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Prof. Dr. Fikriye KIRBAĞ ZENGİN

Fırat Üniversitesi Eğitim Fakültesi İlköğretim Bölümü, fkzengin@gmail.com

Yrd. Doç. Dr. Gonca KEÇECİ

Fırat Üniversitesi Eğitim Fakültesi İlköğretim Bölümü, kececi.gonca@gmail.com

Dr.Gamze KIRILMAZKAYA, gamzekirilmazkaya@gmail.com

DETERMINING THE LEVEL OF ASSESSMENT AND EVALUATION KNOWLEDGE OF COMPUTER EDUCATION AND INSTRUCTIONAL TECHNOLOGY DEPARTMENT PRESERVICE TEACHERS

Abstract

This study was conducted to determine Computer Education and Instructional Technologies (CEIT) preservice teachers' level of knowledge about measurement and assessment approaches and to measure whether computer and technology were integrated in measurement and assessment techniques. The study group consisted of preservice teachers; 2nd class and 3th class, a total of 58. Three open-ended questions and one semi-structured question were used to collect data. As a result of the study, it was found that preservice teachers who made adequate explanation of assessment and evaluation were quite a low percentage. It was seen that traditional and alternative assessment were known much better than authentic assessment. It was seen that traditional techniques were known at a very good level but, alternative techniques were known minimum level. For the question of how technology was used to assessment and evaluation, the most common opinions were about the use of questionnaires and educational game and a few opinions were about the use of moodle, blogger, wordpress programs.

Keywords: Traditional Assessment, Authentic Assessment, Alternative Assessment, CEIT Preservice Teachers, Technolog

BİLGİSAYAR VE ÖĞRETİM TEKNOLOJİLERİ BÖLÜMÜ ÖĞRETMEN ADAYLARININ ÖLÇME VE DEĞERLENDİRME BİLGİ DÜZEYİNİN BELİRLENMESİ

Özet

Bu çalışma Bilgisayar ve Öğretim Teknolojileri Eğitimi (BÖTE) bölümü öğretmen adaylarının ölçme ve değerlendirme yaklaşımları hakkında bilgi düzeylerini tespit etmek, bilgisayar ve teknolojiyi ölçme ve değerlendirme tekniklerine entegre edip etmediklerini belirlemek amacıyla gerçekleştirilmiştir. Çalışma grubu, 2. sınıf ve 3. sınıf olmak üzere toplam 58 öğretmen adayından oluşmaktadır. Verileri toplamak için üç açık uçlu soru ve bir yarı yapılandırılmış soru kullanılmıştır. Çalışmanın sonunda ölçme ve değerlendirmeyi yeterli düzeyde açıklayan öğretmen adayı sayısının oldukça düşük düzeyde olduğu tespit edilmiştir. Geleneksel ve alternatif değerlendirmenin otantik değerlendirmeden daha çok bilindiği görülmüştür. Geleneksel tekniklerin çok iyi bir düzeyde bilindiği ama alternatif tekniklerin minimum seviyeyede bilindiği görülmüştür. Ölçme ve değerlendirmede teknolojiden nasıl yaralanılır sorusunda anket ve eğitsel oyun kullanımı en yaygın cevap olarak verilirken, birkaç öğretmen adayınca moodle, blogger, wordpress programlarının da değerlendirmede kullanılabileceği belirtilmiştir.

Anahtar Kelimeler: Geleneksel Değerlendirme, Otantik Değerlendirme, Alternatif Değerlendirme, BÖTE öğretmen adayları, Teknoloji

Introduction

Measurement and evaluation are needed in all areas of education and training application. Evaluation, respectively, factual knowledge, procedural knowledge and metacognitive knowledge are based on (Fourie & Van Niekerk 2001). Over time, process-based assessment that replaces the traditional outcome-based assessment is based on summative assessment rather than formative assessment which have been taken (Ören, Ormancı & Evrekli 2011; Born 2003). One of the most powerful roles that assessment can have its effect not only on what student learn but how they learn (Norton 2004).

In Turkey, elementary school programs with changes made in 2004 is based on constructivism. The evaluation methods also changed with the philosophy of constructivism (Kanatlı 2008). Teachers and students have encountered the concepts of alternative assessment beside the traditional methods. Alternative assessment methods (based on the student's own self-assessment participated in the evaluation process, teacher observation, performance-based assessment) is also begun to use.

Alternative assessment is non-traditional evaluation showing what the students know and what you can do, which can expose and show the progress of the student to inform teaching (Pierce and O'Malley 1992). "*Unlike standardized testing, which usually produces a score that may no meaningful by itself, information from alternative assessment is easy to interpret and unders-*

tand. This represents a tremendous benefit for all the possible clients of assessment" (Hamayan 1995). For Anderson (1998), comparison of philosophical beliefs and theoretical assumptions of traditional and alternative assessment were like Table 1:

Table 1. Comparison of philosophical beliefs and theoretical assumptions of traditional and alternative assessment

Traditional Assessment	**Alternative Assessment**
Universal Meaning	Multiple meanings
Passive process	Active process
Separates process from product	*Emphasizes process and product*
Discrete, isolated bits of information	Focuses on inquiry
To document learning	To facilitate learning
Cognitive abilities as separate from affective and conative abilities	Connects between cognitive, affective and conative abilities
Views assessment as objective, value-free and neutral	Views assessment as subjective andvalue-laden
Hierarchical model	Shared model
Learning as an individual process	Learning as a collaborative process

Alternative assessments contemplated to assess learning tasks that stimulate critical thinking skills and require students to produce knowledge rather than simply recall information provided to them by others (Cummings, Maddux & Richmond 2008).

It is inadequate and not be correct using traditional paper-pencil tests, one-way observation instruments and without knowing students' previous learning and development (Darling-Hammond, Wise & Klein 1998). Authentic assessment studies have emerged in line with similar views. Darling-Hammond and Snyder (2000) outline four aspects of authentic assessment of teaching that appear from emerging research to be important both for measuring teaching and enhancing candidates' abilities to teach well:

- Assessments sample the actual knowledge, skills, and dispositions desired of teachers as they are used in teaching and learning contexts, rather than relying on more remote proxies
- Assessments require the integration of multiple kinds of knowledge and skill as they are used in practice.
- Multiple sources of evidence are collected over time and in diverse contexts,
- Assessment evidence is evaluated by individuals with relevant expertise against criteria that matter for performance in the field.

Latham & Pearlman (1999) note, "the fact that the candidates know they are being assessed will likely influence their actions, so these actions cannot be truly considered authentic". According to Kaya (2011), although alternative techniques are used in authentic assessment, each alternative assessment techniques are not authentic. For making assessment authentic (real, true), how is implemented is important rather than what it is. For example, the concept map is a product of an student and it is a kind of alternative assessment tecniques. In order to make authentic, students should have the authority how it is prepared and what evaluation criteria is used. After a class discussion to this authority, the status should be determined by

common accord. There is an alternative measurement tool in order to become an authentic tool and processed in both practical and theoretical. A joint decision should be taken in the participation of students in the class after the arguments about how to do both quantitative and qualitative evaluation, which measures to use. In accordance with the decisions taken in this new evaluation approach must be made to be tested for 2-3 weeks. The first examples (4-5) should not be evaluated.

According to Shulman (1986), the condition of being a good teacher is to be equipped with Pedagogical Content Knowledge (PCK). Assessment and evaluation is a component of PCK (Tamir 1988; Magnusson, Krajcik & Borko1999; Hashweh 2005). In this respect, teachers should know an adequate level of measurement and evaluation knowledge and skills (Zhang & Burry-Stock 2003). Pre-service teachers should know objectives of the methods used for measuring and evaluating and should have the ability to implement them. Preservice teachers graduated from faculties of education are expected to learn these skills. In the studies on this issue, teachers' knowledge gaps and inadequacies are appeared (Aydın 2005; Bulut 2006; Çakır & Çimer 2007;Şeker 2007). However, studies of teacher candidates are that they are not enough about alternative assessment approaches (Demirelli, Canbazoğlu, Kavak &Bekçi 2009; Yapalak, Coşkun & Sidekli 2008). Over time the concept of tecnology is also added PCK and it is taken as TPCK (Technological Pedagogical Content Knowledge) (Mishra & Kohler 2006).

There is a project FATIH (abbreviation of "Movement of Technology Enhancement and Promoting Opportunities" in Turkish) which targeted enrichment technology for active use in the schools of Turkey. Therefore, teacher candidates' opinions about the usage of tecnology in assessment and evaluation are very important. The preservice teachers of Computer Education and Instructional Technology Department are taught tecnology education much more than other parts of education faculties. Because of that CEIT preservice teachers are chosen in this study. This study was carried out to determine CEIT pre-service teachers' level of knowledge about measurement and assessment approaches and to measure whether computer and technology were integrated in measurement and assessment techniques. The study focused on answering the following research questions;

1. What is CEIT preservice teachers' level of knowledge about measurement and assessment?

2. How do CEIT preservice teachers determine technology associated to measurement and assessment?

Material and Methods

In this research, qualitative research design was used. The data were analyzed in both quantitative and qualitative terms. The study group consisted of students 2nd class (N= 38 of 43) and 3th class (N= 20 of 53), a total of 58 of Computer and Instructional Technology Teacher Education Programme, Fırat University. Preservice teachers are chosen willingly. Three open-ended questions and one semi-structured question were used to determine the preservice teachers' level of knowledge about measurement and assessment approaches and to measure whether computer and technology were integrated in measurement and assessment techniques. The semi-structured question consisted of 29 sub-questions. Each sub-questions had five responses choices, including "1=not at all," "2=little," "3=moderate," "4=quite," and "5=complete"addressing this issue. Questions were examined by one assessment and evaluation expert and also three science education experts. Final of the questions was formed.

Findings

In this section, questions used in the research and the answers given to these questions are shown below tables and graphs. The answers given to questions of preservice teacher, scientifically satisfactory explanation (3.5 points), partly scientific level explanation (1 point), and non-scientific explanations (0 points) were evaluated in three categories (Vazquez-Alonso & Manassero-Mas 1999). Questions and answers used in the study are as follows:

Question 1: *"What do you understand the concepts of assessment and evaluation? Are there any similarities or differences between the two?"* Preservice teachers' answers to this question are shown in Table 2.

Table 2. The frequency and percentage of the answers given to the concepts of assessment and evaluation.

Similarities and Differences	**Second Class**		**Third Class**		**Total**	
	f	%	f	%	f	%
Scientifically satisfactory explanation	1	2,63	1	5	2	3,45
Partly scientific level explanation	30	78,95	13	65	43	74,14
Non-scientific explanations	7	18,42	6	30	13	22,42

Analyzing Table 2, an adequate explanation of the scientific concepts of measurement and evaluation at 3.45 percent of preservice teachers, preservice teachers made a statement partly scientific level was found as 74.14, 22.42 percent of preservice teachers were found to be engaged in non-scientific explanation. It ıs seen that preservice teachers who make adequate explanation of assessment and evaluation are less than preservice teachers who don't make adequate explanation.

Question 2: *"What do the traditional, alternative, authentic assessment mean? Which of the assessments is more useful when they are sorted? Please write the reason."* Table 3 shows frequencies of

preservice teachers' answers to this question, the percentage of teachers responses are given in Figure 1.

Table 3. Frequencies of responses given concepts of traditional, alternative, authentic assessments

	Second Class						**Third Class**					
	Traditional Assessment		Alternative Assessment		Authentic Assessment		Traditional Assessment		Alternative Assessment		Authentic Assessment	
	f	%	f	%	f	%	f	%	f	%	f	%
Scientifically satisfactory explanation	18	47,37	17	44,74	2	5,26	9	45	8	40	0	0
Partly scientific level explanation	18	47,37	18	47,37	30	78,95	10	50	11	55	15	75
Non-scientific explanations	2	5,26	3	7,89	6	15,79	1	5	1	5	5	25

Analyzing Table 3, It is seen that the number of teachers who are describing authentic assessment scientifically adequate is 2, partial explanation the scientific level of the 11, the number of teachers who do not respond or non-scientific explanation is 45; The number of teachers who are describing alternative assessment scientifically adequate is 25, partial explanation the scientific level of the 4, the number of teachers who do not respond or non-scientific explanation is 29; The number of teachers who are describing traditional assessment scientifically adequate is 27, partial explanation the scientific level of the 3, the number of teachers who do not respond or non-scientific explanation is 28. The percentage of second-grade teachers' correct answer appears to be higher than the percentage of third grade teachers.

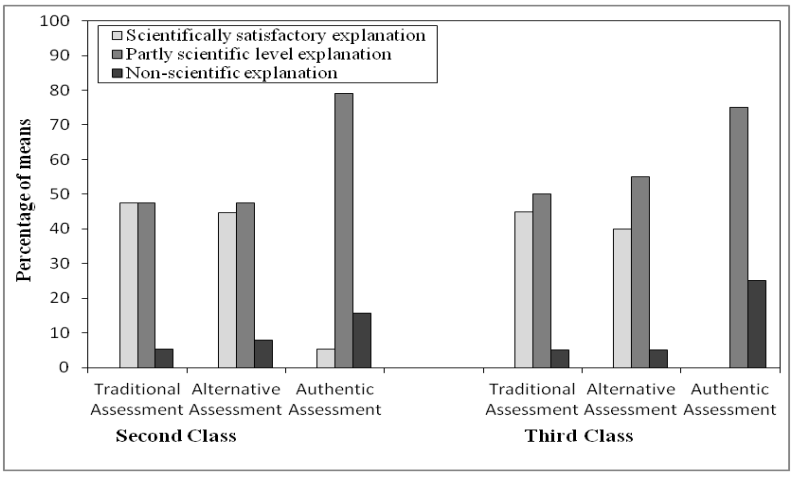

Figure 1. Percentage of responses given traditional, alternative, authentic assessment concepts

Analyzing Figure 1, It is seen that the percentage of the preservice teachers who describe scientifically adequate authentic assessment is 3.45, the percentage of the preservice teachers who describe partial is 18,97; the percentage of the preservice teachers who do not respond or non-scientific explanation is 77,59; the percentage of the preservice teachers who describe scientifically adequate alternative assessment is 43,10, the percentage of the preservice teachers who describe partial is 6,9, the percentage of the preservice teachers who do not respond or non-scientific explanation is 50; the percentage of the preservice teachers who describe scientifically adequate traditional assessment is 46,55, the percentage of the preservice teachers who describe partial is 5,17, the percentage of the preservice teachers who do not respond or non-scientific explanation is 48,28.

Analyzing the answers given to the question 2; It was found that some of the preservice teachers chose the alternative assessment as the best type of evaluation (N =10); some of the preservice teachers chose the traditional assessment as the best type of evaluation (N =3); some of the preservice teachers chose the authentic assessment as the best type of evaluation (N =2); some of the preservice teachers defined that assessments could not be sorted (N=2); the others had no idea (N=41). In addition, it was found that some of the second class teacher candidates (N = 9) used as a synonym for alternative assessment authentic assessment and also third class teacher candidates did not know the authentic assessment. Some of the preservice teachers' answers was as follows:

For example, the answer of one of the second grade the preservice teachers was like that: *"Alternative and authentic assessment have the same meanings. Alternative assessment is already the most useful"*

Preservice teacher 15:*"Alternative assessment and authentic assessment are the same concepts. Defends the importance of real-life conditions."*

Preservice teacher 34: *"The other name of the alternative assessment is authentic assessment. Alternative assessment is the most useful."*

Question 3:*"How can technology be used in assessment and evaluation techniques? Please explain."*Some of the preservice teachers gave the surveys and the use of educational games as example N=48 (%=82,76); in addition to surveys and the use of educational games moodle, blogger, wordpress programmes were also added N=5 (%=8,62). Some of the preservice teachers' answers were as follows:

Preservice teacher 1: *"Using our knowledge programming of ourselves, we can write the assessment and evaluation program. Duration, face recognition, password can be defined because of provide to enter only the student. Ninp, Coursites, Survey, ÖYT ."*

Preservice teacher 23:*"Flash, distance education software, delphi, educational games can be used."*

Preservice teacher 45:*"Especially, computer can be used. As example, the student's level of knowledge can be measured using educational games. Moodle, online learning environment can be used "*

Ouestion 4: The semi-structured questio*n was that; "What extent do you know assessment and evaluation techniques? Please select in the table below"*. Preservice teachers were wanted to classify their knowledge of techniques of measurement and evaluation. Each sub-questions had five choices, including "1=not at all," "2=little," "3=moderate," "4=quite," and "5=complete"addressing this issue. The answers given by preservice teachers were evaluated in Table 4 and the means and standard deviations of responses given in Table 5.

Table 4. Substance evaluation criteria

Options	**Weight**	**Limits**
No I do not know	0	0-0.7
I know the minimum level of	1	0.8-1.5
I know a moderate	2	1.6-2.3
I know a good level of	3	2.4-3.1
I know a very good level of	4	3.2-4.0

Table 5. The mean level of knowledge of techniques of measurement and evaluation of preservice teachers

Evaluation Activities	$\bar{X}$	**S.D.**
1. Portfolio	1,83	0,77
2. Project	2,55	0,86
3. Performance task	2,50	0,84
4. Self- Assessment	2,71	0,97
5. Peer Assessment	2,53	0,79
6. Checklist	1,67	1,17
7. Concept Map	2,43	1,04
8. Multiple Choice Questions	3,07	0,93
9. Matching Questions	2,88	0,96
10. Group Assessment	2,53	0,94
11. Rubric	1,08	0,98
12.Short Answered Questions	2,71	0,97
13. Long Answered Questions	2,71	0,94
14. Oral Presentation	2,77	1,06
15. Observation	2,83	0,79
16. Interview	2,59	1,06
17. Argument	2,79	0,83
18. Written examination	2,86	1,05
19. Demonstration	2,33	1,03
20. Vee diagram	1,03	1,02
21. e-Portfolio	1,22	1,03
22. Diagnostic tree	1,53	1,15
23. Structured grid	1,20	1,18
24. Word association	2,00	1,20
25. Student Product File	1,95	1,08
26. Diaries	2,36	1,12
27. Poster	2,24	1,16
28. Analogue	1,41	1,15
29. Gap Filling	3,03	0,89

Analyzing Table 4 it was seen that gap filling and multiple choice questions were known very good level; matching questions, short answered questions, long answered questions, written examination, oral presentation, diaries, argument, interview, observation, project, performance task, self- assessment, peer assessment, concept map, group assessment were known good level; student product file, poster, word association, demonstration, checklist, portfolio were known moderate; vee diagram, e-portfolio, diagnostic tree, structured grid, analogue are known minimum level.

Results and Discussion

It was seen that preservice teachers who explained adequate level of assessment and evaluation were less than preservice teachers who did not explain adequate. Accurately describing the concepts of measurement and assessment was found to be 3.45 percent of preservice teachers. This was quite a low percentage but, this was in agreement with the literature (Çakan 2004; Erdemir 2007; Uğurlu & Akkoç 2011). The percentage of preservice teachers explained a statement partly scientific level were found as 74.14. Suggests that this situation stems from preservice teachers' misconceptions.

It was seen that traditional and alternative assessment were known much better than authentic assessment. Suggests that this situation stems from authentic assessment take very least place in the books of assessment. And also it is thought that the form of course contents have more comparison of alternative and traditional assessment.

It was seen that traditional techniques such as gap filling and multiple choice questions were known very good level but, alternative techniques such as vee diagram, e-portfolio, diagnostic tree, structured grid, analogue were known minimum level. It can be because of traditional methods of measurement and evaluation tools used when prospective teachers resettling on degree programs or studying at university. In addition, it was seen that the second class preservice teachers' percentage of correct answers were higher than the percentage of correct answers of the third class teacher candidates. It can be due to the second class preservice teachers have taken a new course of measurement and evaluation.

The preservice teachers answered the question- *How could technology be used in assessment and evaluation techniques?* The surveys and the use of educational games had the big percentage (%82,76). In addition to surveys and the use of educational games moodle, blogger, word press programmes were also added (%8,62). Technology evolves with each passing day and the use of technology in measurement and evaluation is inevitable. In this respect, the opinions of preservice teachers are valuable and they should be encouraged in this regard.

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