



## **SAMPLE APPLICATIONS FROM MATERIAL DESIGNS PREPARED FOR VARIOUS PRIMARY SCHOOL CLASSES**

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### **ABSTRACT**

In the present study, the importance of using material in teaching at primary school is emphasized. Moreover, it is aimed to introduce teaching materials prepared for different classes by candidate teachers. For this reason, 18 students' designs from Primary School Teaching Division of Faculty of Education are presented. Candidate teachers who prepared those designs first choose their interested topics from different courses which they will give at primary school. It is emphasized that materials should be simple, clear, easy to use for the student, made from durable material, should make the topic more concrete, but that they shouldn't include too many details about the chosen topic. Designing materials can be considered as a part of learning experience by living and doing by candidate teachers. It is very important that candidates should design materials and that they should be encouraged to use them when they are doing their internship and later on in their professions. In this regard, "Instructional Technologies and Material Design" course, which has been given a single term four-credit course at Primary School Teaching Division, should be offered as a four-credit course in two terms. Furthermore, it might be suggested that current primary school teachers should be encouraged to develop and use materials and provided with practical applications by within-service seminars and that sharing of functional teaching materials should be provided.

**Keywords:** Material design, material design in primary school, candidate teachers.

### **INTRODUCTION**

A teaching material can be defined as any kind of material designed to address different sense organs, contribute to the establishment of an effective learning environment and help ensure a higher-level learning (Yigit, 2007). According to Heinich, Molenda & Russell (1993: 4) "it refers to different methods and channels by which information can be communicated to learners." Examples of a teaching material include such boards as the Ataturk corner, season charts and history charts as well as atlases, globes, books and journals in the bookcase, computers, projections, overhead projectors and blackboards. A teaching material is of great use to teachers in that it makes target abstract information concrete. The involvement of different sense organs in the process of learning makes a given subject more attractive and learning more permanent (Arslan Cansever, 2013). Primary schools occupy a prominent place in the educational process. During the period, a child acquires basic information he/she will need to use throughout his/her life, including how to read, write and calculate (Aykaç, 2012). A child that has reached the concrete operational stage, a stage specified by Piaget in his/her Cognitive Stages of Development, can comprehend concrete phenomena and events, understand reversibility and follow rules. Target information and skills specific to this stage can be provided for learners in an easy and time-saving manner through a teaching material that has been composed in accordance with design components. For a child in this stage, learning something in a concrete way is one of the prerequisites for permanent learning.

Unless learners are enabled to interact with teaching materials in favorable environments, their use will not yield to a reasonable return, nor will such learners become successful. In this regard, one of the most significant factors in effective use of teaching materials is their selection and preparation (Yigit, 2007). In fact, Sahin and Yildirim (2004), states that some effective teaching materials can reflect all the activities targeted by the teacher (attention-getting, information presentation, clues, participation, exercises and revision, providing feedback, correction and assessment). Rotter (2006), identified four underlying principles of the development of teaching materials. These are contrast, orientation, lettering and artwork. Contrast, enables important information to get recognized by the learner whereas orientation represents beginning-to-end order of materials. The latter is quite effective in facilitating the learner's understanding of the material. Lettering means that the teaching material should be written (e.g. worksheets) and is the principle that the material should be understandable.



Artwork is the principle that information presentation should be enriched with graphical displays and visuals. Ornstein and Lasley (2000) noted that educational materials should be designed in a decent way and used in a planned manner. The process of designing is comprised of certain stages. Yigit (2007) defined these stages as planning, implementation and assessment. Planning, in turn, consists of two steps, namely preliminary examination and contemplation. It is essential in preliminary examination that one should specify target cognitive, affective and kinetic objectives. Setting objectives is fundamental; in addition, it is effective in guiding material design. According to Howe and Jones (1998), it is necessary that objectives should be taken into account in material use. Preliminary examination contains one more step, learners' entry-level competence, in which students' characteristics (students with a high or low willingness to learn) are questioned. At this point, one has to take into account the characteristics specific to a particular age group. In contemplation, one takes a look into behaviors/attainments that are indicators of objectives in reference to the curriculum. Specific measuring instruments are prepared to measure the behaviors in question. It is very important that materials should not contain too many details; instead, they should be simple and understandable. As a matter of fact, Winn and Halliday (1982) stated that materials should be designed in a simple way, for human perception is selective and we can direct our attention only to a small part of the message owing to limited capacity brought about by previous experiences and emotions. Other considerations are designing the material in a way that will help to make the given subject concrete and suitable for use by learners. Furthermore, they should be portable, dismantable and durable. Sahin and Yildirim (2004) stressed that teaching materials to be used again and again should be durable, easily improvable and updateable. Another stage, as stated by Yigit (2007), is implementation. As its name suggests, it refers to the actual use of the materials designed. The last stage, assessment, seeks for an answer to three fundamental questions:

- 1- Do the methods to be used for behavioral attainments include the teaching material in question?
- 2- What is the extent to which the teaching material is appropriate for students' level of perception?
- 3- What is the extent to which the teaching material is accurate and usable?

In 1998, the Council of Higher Education (YOK) in Turkey and the World Bank launched a joint project on the development of national education and made certain amendments to the curriculum for teaching departments in an attempt to restructure faculties of education (Yalin, 2003, p.4). Instructional Technologies and Material Development was incorporated as a compulsory course into the curriculum for all teaching departments so as to provide prospective teachers with an opportunity to put what they have learned in theory into practice. The YOK (2003b, p.152) described the contents of the course as qualities of certain instructional technologies, their place and use in education, development of teaching materials (worksheets, transparencies, slides, videos, computer-based course materials, etc.) through instructional technologies, and an assessment of different materials. A student who has completed the course is expected to know and use certain instructional technologies. Moreover, they are expected to be able to develop new teaching materials or improve on existing ones for educational purposes. In other words, material design is part of learning by doing for prospective teachers. Prospective teachers are encouraged to develop teaching materials and use them during job shadowing and, particularly, in their professional life, which is quite important for satisfying their teaching needs (Arslan Cansever, 2013). The purpose of the present study is to emphasize the importance of material use in primary schools, describe the teaching materials developed by prospective teachers for different courses and age groups within the scope of the course Instructional Technologies and Material Development and explain which part(s) of class they can be used in.



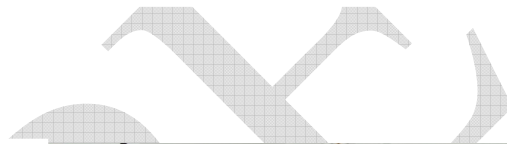
## SAMPLE APPLICATIONS



**Picture 1: The Fun Multiplication Table**  
(Course: Maths, Grade 4)

“The Greengrocer’s Stall” has been designed to familiarize children with different fruits, enable them to develop the behavior of healthy nutrition, and teach them about certain concepts such as many-few, heavy-light and matching. When the objective is to familiarize students with different fruits and healthy nutrition, the teacher demonstrates and introduces the products and explains the benefits they offer. By making certain regulations, the teacher can explain whether there are many or few fruits in any group. Children can be asked to place them equally. The teacher can ask them to count the number of fruits or match the objects in an attempt to reinforce their perception of numbers. The teacher can even organize a drama in reference to the greengrocer’s stall, thus fulfilling the principle of life-likeness.

The purpose of “the Fun Multiplication Table” is to make learning fun and permanent by strengthening students’ memory through trial and error. The material is used in the assessment stage. One of the cables is made to touch the staple next to one of the multiplications. If the answer is correct, the lamp in the middle of the multiplication table turns on.



**Picture 2: The Greengrocer’s Stall**  
(Course: Life Sciences/Maths, Grade 1-2)



**Picture 3: The Product Map**  
(Course: Social Sciences, Grade 4)

The purpose of “the Product Map” is to visually present the products that are cultivated in Turkey, thus making learning permanent. It is used in the development stage so that children can have a concrete idea of the products grown in different parts of Turkey. The material addresses different sense organs, such as sight, touch, smell etc., and ensures that the subject, which is apparently rather abstract and memorization-based for a primary school student, is taught in an easy and permanent manner.





The primary purpose of “the Weather Forecast Umbrella” is to enable students to observe certain characteristics of events or creatures and read visual materials. The secondary objective is to enable students to comprehend weather events through games and have an idea of reading graphics. The material is hung on one of the walls in the classroom and the teacher asks students, in turns every day, to direct the arrow on the graphic to the section that represents the weather conditions of that day. Finally, children can be encouraged to talk about weather conditions.



**Picture 4: The Weather Forecast Umbrella**  
(Course: Life Sciences/Maths, Grade 1-2)



**Picture 5: The Fruit Tree**  
(Course: Maths, Grade 1)

“The Fruit Tree” has been designed in a way that will enable children to learn how to add and subtract numbers in a fun environment and to develop their operational, and therefore, cognitive skills. In the assessment stage, children are asked to make adding and subtracting operations using the fruits. An example question would be “Seeing that there are three apples on the tree, how many are left when one falls down?” Afterward, each operation is discussed and solved in open class. This is followed by different adding and subtracting operations.

“The Animal Masks” has been designed to unlock students’ imagination and improve their self-expression skills. It can be used in a way that is accompanied by a drama fictionalized in accordance with any stage of class. Masks are ideal materials to turn learning into fun for primary school students.



**Picture 6: The Animal Masks**  
(Course: Life Sciences, Grade 1)





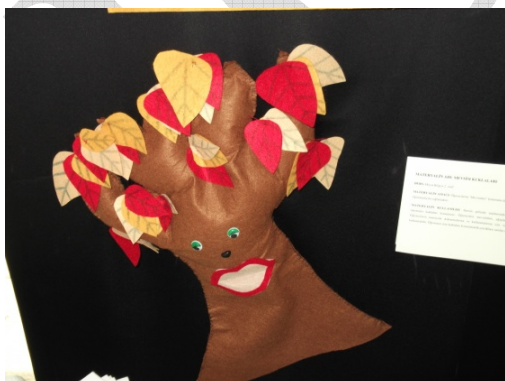
**Picture 7: The Night and Day Board**  
(Course: Life Sciences, Grade 1-2)

The purpose of “the Night and Day Board” is to enable students to comprehend the concepts of night and day by demonstrating them certain observable changes in the sky. In this way, students will hopefully gain the ability to tell, compare and contrast the characteristics of events or creatures. In the introduction stage, the teacher can ask students to comment on the changes they can observe in the sky while talking about night and day and show these changes on the material. After the subject has been taught, the material can be put in a corner as an in-class material.

The purpose of “the Season Puppets” is to make sure that students can learn about the subject seasons in a more entertaining and permanent way. While explaining seasonal characteristics, the teacher animates the puppets in the development stage. The seasons are explained in reference to changes that can be observed on the trees. Children are allowed to touch and use the material. These puppets can be used in the assessment stage, too. In that case, the teacher animates the puppets and address questions to children.



**Picture 8: The Season Puppets-  
Summer and spring** (Course: Life Sciences, Grade 2)



**Picture 9: The Season Puppets- Fall**  
(Course: Life Sciences, Grade 2)



**Picture 10: The Season Puppets- Winter**  
(Course: Life Sciences, Grade 2)



**Picture 11: The Season Chart**  
(Course: Life Sciences, Grade 2)

The purpose of “the Season Chart” is to enable students to learn about the subject seasons by touching and seeing, and in a more permanent and easier manner. In the development stage, students are provided with information as to seasonal characteristics. During the process, students can be made to touch the material and comment on not only what they see but also what they feel. The material can also be used in the assessment stage, by making students either find the correct name of a season by studying the picture or explain seasonal changes. Finally, it can be placed on one of the walls as an in-class material.

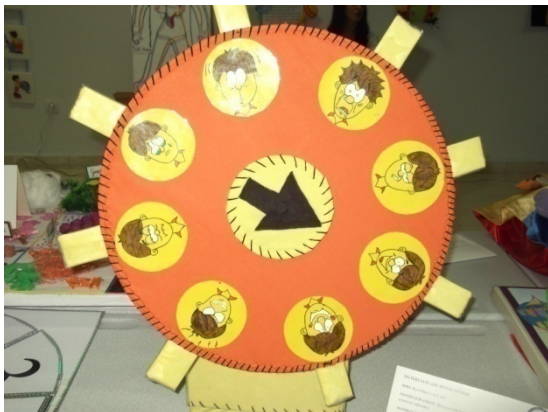


**Picture 12: The Word Top**  
(Course: Turkish Language, Grade 1)



**Picture 13: The Word Top**  
(Course: Turkish Language, Grade 1)

The purpose of the materials entitled “the Word Top”, for which two examples have been provided above, is to enable students to learn how to read and write in an easy and fun way. The material has been designed to enrich students’ vocabulary and to contribute to their linguistic development, make their learning permanent, arouse their interest in reading and writing, teach words to them through games, and increase participation and involvement in the class. During reading and writing practices, students are made to twist the top and read out the word that the cursor points and write it down on the blackboard. In the meantime, the others copy the word into their notebooks.



**Picture 14: The Emotion Sun**  
(Course: Drama, Grade 1-2)

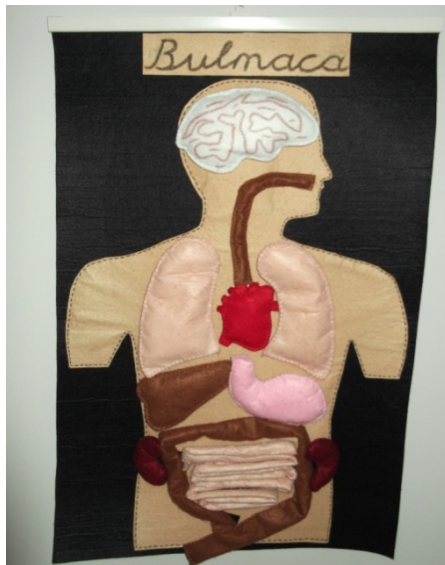
The purpose of “the Emotion Sun” is to enable students to understand certain emotions and develop their drama skills. The number of students to participate depends on the age group that one works with. A first grade student twists the Emotion Sun, picks up one of the expression cards and reads out what is written on it in the mood suggested. As for its application in grade two, two students are chosen. One of them twists the wheel and reads out the sentence whereas the other is expected to respond to the sentence. For instance, a child twists the wheel to find the emotion “surprised” and picks up a card to find the expression “I am sleepy”. The first child reads out the sentence in any way he/she likes. The child the expression is addressed to responds in a “surprised” way. The second child builds up such sentences as “Gosh! You have just waken up, you have been sleeping for ages, etc.” and suggest the emotion with relevant face expressions. The game, as well as the number of participants, can be modified depending on age group.

The purpose of “the Color Garden” is to enable primary school students to learn English equivalents of Turkish colors. The material has different color sections on it. In the assessment stage, the teacher reads out a color in English. What students have to do is to pick up the card with the name of the correct color and place it in the suitable color section. Alternatively, the teacher may read out a color in Turkish, demonstrate examples from the material and ask students to find the correct English equivalent. When the correct answer is elicited, the teacher reverses the card with the Turkish color and shows its English equivalent.



**Picture 15: The Color Garden**  
(Course: English, Grade 4)





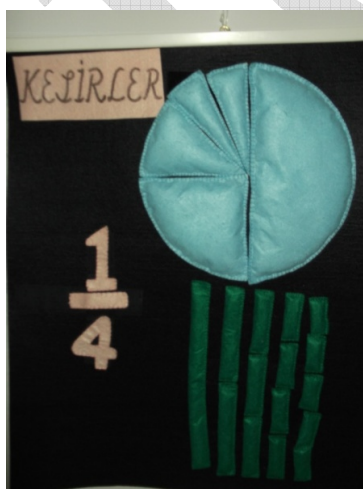
**Picture 16: The Organ Puzzle**  
(Course: Life Sciences, Grade 2)

The purpose of “the Organ Puzzle” is to show the locations of our internal organs, an abstract subject, in a concrete way. The material helps develop students’ ability to think, predict and associate. In the development stage, both the locations and functions of the organs are explained with the help of the material. In the assessment stage, when the lecturing is over, organs are extracted from the board and students are asked to place them again accurately. Since it has been designed to be quite durable, it can be used by many students.

“The Rotating Calendar” has been designed to enable students to learn the concepts of months and days and to enhance their knowledge of calendars. After these concepts have been covered, students are provided with an opportunity to practice with the rotating calendar in the development stage and they are made to find the date of that day. It can be hung on a wall decided jointly by students to be used as an in-class material. Students can rotate the calendar and learn about it by themselves and use it effectively every day by finding the correct date of each day.



**Picture 17: The Rotating Calendar**  
Course: Maths, Grade 1



**Picture 18: The Fraction Pies and Bars**  
(Course: Maths, Grade 3)

“The Fraction Pies and Bars” is intended to enable students to learn fractions in a concrete way and to develop the ability to think, predict and perform, thus making them more active during classes. The material is hung on one of the walls in the introduction stage. The subject fractions are covered in reference to the material. Afterward, one of the fraction pies or bars is placed on the board. Students are expected to calculate the value of the fraction and place it on the board. Since the material is attachable and detachable, it triggers students’ sense of touch.



The purpose of the apron “I am drawing” is to help students use any paint in their drawings, to improve their drawing skills and to make them eager and willing to paint. In drawing class, the teacher puts on the apron “I am painting” and starts wandering in the classroom. Students pick up the paint they need out of the apron and use it in their drawings. Then, they are supposed to place the paints they have used on the apron again. In this way, each student is enabled to draw things in his/her favorite paint(s). It can also be hung on one of the walls and used as a permanent in-class material.



**Picture 19: The apron “I am drawing”  
Course: Drawing, Grade 1-4**

## DISCUSSION

Responsible for not only teaching certain skills and information to students but also directing their attitudes and behaviors once in office, prospective teachers need to have certain skills to perform these roles. In this respect, the first thing they need is an overall training. Such training provides them with general knowledge about their profession and roles and a personality that can perform these roles. Next, they should improve their competence in the contents and details of their subject matter. Third, they should be equipped with theoretical knowledge about educational sciences in general. Fourth, they need technical and practical skills. Finally, they should be able to synthesize and integrate all the qualities described in the first four dimensions for certain purposes in certain situations. A good teacher should not only be an expert in his/her subject matter but also know how to teach information and skills to his/her students. Teachers are enabled to gain these two qualities during their professional training (Aslan, Aslan & Arslan Cansever, 2012). A 21<sup>st</sup>-century teacher is expected to use technology in the educational environment, and to design and use those teaching materials that can integrate their professional knowledge with practice so that they can turn abstract information into something concrete. Instructional Technologies and Material Development is a course included in the curriculum for faculties of education with modern approach to teacher training and it is intended to help prospective teachers integrate technology with their classes. For prospective teachers, the course is part of learning by doing as well as being an opportunity for them to synthesize their personal abilities with professional knowledge and equipment. During their undergraduate education, it is very important that prospective teachers should develop materials and use them firstly during job shadowing and then in their professional life. In this way, they are encouraged to adopt the profession of teaching. All these considered, it is recommended that Instructional Technologies and Material Development, currently having four credits for students studying at the Department of Classroom Teaching in one single term, should be extended and covered two terms so that prospective teachers will have the chance to develop more materials. Moreover, it is recommended that those teachers already in the profession should be encouraged to develop and use materials and enabled to do practice through in-service trainings. It should also be made sure that functional teaching materials are shared.

The purpose of the limited number of teaching materials included in the present study is to turn what is invisible into visible, what is incomprehensible into comprehensible and what is abstract into concrete. Most importantly, prospective teachers should be encouraged to develop and use materials in both



their undergraduate education and professional life, and they should be promoted to share their materials with their colleagues.

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