

Reflections in Peer Evaluation: Is the Attended Teacher Training Program the Implemented Training program?¹

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This study gives opportunity for investigating how student teachers view the teaching profession and how they transfer their pedagogical knowledge into practice. The aim of the study is to investigate the teaching skills student teachers gained in the assessment of micro teaching of their peers. The participants are 30 mathematics student teachers enrolled in the teacher training program in a state university. Document analysis and semi-structured interviews are the research instruments and inferential & descriptive statistics are used for the data analysis. The findings suggest that the qualitative and quantitative peer assessments of student teachers were graded differently which results from the difference of perceptions about teaching and different conceptualizations of the teaching qualifications.

Keywords: mathematics teaching, teacher training, observation

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INTRODUCTION

Teacher training occupies an important place in educational systems. Hence extreme attention is needed in the development of the curricula of teacher training programs (Turkish Ministry of Education (MEB), 2008). Turkey is a country which tried many models and programs of teacher training in its educational history. The most recent change took place in 2006 which increased the number of courses pertaining to the knowledge of the subject and its pedagogy (Table 1).

Table 1. Comparison of the newest and the old teacher training program

	Prior to 2006 (%)	After 2006 (%)
Subject courses	70–75	50–60
Pedagogy courses	25–30	25–30
Liberal education courses	-	15–20

1.1. The ‘teaching methods’ course

All universities follow the same teacher training program in Turkey. Main aim of the courses of ‘school experience’, ‘teaching practice’ and ‘teaching methods’ is to give sufficient amount of professional knowledge and develop classroom teaching practice in the area. According to Tzelepi (1996) the ‘teaching method’ course makes the student teachers develop a reflective attitude in the process of the completion of their training. The courses given in the faculty help student teachers to organize their lessons in an effective way and prepare for the teaching practice which will be done in partnership schools. The role of the faculty coordinator and the cooperating teacher is to help the candidate in gaining experience in the teaching-learning process (Thompson, 1984; Kennedy, 2005).

The aims of the teaching methods course include being able to prepare a lesson plan, to assess the quality of teaching, and to understand the requirements of being an efficient teacher and application of the methods & techniques in the classroom. The candidate passes from several filters, live different experiences and meet different teachers. S/he sometimes chooses a model teacher and wants to become like one. A candidate who did not take any courses about teaching comes to that decision possibly through observations which often happen in an intuitive way without using any criteria. The knowledge candidates get in their education might increase their awareness about what makes a good teacher, they may still be under the influence of their earlier conceptualization of a good teacher.

Although mathematics teachers’ practices are influenced by their experiences while

they learned mathematics (Fosnot, 1989; Skott, 2001), training programs have important roles in shaping a candidate's viewpoints and increasing their skill and knowledge about teaching (Aydin, Delice & Erdogan, 2007). Possible reasons for such differences were discussed in the literature: *e.g.*, teachers' or instructors background, beliefs, practices and the methods used etc. (Karaagaç & Threlfall, 2004). In this study our aim is to observe these differences with the help of peer assessment during micro teaching. In other words we aim to assess the candidates' viewpoints in regard to the gains from the method course. We try to test the hypothesis that while the candidate is assessing his/her friend s/he actually assessing herself/himself. That is, the factors and limitations in their assessments are investigated.

1.2. Teacher practices and its assessment

In the assessment of teaching practice there are two main data sources: the faculty coordinator and by the mentor teacher. Peer and self assessment can also be used to obtain a general perspective. Peer assessment is especially important in that it presents opportunities for the assessment of the skills and knowledge of the assessors (Thompson, 1984; Skott, 2001). While assessing their peers the candidates use the prototype which is influenced both by the theoretical knowledge and their past teachers. It is important therefore to analyze candidates' knowledge, beliefs and expectations about mathematics teaching and the role of the teacher.

In parallel with the reform in mathematics curriculum at the pre-university level, most of Turkish teacher training intuitions put serious effort to adapt their programs to meet the requirements needed by the new curriculum. It is hard to say, however, that this task was not fully accomplished which meant the continuing domination of behaviouristically oriented teaching and assessment approaches in training programs. In our model we believe, it is possible that student teachers can be prepared by a method consistent with which they are advised to use in their professional lives.

In the model, instead of giving a role to teacher as the sole owner of knowledge and the assessor, the student teachers assess themselves so the university teacher becomes the 'guide' an acceptable teacher role suggested by the contemporary instructional approaches (Cobb, 1988).

1.3. Observation and peer assessment

Observation as an important component in peer assessment can be used as a method of data collection to describe the patterns of behavior in an institution. The most important characteristic of observation is to get the firsthand data in its natural environment (Cohen, Manion & Morrison, 2000). It is a useful technique to identify pedagogical styles, to

evaluate curriculum implementations and to gather data about teaching practice (Morrison, 1993). In the assessment of the candidate by his/her peers structured and naturalistic observation techniques were used (Lincoln & Guba, 1985). In the structured one a scale was used and in the naturalistic one the assessor candidates are left free. The purpose of assessment may be summative (determining achievement levels of students) or formative (identify strengths and weaknesses of students or teaching). Informal assessment, as opposed to formal assessment, is done without interrupting and as part of the teaching. Assessment opportunities in informal assessment emerge spontaneously and the outcome is used instantaneously. Hence the purpose of assessment in this study is formative and the chosen assessment mode is informal. This research is initiated to find a solution to the following problem: To what degree the objectives of the teacher training program and the gains of student teachers from their observations coincide? What is the relationship between the assessments done by structured and naturalistic observation techniques? This study reveals how mathematics student teachers view teaching profession as a result of their gains from the courses in the program & their informal experiences and gives the opportunity to explore how they transfer the methods they learned to practice.

2. METHOD

2.1. Research Design and Participants

The study explores how student teachers assess their peers with respect to their own viewpoints hence it has a non-positivist paradigm with interpretivist approach. Case study (Patton, 2002) is the main strategy of the study. The participants are 30 final year mathematics student teachers trained in a state university in the fall semester of the 2007–2008. The student teachers having taught methods and techniques were expected to micro-teach an assigned topic to their peers in the ‘teaching method’ course. The study reports the findings of the peer assessment of a student teacher who micro teaches the topic of ‘limit & continuity’ in both quantitative and qualitative ways.

Table 2. Structured Observation Assessment (SOA) instrument

SOA sub-dimensions	Skills contained by the sub-dimensions
Inquiry Design	Goal oriented material use, Discussion & inquiry efficiency, The content knowledge
Teaching behaviours	Cognitive subject skills, Assessment styles, Planning skill
Professional performance	Classroom management, Self-confidence, Motivation
Educational practice	Method-technique applications, Daily life problems

2.2. Data Collection Tool

Two observation instruments were used in the study: The Structured Observation Assessment (SOA) and the Unstructured Observation Assessment (UOA). SOA a four point Likert scale instrument was used by the student teachers to assess their peers' teaching performance quantitatively. There are four sub-dimensions and 33 items in the instrument (Table 2). The UOA, on the other hand was used for the qualitative data UOA is a form on top of which there is a statement which asks to the student teachers to observe and assess their peers in subsequent 5 minute periods. No other direction whatsoever was given to the respondents to ensure that they assess their peers using their own knowledge, experience & beliefs and comment on their reasons. In the qualitative method the 30 student teachers assess their peers using the Unstructured Observation Assessment (UOA). One hour after the qualitative assessment of the micro teaching they re-assess their peers this time with SOA.

2.3. Data Analysis

Data from SOA was analyzed using SPSS. The UOA data was analyzed in two steps. In the first step candidates' writings to UOAs were divided into five categories with respect to common assessment criteria. Then the number of candidates who take every category as a criterion was determined. The second step involves identifying the sub-qualifications contained by the UOA sheets and exploration of their effects into the process of qualitative assessment. In this context, the data obtained was analyzed by giving one point to each of the sub-qualifications contained by the related category which revealed the relative weight of each of the categories in candidates' assessments. Finally candidates' assessment paradigms were explored by comparing the data from SOA forms & UOA sheets with descriptive statistics. This is followed by semi structured interviews conducted with four candidates for the deep analysis of the processes.

3. FINDINGS

Table 3. Category percentages from student teachers' assessments by UOA.

Categories	Number of students	Percentage %
Mathematics content knowledge	19	63
Pedagogical content knowledge	28	93
Liberal education	6	20
Physical appearance	17	56
Communication skill	14	47

3.1. Unstructured Observation Assessment

The analysis of candidates' qualitative assessments using UOA was made in two steps. In the first step the assessments was classified using the common criteria (Table 3). Findings indicate that most of candidates put the pedagogical content knowledge as an assessment criterion whereas 63% of accept consider mathematics content knowledge as a criterion. Liberal education was considered important for teaching competence only by 20% of the candidates. Physical appearance which was not a criterion in teacher training programs was considered important by 56% of the candidates.

In the second step teacher qualifications that were divided into five categories were analyzed to determine the objectives and their weights in the overall assessment (Table 4). Findings from this analysis suggest that 46% of candidates use pedagogical content knowledge and mathematics content knowledge was used only by 23% in their assessments.

Table 4. The influence of the UOA on student teachers' overall assessments

First categorization	Second categorization	%
Mathematics content knowledge	Knowing and application of methods & techniques, Material development, Classroom management, Preparing a lesson plan, Motivating students, Use of the blackboard, Knowing & assessing the objectives	46
Pedagogical content knowledge	Knowing fundamental concepts & definitions, relating the concepts in the topic to other topic in the subject. Answering the students' questions	23
Physical appearance	Classroom atmosphere, Heating, Lighting, Suitable dressing.	14
Communication skill	Lesson beginning, Greeting the classroom, Effective communication with the students, Use of voice, Use of language and gestures.	13
Liberal education	Relating the topic to daily life, Using analogies, Having knowledge about the epistemology of the subject	4

The weight of the content knowledge on the overall assessment is found to be drastically low compared to that of the pedagogical content knowledge. The least weight is found in the liberal education qualification (4%).

3.2. Structured Observation Assessment

The correlations in between four sub-dimensions of SOA were calculated using the Pearson formula. Findings indicate statistically meaningful medium correlation between ‘inquiry design’ & ‘teaching behaviors’ ($r = 0.56$, $p < 0.005$), strong correlation between ‘educational practice’ & ‘inquiry design’ ($r = 0.68$, $p < 0.005$), medium correlation between ‘professional performance’ & ‘teaching behaviors’ ($r = 0.39$, $p < 0.50$), medium correlation between ‘professional performance’ & ‘educational practice’ ($r = 0.37$, $p < 0.50$), and low correlation between ‘educational practice’ & ‘teaching behaviors’ ($r = 0.33$, $p < 0.10$) (Table 5). These suggest that most of the sub-dimension of SOA is interrelated.

Table 5. The correlations in four sub-dimensions of SOA

Sub-dimensions		Inquiry design	Teaching behaviors	Professional performance	Educational practice
Inquiry design	PC ¹	1	0.564***	0.175	0.689***
	Sig ²		0.001	0.347	0.000
Teaching behaviors	PC	0.564***	1	0.390*	0.332*
	Sig.	0.001		0.030	0.068
Professional performance	PC	0.175	0.390**	1	0.369**
	Sig.	0.347	0.030		0.041
Educational practice	PC	0.689***	0.332*	0.369**	1
	Sig.	0.000	0.068	0.041	

¹Pearson Correlation,

²Two-tailed significance,

*Correlation is significant at the 0.10 level ($N=30$),

**Correlation is significant at the 0.05 level ($N=30$),

***Correlation is significant at the 0.01 level ($N=30$).

3.3. The Comparison of Teachers’ Assessments in the Structured and Unstructured Assessment Observation Forms

The comparison of the grades given by candidates yielded a statistically meaningful difference between SOA and UOA and that the grades given in UOA is significantly greater those of SOA (Table 6).

Table 6. Paired T Test and Pearson correlation results of teachers' assessments in the SOA and UOA.

	Means	Mean difference	Std. Deviation	<i>T</i>	<i>df</i>	<i>p</i>	Pearson correlation
SOA grades	60.38	34.17	14.17	13.43	30	0.00	$r=-0.081$ $p=0.664$
UOA grades	94.55						

Data also indicates that the correlation between the two sets of grades, on the other hand, was found to be very low which means that there is no indication of linearity between the grade sets.

4. DISCUSSION

There are differences between candidates' gains revealed from the UOA and expectancies of the program. While the program emphasizes subject matter knowledge (Turkish Higher Education Council (YOK), 2006), the candidates do not seem to use this much in their assessments. This may be related to their low level of self-esteem on the subject matter knowledge. Assessing the teacher qualifications based on pedagogical content knowledge rather than the content knowledge is apparent contradiction with the proficiency criteria of the program (Table 3). This difference might be attributed to the concept of perception selectivity (Woolfolk, 2007). Assessment seems to be done on basis of which hits the eye first and it is normal that the first things caught by the novices' eye are things like physical appearance and voice rather than knowledge. There is evidence in the expert-novice literature that expert teachers outdo novices in terms of quantity of content, pedagogical and pedagogical content knowledge (Livingstone & Borko, 1990). Moreover when solving classroom problems, expert teachers are guided by underlying causes, whereas novices pay more attention to surface features (Peterson & Comeaux, 1987).

Some categories that do not exist in the qualifications in Turkish teacher training program emerge in candidates' assessments based on unstructured observations. For example, 56% of candidates think that physical features and communication skills have an impact on their classroom practice as their UOA indicate.

Differences are also observed on the candidates' grading. The data from the semi-structured interviews suggest that scaling (quantification) of teaching competencies has a narrowing down effect on student teachers' observations which reflects to the grades given. Some explanations can be stated for the grading differences. Firstly, it may be that the candidate assesses his/her peers over the full grade in the UOA. In SOA, on the other

hand, there are grade intervals for each of the skill being assessed and makes the assessment more concrete. Secondly, candidates seem to consider on how rather than what the content is delivered in their UOA papers. The candidates who in the SOA assess their peers on the basis of the mathematical content and break points from wrong examples might not be very meticulous and more flexible in their UOA papers.

The interviews also showed that the qualitative assessments appeared to be more subjective (Kennedy, 2005) than the quantitative assessments which may be related to some social factors like friendship between the assessed & the assessor or the social status of the assessed in the classroom.

5. CONCLUSION

There are many factors affecting the assessment process. This study is focused on the program and the assessment through their observations. Differences were found between the expectations of the teacher training program and the gains of student teachers as revealed by their assessments. While the program aims to train teachers with sufficient amount of content & pedagogical knowledge and liberal education (YOK, 2006), the candidates seem to regard professional skills more than the subject knowledge. There are differences in assessments made by the SOA and UOA. Since qualitative assessment criteria were developed by the student teachers, the study provided evidence for the fact that the student teachers' assessments are limited by their own knowledge, beliefs and experiences. That explains why the grades from the quantitative assessment are lower than those of the qualitative. Moreover, the student teachers use the surface features in their assessment of their peers.

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