



DETERMINATION OF SCIENCE AND TECHNOLOGY TEACHERS' VIEWS AND PROBLEMS ABOUT USING ALTERNATIVE MEASUREMENT AND ASSESSMENT TECHNIQUES: A CASE STUDY*

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Abstract

Alternative assessment techniques are quite new for teachers in Turkey, because these techniques didn't used before in previous curriculums. Many research results showed that teachers have very little knowledge about the alternative measurement and assessment techniques. So, it is believed that studies concerning teachers' needs about alternative measurement and techniques should be considered. In this way, teachers' inadequacies in the measurement and assessment area would be determined. The aim of this study is to investigate science and technology teachers' views about alternative measurement and assessment techniques and the problems they encountered in using these techniques. The case study research method was adopted and semi structured interviews were implemented for the data collection process. The sample of this study consisted of 50 science and technology teachers. Nvivo 8.0 package program was used in analyzing the qualitative data collected. At the end of the study; it was found that teachers use performance task, project, branches tree, portfolio and concept map more than other measurement and assessment techniques. Lack of time is the most important problem of teachers while using alternative assessment techniques. It can be concluded that well- prepared in service training covers all alternative assessment techniques should be presented and applied in widespread manner.

Keywords: Science and technology teachers, alternative measurement and assessment, problems, views

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INTRODUCTION

The 2004 science and technology curriculum brings new philosophy in measurement and assessment process with the new science curriculum. The new assessment approach is defined as alternative measurement and assessment (AMAT). The performance evaluation used in alternative assessment is not only focusing on the result or product but also it adds process and students' development into assessment process (Foss, & Banicky, 2000, Butler & McMunn, 2006). Performance tasks, portfolios, concept maps, project, drama, interviews, presentations, written

reports, self assessment, group and /or peer review, posters and so on takes place in alternative assessment techniques. Although the science and technology curriculum has been implemented since six years, and were presented to teachers with many in- service training courses, many research results have shown that teachers faced serious problems in the measurement, assessment and implementation process of AMAT (Çakan, 2004; Kılıç, 2005; Özsevgeç, 2007; Şekel, 2007; Erdemir, 2007). For this reason, at the beginning it is important to determine teachers' views of AMAT and difficulties that they encountered in using. Then teachers' problems can be removed more easily. The aim of this study is to investigate science and technology teachers' views about alternative measurement and assessment techniques and the problems they encountered in using these techniques.

METHOD

Case study methodology is used in this research. The study is done with 50 science and technology teachers working in cities; Giresun, Trabzon, Rize, Artvin and Gümüşhane. Science and technology teachers views about AMAT and the problems they encountered during implementation process is investigated.

Sample

The sample of this study is 50 science and technology teachers working in Giresun, Trabzon, Rize, Artvin and Gümüşhane.

Data collection and analyses

In this research, semi-structured interviews were used to collect data. 50 science and technology teachers interviews were recorded with voice recorder with participants' consent. Nvivo 8.0 package program was used in analyzing the qualitative data collected. As a result of this analysis codes were created. And findings were presented in tables in the form of percentages.

FINDINGS

Codes composed based on teachers' opinions from the answer of the question "What do you think about alternative measurement and assessment techniques (AMAT)?" were presented in percentage worth with Table 1.

Table 1. Teachers' opinions about AMAT

Codes	%	Codes	%	Codes	%
Assessment which includes questions having visualization property	6	Measurement questioning the usage areas of knowledge (the relation with the technology)	6	Assessment and evaluation that can not be done in the prescribed period of time	6
To ask different types of questions in written exams	10	Assessment that takes the individual differences and personal capabilities into account.	12	Assessment adding students to the process	10
Process-oriented evaluation	12				

If percentage worth is less than 5%, it was not presented

As seen from Table 1, significant proportion of (%12) the teachers defined AMAT as "Process-oriented evaluation" and "Assessment that takes the individual differences and personal capabilities into account".

Codes composed based on teachers' opinions from the answer of the question "What are the advantages of using AMAT?" were presented in percentage worth with Table 2.

Table 2. Advantages of using AMAT

Codes	%	Codes	%	Codes	%
Multi-faceted evaluation	20	Parents having high education and economic level	6	Taking into account individual differences of students'	10
Giving opportunity to know the student	10	Providing the student to receive high marks	10	Give students the opportunity to see their shortcomings	8
Giving chance to teacher in convenience of evaluation	14	Ensuring the active participation of students to the process	14	Give students' chance to discover and develop their abilities (creativity, making comments, etc. to express themselves.)	22
To provide the students to learn from themselves and their peers	6	To increase parent to student interaction	10	To increase students' interest and motivation	16
The possibility of making an objective assessment	10	To provide students to long-term learning without forcing to memorization	22	The establishment of cooperation between parents, teachers, students,	12

If percentage worth is less than 5%, it was not presented.

As seen from Table 2, significant proportion of (%22) the teachers emphasized advantages of AMAT as "To provide students to long-term learning without forcing to memorization" and "Give students' chance to discover and develop their abilities (creativity, making comments, etc. to express themselves)".

Codes composed based on teachers' opinions from the answer of the question "What are the disadvantages of using AMAT?" were presented in percentage worth with Table 3.

Table 3. Disadvantages of using AMAT

Codes	%	Codes	%	Codes	%
Lack of physical infrastructure (Internet, classroom environment, laboratory, material, etc.).	1 8	Teachers lack of knowledge about alternative measurement and assessment techniques	10	Increasing of the workload and complaints of parents	2 8
Shortage of time due to the intensity of curriculum	8	Students' having shortage of time	6	Unconscious of parents	3 8
Teachers' having shortage of time	2 2	To increase the workload of the student	20	Administrators SBS pressure	8
To increase the workload of the teacher	3 6	Students get used to laziness	10	Crowded classrooms	8
Increasing the monitoring of the document by the	6	Teachers trained in the old program offer	12	Not to achieve continuity of the system	1 0

Administrator		resistance to innovation			
Being unable to clearly evaluate students (subjective assessments)	1 2	Parents having low education and economic level	14	Curriculum do not take into account regional differences	8

If percentage worth is less than 5%, it was not presented.

As seen from Table 3, significant proportion of (%38) the teachers emphasized disadvantages of AMAT as "Unconscious of parents" and % 36 of teachers "To increase the workload of the teacher".

Codes composed based on teachers' opinions from the answer of the question "Which Measurement and Evaluation technique (traditional and alternative) do you prefer to use?" were presented in percentage worth with Table 4.

Table 4. Techniques preferred by teachers in the AMA process

Techniques	%	Techniques	%	Techniques	%	Techniques	%
Open ended questions	10	Branched tree	30	Performance task	62	Structured grid	22
Peer review	10	True-false	22	Poster	8	Portfolio	30
Loopholes	18	Drama	8	Project	62	Concept map	26
Puzzle	6	Matching test	14	Classroom performance	6	Multiple choice questions	20

If percentage worth is less than 5%, it was not presented.

As seen from Table 4, the most preferred measurement and assessment techniques by teachers are that performance task and project. The proportion of (%62) the teachers prefer performance task and project. Portfolio, branched tree and concept test preferred teachers in the measurement and assessment process. The proportion of (%30) the students prefer to use portfolio and branched tree and the proportion of % 26 teachers prefer to use concept maps. Also proportions of the (%20) teachers prefer to use Multiple Choice Questions.

Codes composed based on teachers' opinions from the answer of the question "Which problems do you face in using AMAT?" were presented in percentage worth with Table 5.

Table 5. Codes reflected teachers' problems in the AMA process

Codes	%	Codes	%	Codes	%
The lack of information on the preparation of AMAT	10	Homework done by parents	6	Low student profiles	6
Lack of objective in assessment process	10	Timely delivery of assignments	12	Student level unable to find the appropriate assignment	10
Shortage of time (Preparation, application, assessment)	40	Utilization of a separate scale for each student makes the assessment more difficult	6	Stationary problems of the teachers (photocopy, paper, etc.).	10
Very crowded classrooms	8				

If percentage worth is less than 5%, it was not presented.

As seen from Table 5 time is the biggest problem faced by teachers in the AMA process. Significant proportion of (%40) the teachers emphasized time adequacy in assessment process. "Timely delivery of assignments" is the second important problems raised by the significant proportion of (% 12) the teachers.

DISCUSSION

Instructional program which was first started to implementation in 2004 focuses on the use of alternative measurement and assessment techniques. Students have to be evaluated in the process with alternative measurement and assessment techniques different from traditional measurement and assessment techniques (MEB, 2004). When we asked the teachers to define AMAT, only 12% of teachers defined it as "Process-oriented evaluation". From this perspective, it can be said that teachers do not comprehend exactly the philosophy underlying of AMAT and they have not got enough information about it (Cheng, 2006; Acat & Demir, 2007; Cansız Aktaş, 2008; Sağlam Arslan, Devocioğlu, Kaymakçı & Arslan, 2009).

When we examined teachers' opinions about advantages and disadvantages of AMAT, it has seen that 36% of the teachers emphasized disadvantages of AMAT as "To increase the workload of the teacher"(see table 3). As AMAT requires too many forms in evaluation process of students it can be thought as increasing teachers' workload (Şenel, 2008). Although AMAT has many advantages for students and teachers, when teachers' opinions are examined, only 22% of the teachers emphasized advantages of AMAT as "To provide students to long-term learning without forcing to memorization" and "Give students' chance to discover and develop their abilities". As the percentage of the teachers is low (20%) we can conclude that some teachers do not comprehend exactly advantages of AMAT and do not use the for purpose of these techniques in their classroom (Sağlam Arslan, Devocioğlu Kaymakçı & Arslan, 2009).

Although the usage of performance task and project is compulsory in the instructional program 62% of the teachers prefer to use it. When Table 4 is examined, 20% of the teachers still prefer to use the multiple-choice test. Because structure of the Level Determination Exam (LDE) which is applied in primary school level in Turkey, is also based on multiple choice test. LDE is in the form of evaluation of results. But instructional program applied in schools give importance to evaluate students in the process. Teachers may live in mess in this point and still use multiple choice tests to evaluate their students (Sağlam Arslan, Devocioğlu, Kaymakçı & Arslan, 2009; Şenel, Nas & Cepni, 2009).

Most important problem that teachers encounter by using AMAT is lack of time. Science and technology content is so intense that teachers couldn't complete the topics in program although the course is 4 hours per week (Gelen & Beyazıt, 2006). Teachers are not able to give so much time for process evaluation.

CONCLUSION

At the end of the study it has seen that teachers don't have enough knowledge about AMAT. It has also seen that teachers do not comprehend exactly the philosophy underlying of AMAT. In service courses including psychology and application of AMAT can be arranged. Besides, web supported forms can be prepared to decrease teachers workload and time constraints.

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