teachers and children on a variety of domains such as social, emotional and cognitive development (Justice et al., 2008; Reitzel, 2000; Rudasill, 2011; Yan et al., 2011). It can thus be reasonably argued that positive attitude of teacher towards children may be effective in raising their curiosity level since positive attitudes integrate open instructions and interesting activities as well (Ölçer, 2004) and these are amongst the most essential elements in raising children's curiosity. Professional satisfaction and experience also give teachers the opportunity to know and analyze students better, establish and plan the philosophy of education (Dağlıoğlu, 2010b). It is an expected finding that teachers possessing such attributions shall face less challenge in raising curiosity of children. Considering the fact that teachers whose views have been included within the scope of research have averagely 11 years of professional experience it is feasible to argue that this is a sufficient length of time to lead children's feelings related to interests, will and curiosity on a general sense.

The reason why teachers consider themselves partially adequate in raising curiosity of children is that although they are good at raising curiosity towards subjects they are already interested in, they fail to raise curiosity towards subjects they lack interest in. It has been reported in a study analyzing the relationship between curiosity feelings in children and behaviors of adults a high correlation has been determined between research behavior of adults and children's inclination to research the subjects they are curious about (Endsley et al., 1979). Henderson and Moore (1980) have argued that curious children demand "sensitive" and persuasive" adults to ask greater quantities of questions. These findings reveal that the attitudes and behaviors of adults are influential over curiosity feeling of children.

Another finding obtained from this research is that to the ends of raising the curiosity of children teachers make use of visual materials, tone of voice and body language and question-asking method.

Active participation may be assistive in raising the curiosity of children. In ensuring active participation of children open-ended questions may be aidful. In other terms asking open ended questions by teachers bears importance in uncovering the curiosity in children (Eggen

and Kauchak, 2001; MacNaughton and Williams, 2004; Cheminais, 2008). When open ended questions are employed to motivate the child towards an event, person or object they assist the child to think about it and boost his curiosity (Johnston et al., 2007; King, 2005; Walsh and Blewitt, 2006; Chappella et al., 2008). On that accounts, teachers should aske children open-ended questions that enable them to think in higher levels (Warner and Sower, 2005; DeVries and et al., 2002).

A study on the extent body language, voice and words affect language, it is concluded that body has 55% effect, voice has 38% effect and words have 7% effect, meaning components of non-verbal communication known as face expressions, gestures, mimics and head movements possess the largest share in communication process (Kıldan, 2008). Based on this deduction; towards the ends of raising the curiosity of children, success in non-verbal communication is equally important as using the appropriate expressions of question.

CDs, picture cards, photos, models and objects are physical stimulants for children. Teachers have noted that it is easier for them to raise the curiosity of children towards physical subjects and concepts. This shows the fact that there is consistency between the views and practices of teachers.

The least frequently applied activities are drama actions, valuing the thoughts of children, surprised activities, selecting words attentively, following interesting internet activities, story, group chat, tongue-twisting and riddles, songs, plays, giving clues, sample case and pre researching on the subjects children are most curious about. It is quite an unexpected finding of this research that these activities are selected less commonly since drama, songs, riddles and tongue twisting are already the kinds of activities children are naturally interested in. This finding may be related to the fact that teachers consider above listed items not as a method in curiosity raising but rather as an activity.

Teachers raise the curiosity of children mostly in science and Turkish language activities. Also teachers believe that children's curiosity must be raised mostly during these activities. Within that context there is consistency between the views and practices of children which may be defined as a positive finding. Nonetheless teachers should pay the same significance to each activity with no discrimination and raise curiosity in all activities and subjects since learning is meaningful and permanent when it covers all fields. Child's development is a whole and within the scope of this holistic approach the child needs to be supported (Güven and Azkeskin 2010; Ceylan, 2009; Ünver, 2004).

In addition to this, children have natural curiosity; but there are individual differences in terms of children's interest in an object or topic. Children express their curiosity toward different objects and events in different ways (Renninger, 1990). In order to arouse curiosity in children, preschool teachers should observe these differences firstly; and then they should identify which activity or object would help them arouse curiosity in children. Preschool teachers in our study stated that they try to arouse curiosity not in all activities but in some activities; so, this may prove that teachers do not take individual differences into account.

Teachers face the smallest difficulty in raising children's curiosity during science activities and the greatest difficulty in reading-writing preparatory activities. As relevant literature is analyzed it is found out that curiosity raises when an unexpected situation, suspicion, woozy-ness, dilemma, confusion, cognitive conflict, innovation, complexity, incompatibility, ambiguity, lack of clarity and change emerge (Harty and Beall, 1984). Since the content of the subjects and activities teachers handle in science activities raises the curiosity of children it is considered that this is the activity that raises their feelings of curiosity most easily.

Teachers face the smallest difficulty in raising the curiosity of children towards concrete subjects and concepts, familiar subjects, events that they meet daily; whereas they face the greatest difficulty in raising their curiosity towards abstract subjects and concepts, subjects beyond their development level and number concept. Parallel to this finding, Spektor-Levy et al. (2011), in their research, have reported that teachers in their study mostly selected concrete themes and subjects relevant to daily life in raising the curiosity of children. Furthermore, in many researches on curiosity it has been manifested that curiosity cannot be activated without a concrete stimulant (Loewenstein, 1994). As regards the views provided on the qualities and structure of this stimulant the definition given by Berlyne (1960) has been the most widely recognized one. In this definition, the qualities of stimulant are explained as change, obscurity and confusion. Fourth quality is responding to this physical stimulant in a variety of ways.

CONCLUSION AND SUGGESTIONS

In-service training programs that enable teachers to notice their own misinformation and lack of knowledge regarding methods to provoke curiosity in children and the in-service training programs informing teachers about methods and techniques used by preschool teachers who implement different preschool education approaches in different countries should be organized. By this way, the competence of preschool teachers in preparing educa-tional programs that value and consider children's curiosity can be increased. In addition to this, pre-service teachers should be educated on this issue during their bachelor studies; teacher training programs should not ignore covering these topics so that preservice teachers can learn how and why to arouse curiosity in children.

Another result of the study showed that preschool teachers mostly focus on raising the curiosity of children

during science activities. It is recommended that informative seminars be organized to notify preschool teachers that curiosity is a skill that needs to be cultivated, supported, renewed and nourished; that this feeling needs to be awakened through all activities within the program schedule.

Further researches can be conducted to analyze the relationship between the subjects teachers feel curious about and children's feelings of curiosity; and the studies focusing on teacher competence to apply methods for raising curiosity in children would complete the missing findings in this research. Researches that determine the strategies employed in various countries' educational programs for raising curiosity in children would be useful because they would serve as resource for teachers in Turkey.

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