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Primary School Teachers' Views on the Preparation and Usage of Authentic Material

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Abstract

The students of primary school, secondary school, high school and university confront a vast array of stimulants along with the developing technology in their daily lives. With the classroom environment's lack of rich stimulus, it is difficult to get the students' attention using traditional teaching methods. If teachers choose both technological materials and two-three dimensional materials and use them effectively, lessons will be more understandable to the students. The objective of this research is to record the opinion of primary school teachers about the preparation and usage of educational materials. The research was methodized by employing a qualitative pattern. The working group consists of 106 teachers who attended the Instructional Materials Seminar in Aksaray, Turkey. A semi-structured interview form was used to collect the data of this research. The research data was analyzed by using a content analysis method (specifically, the Phenomenological pattern). Teachers stated that it is of primary importance to use materials for concretizing topics and easier and permanent learning. The most important problems for teachers during preparation of materials are listed as a lack of time, money, equipment and knowledge. All the teachers who attended the research stated that it is necessary to prepare materials in all professions but it is especially important for Mathematics. Teachers also stated that materials that students can touch and see help most while teaching abstract topics.

Keywords: instructional materials, teachers' views, primary school teachers' views, technological materials, material preparation

1. Introduction

Learning is a global human activity in the world. Each country is constantly trying to explore and develop their own learning methods based on their own requirements and cultural environments (Yamazaki, 2005). Especially, the learning environment should be organized by taking into consideration that each student has different traits and learns in different ways. During the organization of a learning environment, taking into consideration individual differences and enriching different kinds of teaching materials, methods and techniques will increase student achievement. Mutira et al. (2007) indicated that using visual and auditory materials would be helpful for students with different personality traits. Modern education policies and philosophies that aim for a higher level of achievement emphasize increasing positive interpersonal relationships, the reflective learning environment, the individual's critical thinking and a creative system of modern technologies (Jia, 2005).

Materials are mostly used to promote education during the learning process. Well-arranged materials enrich the teaching process and improve learning (Yalın, 2007). Memorizing a definition or an abstraction does not have any meaning solely by means of its usage. The intellectual development of individuals will be possible by not only acquiring experience but by also using the experience they acquired more effectively. Using helpers in various teaching and learning environments makes the education more concrete and permanent. Consistent and wide abstractions cannot occur without rich, meaningful and concrete experience (Alkan, 2005).

Many researchers emphasized the importance of using educational materials during instruction (Alkan, 2005; Knapp & Glenn, 1996; Küçükahmet, 2008; Lowry, 1999; Mutira et al., 2007; Yalın, 2007). Advantages of using educational materials are also well documented in the literature. Yalın (2007) claimed that using materials in education allows multiple learning environments, saves time in the learning process, gives opportunity for

observation, presents the same theme in different ways, preserves the utilization of material several times and increases comprehension by simplifying themes. Moreover, it helps to fulfill a student's individual needs, draws their attention to important parts, makes it easier for them to remember and actualizes the abstract theme. Similarly, Küçükahmet (2008) stated that using materials in education helps save time and wording, visualizes certain ideas, explains complicated ideas, popularizes the learning process, shows order of the idea, process and period, leads to vivid and clear teaching, improves the interest and attention of the students, increases student's aspirations, allows practice of the topic being learned, and enriches the teaching.

Many factors affect the decision of which materials to use during instruction. Yalın (2007) specified the factors that play important roles in the selection of class materials as: (1) the teaching method, (2) student traits (audio or visual preferences, learning level etc.), (3) the teaching environment (class size, suitability of material usage), (4) features of the materials, (5) the teacher's attitude and ability, (6) cost, time and availability.

Although supporting classrooms with materials for instruction has a positive effect on comprehension, using them at the right time is also important for effective learning. Teachers' knowledge, teaching ability and past experience of the specific material, topic to be taught, as well as when and how material will be used, affect the achievements of a class (Gilbert & Bush, 1988; Perry & Howard, 1997). The success level of the teacher choosing the appropriate materials from amongst many, depends on the qualification he/she has in the field of educational technology (Koşar et al., 2001). Gow and Kemper (1993), Brown (1993), Chang (2005) and Chang, Lin and Song (2011) specified technology and material usage as a required proficiency area of teachers and lecturers in their research on teaching efficacy.

Recently, Turkey introduced a reform in the in-service training of teachers that is called the "School Based Professional Development Model" (*OTMG*). *OTMG* has been implemented via the cooperation of the Higher Education Council (YÖK) and the World Bank, in 1998 (YÖK & World Bank, 1998). According to Yalçınkaya, Mete and Albuz (2013), *the Model of School Based Professional Development (OTMG) is a new concept of professional development in the in-service training system aimed at providing a road map for meeting teachers' development needs and preparing their methods of identification, implementation and monitoring of the plan by the process of professional development or teachers who want to develop their professional competences.* (*p. 289*). Educational Technology and Materials courses have been added to all teacher training programs as a compulsory class based on this model.

Therefore, the objective of this research is to obtain the opinions of primary school teachers who attended an educational material seminar as a part of the in-service training program during the implementation of the OTMG model. Answers to the following questions were explored in accordance with this overall purpose: (a) what are the primary school teachers' views on the advantages of the utilization of materials in the educational environment? (b) what are the primary school teachers' views on the difficulties that they encounter while preparing and employing educational materials? (c) in which fields do the primary school teachers need to use materials? Why?

2. Method

2.1 Participants

The research data was collected at the end of the one-week in-service training program for primary school teachers in Aksaray, Turkey, where participants attended the "Instructional Materials Seminar" during the program. The participants consist of 106 primary school teachers from 63 provinces in Turkey. Table 1 presents the demographic features of participating teachers. Of all the participants, 61 were male and 45 were female. As for their branches, 28 were Classroom teachers, 24 were Mathematics, 20 were Social Sciences, and 23 were Sciences. Professional seniority of the participants was classified as 1 to 5, 6 to 10, 11 to 15, 16 to 20 and 21 or over.

Table 1. Demographic features of participating teachers

Demographic Features		f
Gender	Male	61
	Female	45
Professional seniority	<5	24
	6-10	23
	11-15	18

	16-20	15
	>20	26
	<25	13
Age	25-30	29
	31-35	24
	36-40	21
	>40	19
	Classroom teachers	28
	Mathematics	24
	Social Sciences	20
Branch	Sciences	23
	Information Technologies	7
	Foreign Language	3
	Music	1
	Total	106

2.2 Measures and Procedures

A phenomenological research design based on a qualitative approach was used in the study. A phenomenological pattern focuses on the fact that we have realization but do not have thorough and detailed opinion (Yıldırım & Şimşek, 2008). A semi-structured interview form was used to collect the data. Semi-structured interviews are more flexible than structured interviews. With this technique, the researcher prepares an interview protocol, including questions that she/he plans to ask. However, the researcher can affect the flow of interviews with new and sub-questions so the person gives answers more clearly and in detail. If the participant answers certain questions in another question, the researcher can skip those questions. Because the semi-structured interview technique has a certain level of standardization and flexibility, it seems an appropriate technique in science and education research (Ekiz, 2003).

The interview form was structured according to the views of the coordinator of the "Ministry of National Education", two faculty members who attended the course as trainers and teachers from each subject area who attended the course as trainees. After the course, participants were posed 3 open-ended and follow-up questions. All teachers who attended the Instructional Materials Seminar completed the interview form.

The data was analyzed by using the content analysis method. Content analysis has been defined as "*a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns*" (Hsieh & Shannon, 2005, p. 1278). The data via content analysis was classified within the framework of definite concepts and themes to include the process of regulation and interpretation in a manner that the readers understand better (Yıldırım & Şimşek, 2008). The following procedures were undertaken during the content analysis of the data: (a) categories and a coding scheme were developed, (b) data were coded, (c) coding consistency was checked, (c) categories and themes were explained based on the context and phenomenon, (d) conclusions were drawn from coded data. As a means of achieving reliability, the data were coded by 2 researchers, participants were chosen from volunteers and findings were supported by participants' comments.

3. Findings

3.1 Advantages of Using Materials during Instruction

The first sub-problem is defined as "what are the advantages of using materials in teaching environments?" Twelve themes emerged regarding the benefit of using materials in classrooms (Table 2). Those themes were named as "increasing comprehension" (n=41), "addressing multiple senses" (n=41), "permanent learning"(n=43), "concrete instruction" (n=31), "easy teaching"(n=31), "arousing interest" (n=13), "enjoyable class time" (n=7), "effective use of time" (n=4), "increasing motivation" (n=3), "broadening students' horizons" (n=2), "increasing inquisitiveness" (n=2) and "increasing self-confidence" (n=2).

Table 2. Findings on advantages of using materials in the teaching environment

Themes	f
Increasing comprehension	41
Addressing multiple senses	41
Permanent learning	43
Concrete instruction	31
Easy teaching	31
Arousing interest	13
Enjoyable class-time	7
Effective use of time	4
Increasing motivation	3
Broadening student's horizon	2
Increasing inquisitiveness	2
Increasing self-confidence	2

Some of the teachers' statements about the benefits of using materials in the teaching environment are given below:

"When I use materials, my students line up to touch them."

"We have difficulties while teaching abstract topics; the materials that students can touch and see help us."

"Addressing different senses enables students to understand the topic."

"I think learning through experience will be easy and permanent."

"Giving lectures by old methods is over; there is a need of different materials to take the student's attention."

"Learning becomes easier, self-confidence of the students increases and they will be happy."

3.2 Problems Teachers Faced to during Preparation and Utilization of Materials

The second sub-problem is defined as "what are the difficulties you come across while preparing and using educational materials?" When problems related to preparation of educational materials were examined, each teacher's opinion was classified under nine themes (Table 3). Those were: lack of time, equipment, money, knowledge, ability, will, responsibility, originality and donkey work (hard work). Teachers claimed that crowded classes (n=14), lack of guidance (n=3), difficulty in keeping hold of materials (n=2), prejudice towards materials (n=1), and possible risks (n=1) inhibit material utilization during class-time. To summarize, a lack of time, material, money, knowledge and ability impedes making materials for class. Also, crowded classes are blamed as the main reason for insufficient use of materials during instruction.

Table 3. Findings on the difficulties teachers come across while preparing and using materials

	Themes	f
Preparation of material	Lack of time	42
	Lack of equipment	32
	Lack of money	35
	Lack of knowledge	11
	Lack of ability	11
	Lack of will	5
	Donkey work	3
	Lack of responsibility	2
	Lack of originality	3
Utilization of material	Crowded classes	14

	Lack of guidance	3
	Difficulty in preserving	2
	Prejudice	1
	Risk	1

Two of the teachers did not indicate any problem by saying "*making material is not a hardship but a pleasure*". Some of the teachers' statements about the difficulties teachers come across while preparing and using materials are given below:

"Because of financial and traditional conditions, there are problems in the preparation of materials that correspond to the exercise in the textbook."

"I do not have enough knowledge and ability about the topic."

"According to the management, this is drudgery."

"In my opinion, materials should be designed and prepared by specialists, and be distributed to all schools by the Ministry of National Education."

"I do not know how to prepare them as I did not have the lesson at university."

3.3 Fields in Which Teachers Need to Design and Use Material

The third sub-problem is defined as "in which fields do the primary school teachers need to use materials? why?" Teachers' opinions on fields where primary school teachers need to use materials emerged under ten categories (Table 4). The majority of the teachers declared that materials need to be used in every field (n=32). Mathematics (n=20), fields related to abstract concepts (n=16), fields related to disabilities (n=16), science (n=11), technology (n=8) and social science (n=7) also got higher rankings among the teachers. The reason for using materials during instruction was observed under six categories. Teachers claimed that materials use reduces student anxiety, increases comprehension and engenders enjoyable class-time, provides concrete experience, delays forgetting and eases learning.

Table 4. Findings on the fields in which teachers need to design and use material

	Themes	f
Fields in which Teachers need to design materials	Every field	32
	Mathematics	20
	Field related to abstract concepts	16
	Fields related to disabilities	12
	Science	11
	Technology	8
	Turkish	6
	Social Science	7
	Complicated topic	3
	English	2
Purpose of material use	Reducing anxiety	17
	Increasing comprehension	12
	Endear	12
	Easy learning	11
	Permanent learning	2
	Concrete learning	2

Some of the teachers' statements about the fields teachers need to design and use materials in are given below:

"There is a need to design and use material in every field."

"In Mathematics courses, because students are afraid of Mathematics."

"It is necessary in both Social Sciences and Science courses as the learning will be easier with the usage of each sense organ."

"It can be designed for all courses and topics; however, it is wise to design for the topics that are hard to learn."

4. Discussion

Bearisonet et al. (1986) emphasized that the objectives of educational systems are not to direct knowledge to students but to enable them to gain the skill of reaching for the knowledge. Many kinds of materials help students to learn new topics and to find the way of reaching these in the educational environment and in daily life. Previous studies showed the use of concrete materials increases achievement and improves attitudes towards class. However, "teacher experience and expertise determines their use of concrete materials as teaching and learning aids" (Mutodi & Nrigande, 2014, p. 459). Teachers are expected to have the skills of choosing, designing and practicing materials that are appropriate for their branches. Gündüz and Odabaşı (2004) stated that gaining skills in cognitive, affective and psychomotor qualifications on the Instructional Technologies and Material Development (ITMG) course will serve pre-service teachers by integrating technology and education into their profession. The course, ITMG, has been integrated into the in-service teacher training programs in Turkey. The study investigated the points of views of primary school teachers who attended the in-service training on material use.

The points of views of primary school teachers on the advantages of using materials are collated under twelve headings: permanent learning, increasing comprehension, addressing multiple senses, concrete instruction, ease of teaching, arousing interest, enjoyable class time, effective use of time, increasing motivation, broadening students' horizons, increasing inquisitiveness and increasing self-confidence. The teachers stated that: they have hardship while teaching abstract topics, using concrete materials that students can see and touch will help them learn. Furthermore, they perceived materials as important as they assist understanding, delay forgetting, address more senses and enable students to understand the topic. The study indicated that the main advantages of using materials were: increasing comprehension, addressing multiple senses, resultant permanent learning, leading concrete instruction and easing teaching. This is consistent with findings by Kablan et al. (2013) that showed that using materials during classroom teaching has a positive effect on academic success, lowers students' anxiety, promotes comprehension as well as enjoyable class-time, provides concrete experience, delays forgetting and helps learning. Karaca (2011) also stated that the use of materials increases student interest in class facilitates teaching and promotes permanent learning.

When the views of participants are analyzed in "difficulties teachers come across during preparation of materials", they categorized them under nine themes (lack of time, equipment, money, knowledge, ability, will, responsibility, originality and uneasiness). The study indicated that among the problems teachers encounter, time, equipment, money and related knowledge are the most important ones. Previous studies have not differentiated between difficulties in preparation and use of material. This finding is parallel with the results of Kablan et al. (2013), Sadi et al. (2008), Balkı and Saban (2009), Dindar and Yaman (2003), Cengizhan (2011), Çiftçi et al. (2015) study which show that the most important reason for not using education materials\technologies are a lack of knowledge, equipment, time and cost. This study also indicated that crowded classes, lack of guidance, difficulty in preserving materials, possible bias and hazardousness obstruct utilization of material in class. Previous studies (Dindar & Yaman, 2003; Fidan, 2008; Kazu & Yeşilyurt, 2008) indicated that although teachers have positive attitudes towards material use, they do not use it enough during class time. Bozkurt and Akalın (2011) stated that lack of teacher's knowledge, expertise and experience brings difficulties in material use. Bozkurt and Şahin's (2013) study showed that teachers mostly do not use materials because they have difficulty in obtaining them. Further, their study indicated that teachers prefer to not use materials due to their hardship. Bozkurt and Şahin interpret this finding as teachers avoiding taking on new responsibilities. Lack of originality and knowledge was another hindrance in use of materials. Gilbert and Bush (1988) and Perry and Howard (1997) reported a decline in concrete materials use in later years of primary education due to the lack of teacher knowledge of how to manage and use/manipulate, as well as a lack of knowledge of mathematical concept that they were trying to teach (Moyer, 2001).

Because the majority of the teachers stated that insufficient time, money, equipment, knowledge and ability are the main problems they face during the preparation of class materials, it is recommended that "education

material labs" be established in every city to collate materials in each subject area and lend them to teachers as needed. The Turkish Ministry of Education already has a special division called, YEGİTEK, which develops and purchases new materials and technologies for the teaching-learning process. YEGİTEK has been organizing workshops to develop class materials and projects to form authentic class materials, as well as preparing a handbook for making materials. Based on the results, it is recommended that an applied in-service ITMG course/workshop for teachers be organized because the teachers' lack of knowledge and experience affects their use of material. Currently, the ITMG course has been a compulsory class in teacher education in Turkey, and in part of this class, each teacher candidate has to prepare authentic class materials in his/her subject area. At the end of class, students generally exhibit their materials and then leave them at the university or donate them to schools which are willing to keep them. It is unfortunate to see that ample work, money and time devoted to materials ended up in the college refuse. As a result of the education material labs, students who attended the ITMG course can devote their materials there. Also, college teachers with their students might visit schools in nearby areas and talk to teachers and develop enduring and authentic materials which address the teachers' needs during courses. Teachers also asserted that insufficient storage space at schools creates difficulties in preserving materials, and as a result, reduces the utilization of educational materials during class-time. Accordingly, constructing Education Material Labs might also solve this problem.

Teachers' views on fields where primary school teachers need to use materials were examined under ten categories (in every field, mathematics, fields related to abstract concept, fields related to disabilities, science, technology, Turkish, social science, complicated topic and English). Most of the teachers are of the opinion that there is a need to prepare and use materials in every field. The second required subject is Mathematics, which they stated, students feared most. Many researchers have shown that students are afraid of Mathematics courses and feel anxiety about them. Keçeci (2011) stated that designing Mathematics courses during the school term and, especially, in primary school, that do not cause anxiety for students, has an importance in the next stages. The factors causing student anxiety should be determined, especially during the first stage of Mathematics education, and an attempt made to lower the intensity of their effects. By using materials in Mathematics courses, it is possible to let the students have fun during the lesson, and draw their attention to the lesson. Previous studies (Karaca, 2011; Mutodi & Ngirande, 2014; Steedly et al., 2008) indicated that the use of concrete materials contributes to improved attitudes towards mathematics and increased achievement. However, previous studies (Sowell, 1989; Suydam & Higgins, 1977) also indicated that students' achievement levels are directly correlated to their teachers' experience in using materials. Therefore, applied in-service ITMG courses/workshops for teachers must be increased and hands-on exercises with students must be a part of this education. Previously, Çelikkaya (2013) reported that half of the participants who received in-service training for ITMG found the education unsatisfactory. Çelikkaya indicated that the main reasons for those groups' dissatisfaction were that they were large in numbers, time was inadequate and no opportunity was given for practice. Consequently, it is also recommended that the number of applicants per session for ITMG courses be limited to 10. Otherwise, hands-on experience would only be a dream. Finally, teachers have the opinion that there is a need to design materials for every topic related to abstract concepts. Alkan (2005) expressed that using helpers in different teaching and learning environments makes the education concrete; so, they enable change to form better abstract concepts. He stated that consistent and wise abstractions do not occur without rich, meaningful and concrete experiences.

To summarize, participants of the research stated that using materials during education is important but they cannot do it because for various reasons. The ITMG course is integrated in the teacher-training programs but model implementations under the guidance of specialists should be organized for teachers who graduated from the school before the term. Financial support, like education charges, may be subsidized to teachers for designing material via the Ministry of National Education. At the end of the research, technical pre-service teachers pointed out that the ITMG course had made a significant contribution to their professional, individual, and social development.

This study is limited to primary school teachers. Teachers' views on educational materials are important at all educational levels and need to be studied as well. This study is also limited by qualitative analysis and future studies may combine both qualitative and quantitative methods for triangulation of the data.

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