

PRESCHOOL EDUCATION IN TURKEY AND IN THE WORLD: A THEORETICAL AND EMPIRICAL PERSPECTIVE

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A NEW PERSPECTIVE AT PRE-SCHOOL SCIENCE EDUCATION: THE KITCHEN; OUR LABORATORY

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INTRODUCTION

The fact that our century could be referred to as ‘The Science Boom’ requires our children to acquire such qualifications as creative thinking and obtaining scientific terms from early childhood on, as that period is when children actively gain basic concepts and abilities relating to scientific processes. When children are observed within their natural activities, it is easy to see the formation of the concepts and how they are practiced in situations that require solving problems. Problem solving is when scientific research begins (Arı, 1993: 99).

Recent researches suggest that what matters in child development is not by whom they are looked after but the commitment in the attitude, persistence and educational quality. It is possible to make good use of pre-school period when the development is the fastest and changeable only by means of a very well-planned educational programme. The more important thing in pre-school education programme is the process, not the learning product. The methods as to how the knowledge is taught are crucial. Therefore, basic knowledge and skills obtained via rich experiences in early childhood increase children’s chances to be successful in their prospective learning processes (Gürkan, 1993: 119). Consequently, it is of great importance to grow open-minded individuals and to help the progress of the way of thinking by placing a particular importance to scientific activities in pre-school period.

Having experienced scientific activities, children could get the chance to learn and practice scientific processes both at home and at pre-school science education. Besides, parents’ active participation in the institution’s programme, being knowledgeable with the game materials and their usage, and tendency to provide their children with such materials at least in their houses would all positively affect the children’s learning process (Bilir, 1993: 34). Because an accomplished parents-children communication which defines children’s prospective success in interacting with other people is only possible when mothers spend enough time with their children and meets their needs lovingly, adequately and in time. As it is well known, parents are the first teachers to help their children obtain environmental details and develop progression skills such as walking and speaking. Parents start to function as teachers to their children at the birth and keep their roles when children go to school and have actual teachers (Temel and Ömeroğlu, 1993: 74). The education of children until the age of five which is one of the most important periods in children’s lives is accepted as one of parents’ basic assignments in almost any country in the world (Oktay, 1993: 104). According to Erikson (1982); as a result of the education provided to a child in the babyhood and childhood, it either perceives the world as somewhere trustworthy and reliable or somewhere full of hatred and threat. It is no doubt that, as Jersild (1946) underlines; ‘The education starts at the birth, if it hasn’t started much earlier, and longs forever.’ Thus, it

is of great importance that parents are acquainted with child development and education in this process (cited by: Gürkan, 1993: 120).

The first planned and programmed learning processes relating to the science should be tried to be actualized at educational institutions according to children's real interest and needs. Such learning processes are performed via suitable methods and techniques, considering children's developmental level, interest and requests, and environmental opportunities. Knowing children's cognitive aspects such as their attitude interest in science is of great importance in getting successful results out of science and nature activities tried to be developed at pre-school institutions as it is well known that children learn what they are curious about and interested in or what they like in a better way than what they are expected to learn (Yaşar, 1993: 140–143).

It is often observed that children improve their process of learning their immediate surroundings, which they start by touching, tasting, and hearing and seeing, adding their abilities to ask questions, observe and experience.

Making scientific educational activities more enjoyable for pre-school children especially, targeting their interests, needs and expectations rather than trying to give them standard knowledge while planning such activities would enable to make scientific education more meaningful for children and help them develop a positive attitude towards physical sciences later in their lives (Gürdal et. al, 2001).

THE LABORATORY (EXPERIMENT) METHOD IN SCIENTIFIC EDUCATION

Kang and Wallace's (2005) Laboratory method is a teaching method that enables to improve cognitive skills and gives the learner chance to work individually or in groups. Scientific experiments are essential for learning experiences in science lessons, as they improve the learners' ability of examining and researching and makes them more curious about learning. Scientific experiments that are based on empirical and practical learning enable the learner to actively join the learning process, turning it to an active and vivid experience (Cited by: Küçüküran, 2008: 66). This helps to improve the learner's cognitive skills such as judging, establishing cause and effect relation, problem solving and generalizing. It also helps the learner to develop positive attitude towards employing scientific methods (Küçüküran, 2008: 66).

THE IMPORTANCE OF EXPERIMENT IN PRE-SCHOOL EDUCATION

Employing the experiment method during scientific studies in pre-school education is important in terms of developing children's sense of curiosity and researching, stimulating their cognitive skills and increasing their prospective success levels in academic terms. Children are usually curious about what they see within their environments. Parents and teachers should find scientific activities to keep children's curiosity alive and stimulate them. Doing an experiment doesn't always require a perfect laboratory. There are a lot of experiments to be performed with simple materials especially for pre-school students. Growing of the plants in our houses or the environment, seeing animals such as the worm in the soil, a piece of wood floating on the surface of the water, sinking of a piece of stone thrown into water are all examples for simple experiments. Therefore, the children not attending pre-school educational institutions need to be educated by their parents. It is possible to make educational activities of scientific quality (Şahin,1998: 31).

THE AIM OF THIS RESEARCH

The aim of this research is to:

1. Examine the goals of experiments that could be performed in the kitchen,
2. Determine the aspects that should be paid attention to while performing these experiments,
3. Specify the advantages of the kitchen while using as the laboratory and
4. Present an approach as to how to use the kitchen as the laboratory in scientific education, forming a life cycle.

METHOD

Two qualitative research methods, the document examination and observation methods have been employed in this study (Yıldırım and Şimşek, 2000). Documents prove their value not only because of the things that could be learnt from them but also due to being stimulating for researches that can only be followed by observation and contact (Patton, 2002). ‘Observation is a method which is employed with a view to define the behavior forming in any environment or institution’ (Yıldırım and Şimşek, 2000: 124).

PARTICIPANTS

This study was conducted with third grade prospective pre-school teachers (N=47) attending the Scientific Education class in Abant İzzet Baysal University in the fall season of 2010–2011 academic year and a specialist in Science.

PRACTICE

The practical steps of this study performed with prospective teachers are as follows;

The prospective teachers were asked to design to original experiments for science education to the children at the age of 4-6, to be performed by them and children in a period of 2 weeks. But they were asked to use waste materials, while designing, which are available within the kitchen in compliance with the target achievement.

The experiments designed by each prospective teacher were discussed on in the class with other prospective teachers under professional guidance, in terms of being safe, economic, and practicable, and as a result of this, some additions and reductions were made.

After final formation of the experiments, the prospective teachers were asked to test them first at home themselves, enabling to revise aspects such as the steps of the experiment, timing according to the suitability of the experiment, and security.

Then it was assured that these experiments were practiced by each student in kindergartens in science activities within the scope of the Teacher Practices I class, at university’s undergraduate programme in the seventh semester. Before discussing the results out of this step in the classroom, prospective teachers were asked to prepare portfolios involving their self-assessments regarding each step of the performance.

And finally, these experiments were shared in the classroom both by re-performing and with a presentation, considering the results of the experiments previously performed in the kindergartens. Thus, it was re-evaluated with the prospective teachers under professional guidance considering the feedback from the children and

portfolios.

After this last presentation, the prospective teachers were asked to add a part, which included their self-assessments of their peers, to their portfolios. Doing this, an evaluation of themselves, the children and their peers, was made.

DATA COLLECTION AND THE ANALYSIS

The prospective teachers were observed all through the process by the researchers and notes were taken. The portfolios prepared by the prospective teachers were also collected by the researchers at the end of the practices and analyzed via document examination, one of the qualitative research methods.

The portfolios were coded in order to make the analyses meaningful. Thus, they were named as “P1”, “P2”,... in a row. By gathering both the results from examining the portfolios and the notes taken throughout the observations, some findings relating to the approach ‘The kitchen, our laboratory’ were attained.

FINDINGS

The findings obtained as to what functions the experiments have as a result of documental examining of the portfolios of the prospective teachers and the observations of the researchers are as follows:

TEACHING THE CONCEPTS

The examination of the portfolios and observational data show that laboratory activities, especially concepts can be learnt in the kitchen spending time in a pleasant and safe way. For instance, during the activity called ‘let’s make our own candy’ (P1), the prospective teacher taught the children both the geometric figures and the concepts of color and heat, making use of kitchen tools (please see: Photo 1).



Photo 1: ‘From the Experiment Called ‘Let’s Make Our Own Candy’

MODELING

After the examination of the portfolios and observational data, it was seen that laboratory activities were effective also in modeling. For instance, it can obviously be seen in the experiment ‘the heroes in the nose’ (P28) that the structure of the nose can be modeled (please see: Photos 2-3). In this modeling, toothpicks represent the hair structure, paper rolls represent nostrils and foam particles from the package of eggs are used to show the dust from outside.



Photo 2

“The Heroes in the Nose”



Photo 3

A View from inner Structure of the Nose

CREATING AWARENESS ABOUT NUTRITION KNOWLEDGE

It was also observed as a result of examination of the portfolios and observational data that laboratory activities created awareness on nutrition as well. For example, at the activity named ‘Guessing which food and drinks contain acid and observing them’ (P14), the importance of nutrition could be emphasized (please see: Photo 4–5). This activity also enables to teach color concept.



Photo 4

A View from Experimental Material

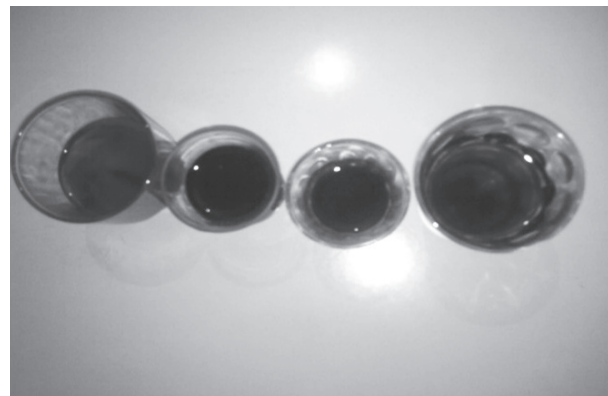


Photo 5

A View from the Result of the Activity

USING A SINGLE MATERIAL IN A MULTIFUNCTIONAL WAY

The prospective teachers also specified that while using the kitchen as the laboratory, it was possible to make many experiments making use of only one material. For instance, one of the prospective teachers stated as follows in her portfolio (P16).

“As I studied in the quantitative department when I was at high school, whenever I heard the word experiment, some perplexing mechanisms would come into my mind. But as a result of the researches I made during the process of preparing my portfolio I witnessed that it was possible to teach children a lot of concepts using only water. And this led me consider making a lot of plans relating to my professional life.”

Similarly, another prospective teacher expressed her thoughts in her portfolio (P23) as follows.

‘As it can be seen from the experiments I referred to as examples, there was no need for expensive materials and confusing mechanisms in order to make experiments.’

INFLUENCING CHILDREN’S SOCIAL-EMOTIONAL DEVELOPMENT

As a result of the examination of the portfolios and observational data, it was detected that laboratory activities influenced children’s social-emotional development. For instance, in the experiment named ‘Observing the leaves in the kitchen’ (P36), observation of self-confidence like ‘I can do’ show that using the kitchen as the laboratory is an effective process (see: Photo 6).



Photo 6

A View from ‘Album Making’ Process after the Experiment ‘Observing the Leaves in the Kitchen’

Another finding gained in the light of the portfolios and the notes taken by the re-

searchers was that there were some points to take into account when using the kitchen as the laboratory. According to these;

1. The experiments should first be performed by the teacher and made suitable for the children, removing all faults, as this way, it is observed that time can be used in a good and effective way.
2. How the children perceive the experiments should also be considered and evaluated and be re-structured accordingly when needed.
3. Parents should also be involved in the experiments as well as the teachers, enabling that the knowledge children acquire by doing and experiencing is permanent.
4. When using the kitchen, the environment should be suitably prepared for the experiment and probable harmful elements should be removed.
5. It should be remembered that each child has different individual aspects and therefore shouldn't be over-expected. On the other hand, very easy experiments could make them get bored.

The advantages of the approach 'the kitchen, our laboratory' are listed below as a result of the evaluations received from the portfolios and the researchers. The approach:

1. Increases children's curiosity,
2. Helps children get to know their environment better.
3. Affects children's self-care abilities and also their abilities of being self-conscious as they perform the experiments themselves.
4. Substantially reduces the cost due to doing the experiments in the kitchen.
5. Helps the children establish relationships with the daily life and reveal life skills, which was underlined by the prospective teachers.
6. One of the most significant advantages of 'the kitchen, or laboratory' approach is that it makes good use of waste materials. By this means, it helps the children develop an environmental awareness.
7. Participation of the parents in the experiments make the children happy, providing them more self-confidence and also make them more eager.
8. It not only teaches children about experimental environments but also helps improve mother-child relation. Temel and Ömeroğlu's (1993) study relating to models based on parental education also fosters this suggestion.
9. Children get many opportunities to use science while working in the kitchen. Besides, children directly involve such experiences in their own lives in an interesting and funny way.

As a result of documental examination of all the portfolios (N=47), observations and practices performed, a life cycle was established enabling to perceive all the elements on the subject from a single point of view (please see Chart 1). The aim of this cycle is important as it sets a template relating to the use of the kitchen as the laboratory, and the cycle is as follows.

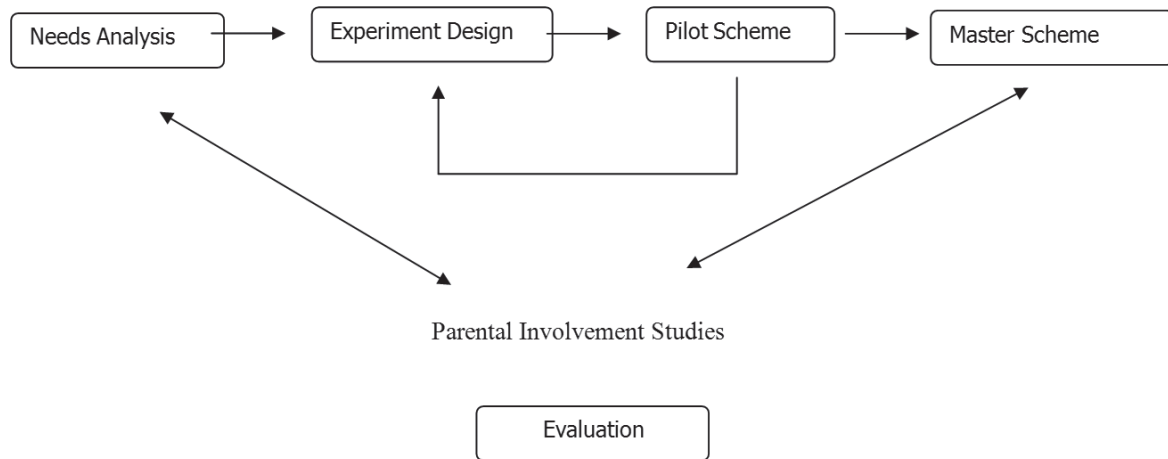


Chart 1: The Schematic View of Basic Steps to Be Followed in Using the Kitchen As the Laboratory

RESULT AND SUGGESTIONS

As a result, pre-school children can learn basic life skills by means of materials, various methods and suitable planning in ‘the kitchen as the laboratory’. Educators’ and parents’ positive and supportive attitudes are of great importance in achievement of such skills. As Arnas (2002: 6) also states, “scientific activities should focus on what children see and ask about in their daily life. For this reason, adults should be able to improve children’s skills such as observation, research, examination, experimentation and questioning, acting as good observers and directing children to such activities and asking them questions all the time.”

It is only possible to understand whether children transfer what they learn at school and in their environment to their daily practices when their parents observe them. It involves parents in projects relating to science and the nature. Though, it is very difficult to observe and measure this process, parents’ and teachers’ perspectives of the science could be changed and directed to more comprehensive activities. In short, adults and teachers should not consider science education in early childhood as an activity but as a life skill. As Özbek (2009: 30) states, ‘children’s interest in the science should be discovered, their favorite activities should be determined and scientific efforts should be encouraged. Their interests and skills should be understood and their learning experiences should be individualized. Their learnable moments should be captured, opportunities be evaluated and learning process should be enjoyed.’

Projects can be developed and experiments can be performed under the name of ‘the kitchen, our laboratory’ both at home and at school. The findings obtained through the study obviously show us that the kitchen can be used as a laboratory for science education. As Gürdal (et. al 2001) stated making scientific educational activities more enjoyable for pre-school children especially, targeting their interests, needs and expectations rather than trying to give them standard knowledge while planning such activities would enable to make scientific education more meaningful for children and help them develop a positive attitude towards physical sciences later in their lives (Gürdal et. al, 2001). However, is important to see that there are crucial elements within this process.

It is possible to get some points such as followings:

1. Waste materials could be used at workshops on experimental development practices.
2. Children should be given the chance to chop up fruit and vegetables, to do little experiments and to cook.
3. Parents could allow their children help themselves do shopping, mend cars, pickle, fish and do gardening.
4. Pre-school teachers could be trained about waste materials and experiments, by providing on-the-job training.
5. As ‘the kitchen, our laboratory’ project is limited in terms of its course scope, it could be suggested that pilot scheme be made in a longer process and studies be made on more effective use of the kitchen in science education.
6. Children’s interest in science should be discovered, their favorite activities should be determined and their scientific efforts should be encouraged. Children’s interests and skills should be well understood and they should be helped individualize their learning experiences.
7. It is thought that children can benefit from simple scientific experiments that could be performed with ‘The Kitchen, Our Laboratory’ at pre-school period. Therefore, learnable moments should be captured, opportunities should be evaluated and learning process should be enjoyed by means of various methods and techniques.

ALL THE CHILDREN TO THE KITCHEN, IN 5 STEPS!

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