

Full Length Research Paper

Teacher recruitment in Turkey: Analysis of teacher selection exams in comparison with Revised Bloom's taxonomy of educational objectives

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Accepted 16 October, 2013

The purpose of the study is to analyze the content validity of Public Personnel Selection Exam (KPSS), which is used for teacher recruitment in Turkey, in accordance with the teaching profession courses and Bloom's revised taxonomy of educational aims. For this purpose, the study was designed as a descriptive survey model. The data were obtained through document analysis. 720 questions asked in KPSS in the last six years – including 2006 – 2011 were descriptively analyzed through the analyses of these documents. The findings of the study revealed that KPSS does not sufficiently cover the teaching profession courses and has a low content validity in this sense. In addition, the findings of the study showed that the questions in the exam measure cognitive processes and knowledge aspects of Bloom's revised taxonomy at minimal rates. In conclusion, the content validity of KPSS, which is used for teacher recruitment in Turkey, was ascertained as low and some suggestions were made in order to raise the level of content validity of the exam.

Key words: Bloom's revised taxonomy on educational objectives, public personnel selection exam, teacher recruitment in turkey, teaching profession courses, Turkey.

INTRODUCTION

Recruitment of teachers at state schools varies across countries due to both qualitative reasons and quantitative causes such as the number of teacher candidates awaiting to be hired. Each country applies their own way of employment in accordance with the current conditions. Among these, recruitment based on competitive approach is utilized by many countries. Within the scope of this approach, various evaluation methods such as exams, interviews, and observations are used (Hobson et al., 2010). This approach has been adopted by some of the European countries such as Germany, France, and Spain depending on their economic and supply-demand systems (Eurydice, 2013). This approach aims to select more qualified ones out of the available candidates. Questioning each country's own teacher training insti-

tutions in a sense, this system targets to improve the quality of teachers. However, in the literature, there happens to be very little amount of evidence proving that this system actually increases teacher's quality levels (Hobson et al., 2010). Furthermore, McKenzie and Santiago (2005) state that schools do not have any direct influence over the recruitment of teachers and that teachers are hired through a central appointment system, which undermines teachers' sense of belonging for the schools they are designated, and also prevents schools from hiring the teachers they actually need.

Majority of the exams used for the selection of teacher candidates include multiple-choice tests directed to measure and assess cognitive skills. Therefore, though being widely used, these exams are not capable of

Table 1. Requirements to enter the teaching profession in public institution (2010): Competitive examination required to enter the teaching profession.

| | Pre- primary Education | Primary education | Lower secondary education | Upper secondary education |
|---------------|-------------------------------|--------------------------|----------------------------------|----------------------------------|
| Australia | Non data | Yes | Yes | Yes |
| France | Yes | Yes | Yes | Yes |
| Germany | Non data | Yes | Yes | Yes |
| Greece | Yes | Yes | Yes | Yes |
| Israel | Yes | Yes | Yes | Yes |
| Italy | Non data | Yes | Yes | Yes |
| Japan | Yes | Yes | Yes | Yes |
| Korea | Yes | Yes | Yes | Yes |
| Luxembourg | Yes | Yes | Yes | Yes |
| Mexico | Non data | Yes | Yes | Yes |
| Spain | Yes | Yes | Yes | Yes |
| United States | Yes | Yes | Yes | Yes |
| Brazil | Yes | Yes | Yes | Yes |
| Turkey | Yes | Yes | Yes | Yes |

evaluating some of the significant skills such as reflective thinking, leadership, sensitivity, and communication (Glassford, 2005, cited in Hobson et al., 2010). In this sense, some of the countries using this competitive system administer the exam through several phases, which aim to assess teacher candidates' affective and social skills as well as their cognitive skills.

Among these countries, for instance, Spain prefers to apply the competitive approach and administers a three-stage exam due to the fact that the number of teacher candidates is a lot higher than needed. In the first stage, teacher candidates' knowledge and skills are tested through paper-pen exams and interviews while in the second and third stages, respectively, the candidates are evaluated in terms of their academic education and experience and their oral communication and teaching skills are observed during practice at schools (Cros et al., 2004). This kind of competition based practice is not limited to only European countries; on the other hand, quite many other examples can be found in other countries located in different continents. According to data from Organization for Economic Cooperation and Development (OECD), 22 member countries within OECD require a diploma and passing through a competition based approach to be employed as a teacher. Table 1 depicts some examples among these countries.

As can be seen in Table 1, a comparative based exam approach is commonly used for teacher recruitment at different levels of education. The exams for teacher recruitment are generally applied at regional or national levels and constitute only a phase of multiphase exam systems. However, teachers are recruited according to their scores from a national test which includes multiple choice test items and is administered centrally once a year. The most effective factor for the wide adoption of

this approach can be attributed to the really high demand for higher education institutions, especially teacher training departments in Turkey. The number of universities has also increased recently in order to meet this rising need. According to 2013 statistics taken from Higher Education Council, there are 103 State and 65 private Foundation universities in Turkey, and this number keeps going up together with new universities. Similarly, the number of Education Faculties has also grown along with the number of universities. Both this increase and the one in quotas of already functioning faculties have resulted in several qualitative problems and led to thousands of teacher candidates ever spreading by new graduates expecting to be employed by the State. Furthermore, the Pedagogical Formation Certificate Program started during 2010-2011 academic year offering the opportunity to become a teacher to graduates of other faculties and programs, especially those with a degree from Faculty of Arts and Sciences, which magnified the discrepancy between supply and demand by aggravating the number of teacher candidates waiting to be hired each year. Thus, it is necessary to conduct a selection based on teaching qualifications in order to employ enough number of teachers among those who have been on the line for some time. Like teachers, other personnel to be hired at any Public Institutions and Organizations are also selected through a national exam administered by Assessment, Selection, and Placement Center (OSYM). Initiated by OSYM in 2002, Public Personnel Selection Exam has served as the main criterion for the selection and recruitment of teachers. Moreover, similar exams had also been used for teacher recruitment by OSYM during earlier years. For instance, "Teaching Proficiency Exam" applied between 1985 and 1991, and "Public Recruitment Exam" administered in 2001 can be noted as

related examples (Yuksel, 2004).

Teacher candidates in Turkey are tested for their knowledge in educational sciences as well, along with general proficiency and world knowledge tests within the scope of KPSS. The number of questions in KPSS was reduced to 80 from 120 in 2013 and the release of the questions to public was abolished. The exam aims to assess and evaluate teacher candidates' professional knowledge rather than their content knowledge. Educating teachers about the requirements of professional knowledge is among the goals of teacher training programs. Teacher training programs in our country offer courses across three major fields such as teaching profession, content knowledge, and world knowledge.

Courses within the field of teaching profession train candidates on basic teaching skills, and seek answers for 'Who should teach what, how, and where?' Content knowledge courses, on the other hand, educate candidates about the special field that they are going to teach (Kuçukahmet, 2007). In addition, world knowledge courses aim to increase social awareness of teacher candidates and train them on how to analyze and think critically.

Considering its purpose, KPSS Educational Sciences Exam is expected to assess and evaluate teacher candidates' competence in terms of teaching profession. However, only cognitive level assessment can be accomplished due to the fact that the exam has a multiple-choice achievement test layout. Therefore, the exam is supposed to efficiently test the cognitive level knowledge of the candidates. Similarly, this opinion was also noted in the report "Teachers' Proficiency" by General Directorate of Teacher Education and Training under the supervision of Ministry of National Education, and some concerns mentioning that the exam questions should assess the higher grounds in cognitive competence were underlined (Yuksel, 2004).

Literature contains plenty of taxonomies regarding the levels of cognitive fields to be assessed. Influencing educational systems throughout the whole world including Turkey, these taxonomies have long served as the basic reference point for program design, development, and evaluation. These taxonomies within cognitive field have also been effectively used in order to develop assessment tools, and they are still at large.

The first taxonomy study was conducted by a group chaired by Benjamin S. Bloom. Specializing in cognitive domain, this taxonomy was developed to make it easier to exchange questions among universities in order to create a bank of questions that test each of the same educational objectives (Krathwohl, 2002; Trans: Kogce et al., 2009). Translated into various languages after the publication, this book had real deep impact on especially assessment and evaluation studies (Ozcelik, 2010).

Dividing the cognitive domain into six steps hierarchically, this taxonomy had a uni-dimensional design. Termed as Knowledge-Comprehension-Application-

Analysis-Synthesis-Evaluation and classified hierarchically, these six cognitive levels have been employed in explaining how individuals acquire cognitive skills. Knowledge: recalling specific facts; Comprehension: describing in one's own words; Application: applying information to produce some result; Analysis: subdividing something to show how it is put together; Synthesis: creating a unique, original product; and Evaluation: making value decisions about issues (Hopper, 2009; cited in Khan and Inamullah, 2011).

Based on this taxonomy, many other taxonomies have been devised by educational scientists. One of them, and maybe the most influential one, was developed by Anderson and Krathwohl. Chaired by Anderson ve Krathwohl, the study group re-designed Bloom's hierarchical educational objectives through their efforts initiated in 2001.

The biggest change in the new version of Bloom's taxonomy was that it evolved into a bi-dimensional layout from a uni-dimensional one. At the end of the study, knowledge level of the original taxonomy was transferred into a different domain, hence, the bi-dimensional layout. These two domains are inter-related, and four types of knowledge within the knowledge domain can be used at any moment of the cognitive processes domain (Anderson and Krathwohl, 2001; cited in Yuksel, 2007). The new version of the taxonomy includes a four-level structure, namely; Factual, Conceptual, Procedural, and Metacognitive Knowledge. *Factual Knowledge* refers to basic knowledge such as terminology, information about specific details and elements in any subject field while *Conceptual Knowledge* means knowing the relations, principles, generalizations, theories, and patterns among the main components of a structure that can be regarded as more complicated than factual knowledge. *Procedural Knowledge*, on the other hand, covers knowledge on how to use information, which techniques and methods to employ, and what and when to do. The highest of knowledge domain, *Metacognitive Knowledge*, mostly regards an individual's self-awareness and self-cognition (Anderson and Krathwohl, 2001; cited in Ozcelik, 2010).

The cognitive processes domain of the updated version of Bloom's taxonomy is similar to the previous one; however, the levels have different names, and the order has been changed. What was known as *Knowledge* level in the original classification is now *Remember* with a narrower scope. The *Comprehension* level in the old one has turned into *Understand* in the new one, and now it is more detailed with a higher number of sub-levels (Yuksel, 2007). One of the most important changes in the taxonomy was applied to *Synthesis* and *Evaluation* levels. The highest level in Bloom's taxonomy, *Evaluation* has shifted places with *Synthesis*, what is now known as *Create* in the new version. As a result, *Create* has become the highest cognitive process.

Recently, there have been a lot of research and studies on KPSS in Turkey; some of which identified teacher

candidates' opinions and attitudes about KPSS; whereas some other studies investigated the relation between candidates' GPAs and KPSS scores (Kablan, 2010). Nevertheless, literature review, both national and international, has yielded few studies examining the cognitive domains assessed through such exams and the compatibility of teaching proficiency exams with teaching fields. Having been applied one way or the other in order to employ teachers for the last 28 years, competitive approach serves as a model for those who use or plan to use examination for teacher recruitment. Therefore, the results of studies aiming to analyze the examination system in Turkey are thought to be helpful for other countries applying or planning to apply the competitive approach to investigate their own systems. Accordingly, how much of the courses in the field of *teaching profession* are included within the scope of questions in Educational Sciences exam and the level of cognitive domain targeted by those questions have been studied. The purpose of the study is to analyze the content validity of KPSS Educational Sciences exam. For this purpose answers to two basic research questions are sought:

1. How is the content validity of KPSS in accordance with the teaching profession courses?
 - Within the last six years' (2006-2011), how far are the exam questions in the "Educational Sciences" part of Public Personnel Selection Exam related with the courses studied in the teacher training programs?
2. How is the content validity of KPSS in accordance with Bloom's revised taxonomy of educational aims?
 - Within the last six years' (2006-2011), what levels of cognition and knowledge, as outlined in Revised Bloom's taxonomy, are tested by the exam questions in the "Educational Sciences" part of Public Personnel Selection Exam?

METHOD

Research model

This study has been designed as a survey study employing descriptive analysis on the qualitative data. Research data have been obtained through document analysis. Due to the fact that OSYM started to publish exam questions online in 2006, and that the questions for 2012 exam have not been published yet at the time of the research, document analysis expands across the last six years' (2006-2011) exam questions.

Data collection tools

Totally, 720 exam questions published within the last six years have been analyzed descriptively as mandated by document analysis. The collection of data to be used in descriptive analysis has been carried out through two steps.

In the first step, in accordance with the first research question, the questions asked in the "Educational Sciences" part of Public Personnel Selection Exam were analyzed to see how far they were

related with the content of the courses studied within the field of teaching profession at education faculties, and Table 2 depicts the analysis based on years. The years are given in the lines and teaching profession courses are presented in the columns of the table. All the questions asked in the Educational Sciences part of KPSS exams within the last six years have been analyzed and noted to the corresponding lines and columns with their percentages regarding each year. The table has been utilized in order to investigate the content validity of the questions concerning teaching profession courses.

In the second one, in accordance with the second research question, all the questions asked in the Educational Sciences part of KPSS were studied to determine what levels of cognition and knowledge, as outlined in the revised version of Bloom's taxonomy of educational objectives, are tested. In this sense, Table 3 of shows the indicators, and all questions regarding each teaching profession course were examined; and subsequently, a general overview containing all courses has been provided.

Data collection and analysis

Firstly, exam questions asked in "Educational Sciences" part within the last six years were downloaded from the official website of Assessment, Selection, and Placement Center (OSYM). These questions were meticulously studied by the researcher and were grouped under teaching profession courses on an Excel file. Approved by the Higher Education Council, the Catalogue for Education Faculties was studied in order to group the questions under relevant courses. The content of teaching profession courses listed in the catalogue for all teacher training programs guided the grouping of the questions. Several experts whose qualifications are listed below were consulted, and agreement concerning the groupings was established.

Having been grouped under courses, the questions were coded for cognition and knowledge domains. In order to make a cross-analysis, cognitive processes were coded as follows during the codification: "1" for "Understand", "2" for "Remember", "3" for "Apply", "4" for "Analyze", "5" for "Evaluate", and "6" for "Create" while the components of domain were coded as "a" for "Factual Knowledge", "b" for "Conceptual Knowledge", "c" for "Procedural Knowledge", and "d" for "Metacognitive Knowledge". These codes were noted in numbers and placed into corresponding cells in the tables employed during data collection.

For the internal consistency reliability of the codification, two professors at education faculty and knowledgeable about the updated version of Bloom's taxonomy of Educational Objectives examined and re-coded the codifications independently. Both the researcher's codification and the expert versions were compared, and the researcher's agreement and disagreement with each expert were determined. Calculated through the reliability formula by Miles and Huberman (1994), the reliability coefficient was noted in the Table. Subsequently, items that caused a controversy among the experts and researcher were discussed through a series of meetings and consensus was sought. At the end, reliability coefficient for each year has been recorded as higher than 0.80, and general reliability coefficient has been calculated as 0.84 with one of the experts and 0.89 with the other one.

Table 2 shows reliability calculations regarding the researcher and the first expert both before and after agreement.

Similarly, reliability calculations regarding the researcher and the second expert both before and after agreement can be found in Table 3.

Likewise, agreement rate between the two experts was also investigated, and reliability coefficients both before and after agreement are presented in Table 4.

As can be seen in Table 4, inter-rater agreement increased from 0.60 to 0.77 following the agreement meetings. In short, both levels

Table 2. Distribution of the researcher’s and the first expert’s opinions concerning the questions in the educational sciences part of public personnel selection exam across the years

| Distribution of questions across years | Before agreement | | | | After agreement | | | |
|--|------------------|----------------|------------------------------------|--|-----------------|----------------|------------------------------------|--|
| | Consensus (C) | Dissidence (D) | The no of questions responded back | Miles and Huberman’s reliability coefficient (C/C+D) | Consensus (C) | Dissidence (D) | The no of questions responded back | Miles and Huberman’s reliability coefficient (C/C+D) |
| 2006 | 91 | 29 | 120 | 0.76 | 99 | 21 | 120 | 0.83 |
| 2007 | 85 | 35 | 120 | 0.71 | 104 | 16 | 120 | 0.87 |
| 2008 | 82 | 38 | 120 | 0.68 | 100 | 20 | 120 | 0.83 |
| 2009 | 83 | 37 | 120 | 0.69 | 99 | 21 | 120 | 0.83 |
| 2010 | 78 | 42 | 120 | 0.65 | 104 | 16 | 120 | 0.87 |
| 2011 | 77 | 43 | 120 | 0.64 | 101 | 19 | 120 | 0.84 |
| Total | 496 | 224 | 720 | 0.69 | 607 | 113 | 720 | 0.84 |

Table 3. Distribution of the researcher’s and the second expert’s opinions concerning the questions in the educational sciences part of public personnel selection exam across the years.

| Distribution of questions across years | Before agreement | | | | After agreement | | | |
|--|------------------|----------------|------------------------------------|--|-----------------|----------------|------------------------------------|--|
| | Consensus (C) | Dissidence (D) | The no of questions responded back | Miles and Huberman’s reliability coefficient (C/C+D) | Consensus (C) | Dissidence (D) | The no of questions responded back | Miles and Huberman’s reliability coefficient (C/C+D) |
| 2006 | 100 | 20 | 120 | 0.83 | 109 | 11 | 120 | 0.91 |
| 2007 | 89 | 31 | 120 | 0.74 | 107 | 13 | 120 | 0.89 |
| 2008 | 79 | 41 | 120 | 0.66 | 102 | 18 | 120 | 0.85 |
| 2009 | 89 | 31 | 120 | 0.74 | 105 | 15 | 120 | 0.88 |
| 2010 | 97 | 23 | 120 | 0.81 | 108 | 12 | 120 | 0.90 |
| 2011 | 94 | 26 | 120 | 0.78 | 108 | 12 | 120 | 0.90 |
| Total | 548 | 172 | 720 | 0.76 | 639 | 81 | 720 | 0.89 |

of agreement between the researcher and the experts and between the experts form a solid evidence as to the reliability of the analysis results.

FINDINGS

Findings concerning the first research question

The first research question tries to answer the

level of relevance between the questions asked in the Educational Sciences part of the last six years’ KPSS and teaching profession courses. Table 5 displays the results of analyses concerning this question.

As depicted in Table 5, the number of questions related with teaching profession varies across years; however, the number of questions regarding each course separately is similar between 2006 and 2011.

According to the results of analyses:

1. Between 2006-2011, the highest number of questions asked in the exams regards Educational Psychology course. 241 (34%) of 720 questions are within the scope of this course.
2. Right after Educational Psychology, Teaching Principles and Methods stands as the second course with the highest number of questions in KPSS throughout the last six years. Of the total

Table 4. Distribution of the two expert's opinions concerning the questions in the educational sciences part of public personnel selection exam across the years.

| Distribution of questions across years | Before agreement | | | | After agreement | | | |
|--|------------------|----------------|------------------------------------|--|-----------------|----------------|------------------------------------|--|
| | Consensus (C) | Dissidence (D) | The no of questions responded back | Miles and Huberman's reliability coefficient (C/C+D) | Consensus (C) | Dissidence (D) | The no of questions responded back | Miles and Huberman's reliability coefficient (C/C+D) |
| 2006 | 90 | 30 | 120 | 0.75 | 97 | 23 | 120 | 0.81 |
| 2007 | 71 | 49 | 120 | 0.59 | 93 | 27 | 120 | 0.78 |
| 2008 | 62 | 58 | 120 | 0.52 | 90 | 30 | 120 | 0.75 |
| 2009 | 67 | 53 | 120 | 0.56 | 87 | 33 | 120 | 0.73 |
| 2010 | 77 | 43 | 120 | 0.64 | 97 | 23 | 120 | 0.81 |
| 2011 | 62 | 58 | 120 | 0.52 | 91 | 29 | 120 | 0.76 |
| Total | 429 | 291 | 720 | 0.60 | 555 | 165 | 720 | 0.77 |

Table 5. Distribution of questions regarding teaching profession courses in teacher training programs across years.

| Teaching profession courses | 2006 | | 2007 | | 2008 | | 2009 | | 2010 | | 2011 | | Total | |
|--|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|-------|-----|
| | f | % | f | % | f | % | f | % | f | % | f | % | f | % |
| Educational psychology | 37 | 31 | 42 | 35 | 41 | 34 | 35 | 29 | 43 | 36 | 43 | 36 | 241 | 34 |
| Teaching principles and methods | 43 | 36 | 33 | 27 | 35 | 29 | 42 | 35 | 37 | 31 | 39 | 32 | 229 | 32 |
| Measurement and evaluation | 18 | 15 | 19 | 16 | 18 | 15 | 20 | 17 | 19 | 16 | 23 | 19 | 117 | 16 |
| Guidance | 19 | 16 | 23 | 19 | 19 | 16 | 22 | 18 | 20 | 16 | 13 | 11 | 116 | 16 |
| Classroom management | 3 | 2 | 2 | 2 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1 |
| Teaching technologies and material design | 0 | 0 | 1 | 1 | 2 | 2 | 1 | 1 | 0 | 0 | 2 | 2 | 6 | 1 |
| Turkish education history | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | - |
| Turkish education system and school management | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | - |
| Total | 120 | 100 | 120 | 100 | 120 | 100 | 120 | 100 | 120 | 100 | 120 | 100 | 720 | 100 |

720 questions used in the KPSS between 2006-2011, 229 questions are related with this course.

3. Following Educational Psychology and Teaching Principles and Methods, Assessment and Evaluation in Education (117—16%) course and Guidance (116—16%) course have the highest number of questions.

4. Analyses have indicated that 98% of the questions in the Educational Sciences part of KPSS are within the scopes of Educational Psychology,

Teaching Principles and Methods, Assessment and Evaluation in Education, and Guidance courses. Among teaching profession courses, Teaching Technologies and Material Design and Classroom Management have only a 2% share of the total questions with 6 and 8 questions respectively.

5. In addition to these courses, only 1 of the total 720 questions asked between 2006 and 2011 is related with Turkish Education System and School

Management, and only 2 are within the scope of Turkish Education History.

In conclusion, to test professional knowledge of teacher candidates and bear the sole power with respect to the appointment of teacher candidates, KPSS Educational Sciences exam is expected to have a wide range of questions exemplifying all the teaching profession courses studied during the undergraduate years. Yet, the questions asked in

Table 6. Distribution of questions in educational sciences part of KPSS Administered between 2006 and 2011 across Revised Bloom's taxonomy of educational objectives.

| Cognitive processes knowledge domains | Remember | Understand | Apply | Analyse | Evaluate | Create | Total |
|--|-----------------|-------------------|--------------|----------------|-----------------|---------------|--------------|
| Factual knowledge | 3 | 2 | 0 | 0 | 0 | 0 | 5 |
| Conceptual knowledge | 119 | 375 | 11 | 102 | 0 | 0 | 607 |
| Procedural knowledge | 0 | 33 | 27 | 48 | 0 | 0 | 108 |
| Metacognitive knowledge | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 122 | 410 | 38 | 150 | 0 | 0 | 720 |

KPSS Educational Sciences exam between 2006 and 2011 have been determined to focus on mainly four courses; which indicates a weak content validity.

Findings concerning the second research question

The second research question investigates what levels of cognition and knowledge, as outlined in revised Bloom's taxonomy of educational objectives, are tested by the questions in Educational Sciences part of Public Personnel Selection Exam administered within the last six years (2006-2011). Relevant findings have been discussed first on an overall basis, and later, detailed results for each course are displayed in Tables.

Cognition and knowledge domains were interpreted separately and the following results were obtained Table 6:

As for cognitive domain:

1. "Understand" has been determined to have received the highest number of questions asked within the last six years. Of all the questions (720), 410 (57%) have been noted to be at this level.
2. The second level that has received the highest number of questions between 2006-2011 is "Analysis", with 150 questions (27%).
3. The next level with the highest number of questions is "Remember", with 122 questions (17%) followed by "Apply", with 38 questions (5%).
4. There have been no questions related with "Evaluate" and "Create" levels.

As for knowledge domain:

1. "Conceptual Knowledge" has been identified to have received the highest number of questions asked between 2006 and 2011. Among 720 questions tested between these years, 607(84%) have been noted to relate conceptual knowledge.
2. "Procedural Knowledge" has been recorded as the second one with the highest number of questions (108 questions—15%).
3. The remaining 5 questions have been determined to

be related with "Factual Knowledge".

4. No question regarding "Metacognitive Knowledge" has been identified among those asked within the last six years.

The following are the results obtained after crossing the data on cognitive and knowledge domains matrix:

1. Within the last six years (2006-2011), "Understand-Conceptual Knowledge" has received the highest number of questions (320—52%).
2. The second most frequently tested levels of the taxonomy are "Remember-Conceptual Knowledge" (119—17%), which are at the bottom of the taxonomy.
3. "Analysis-Conceptual Knowledge" has been identified with the third highest number of questions asked between 2006-2011 (102—14%).
4. The rest of the questions determined to be related with the levels in the taxonomy is as follows: "Analysis-Procedural Knowledge" (48—7%); "Understand-Procedural Knowledge" (33—5%); "Apply-Procedural Knowledge" (27—4%); "Apply-Conceptual Knowledge" (11—2%); "Remember-Factual Knowledge" (3); and "Understand-Factual Knowledge" (2). It wasn't possible to assign a percentage to the last two levels due to the small number of questions related with them.

Detailed results of analyses conducted on cognitive and knowledge domains of teaching profession courses across the last six years are presented in the tables.

A significant amount of questions within the scope of Educational Psychology, which received the highest number of questions (241), has been noted to be related with "Understand" (65%) level of cognitive domain and "Conceptual Knowledge" (95%) level of knowledge domain. When the levels of questions were crossed on cognitive processes and knowledge domain matrix, it was found that again a major proportion of the questions was related with "Understand-Conceptual Knowledge" (63%) (Table 7).

A considerable amount of questions tested within the scope of Teaching Principles and Methods course, which received 229 of the 720 questions asked within the last six years, has been determined to assess the "Understand" (59%) level of cognitive domain and the

Table 7. Distribution of exam questions related with educational psychology across revised Bloom's taxonomy of educational objectives.

| Educational Psychology (2006-2011) | | | | | | | |
|---------------------------------------|----------|------------|-------|---------|----------|--------|-------|
| Cognitive processes knowledge domains | Remember | Understand | Apply | Analyse | Evaluate | Create | Total |
| Factual Knowledge | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conceptual Knowledge | 46 | 151 | 6 | 27 | 0 | 0 | 230 |
| Procedural Knowledge | 0 | 5 | 3 | 3 | 0 | 0 | 11 |
| Metacognitive Knowledge | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 46 | 156 | 9 | 30 | 0 | 0 | 241 |

Table 8. Distribution of exam questions related with teaching principles and Methods across Revised Bloom's Taxonomy of Educational Objectives.

| Teaching Principles and Methods (2006-2011) | | | | | | | |
|---|----------|------------|-------|---------|----------|--------|-------|
| Cognitive processes knowledge domains | Remember | Understand | Apply | Analyse | Evaluate | Create | Total |
| Factual Knowledge | 3 | 2 | 0 | 0 | 0 | 0 | 5 |
| Conceptual Knowledge | 39 | 122 | 0 | 36 | 0 | 0 | 197 |
| Procedural Knowledge | 0 | 10 | 3 | 14 | 0 | 0 | 27 |
| Metacognitive Knowledge | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 42 | 134 | 3 | 50 | 0 | 0 | 229 |

Table 9. Distribution of exam questions related with measurement and evaluation in education across revised Bloom's taxonomy of educational objectives.

| Measurement and Evaluation Courses (2006-2011) | | | | | | | |
|--|----------|------------|-------|---------|----------|--------|-------|
| Cognitive processes knowledge domains | Remember | Understand | Apply | Analyse | Evaluate | Create | Total |
| Factual Knowledge | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conceptual Knowledge | 7 | 51 | 2 | 11 | 0 | 0 | 71 |
| Procedural Knowledge | 0 | 12 | 16 | 18 | 0 | 0 | 46 |
| Metacognitive Knowledge | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 7 | 63 | 18 | 29 | 0 | 0 | 117 |

Table 10. Distribution of exam questions related with guidance course across revised Bloom's taxonomy of educational objectives.

| Guidance (2006-2011) | | | | | | | |
|---------------------------------------|----------|------------|-------|---------|----------|--------|-------|
| Cognitive processes knowledge domains | Remember | Understand | Apply | Analyse | Evaluate | Create | Total |
| Factual Knowledge | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conceptual Knowledge | 26 | 41 | 2 | 25 | 0 | 0 | 93 |
| Procedural Knowledge | 0 | 5 | 4 | 13 | 0 | 0 | 22 |
| Metacognitive Knowledge | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 26 | 46 | 6 | 38 | 0 | 0 | 116 |

"Conceptual Knowledge" (86%) level of the knowledge domain. Upon crossing the levels of questions on

cognitive processes and knowledge domain matrix, a similar result was obtained; "Understand-Conceptual

Table 11. Distribution of exam questions related with classroom management across revised Bloom's taxonomy of educational objectives.

| Classroom management (2006-2011) | | | | | | | |
|--|----------|------------|-------|---------|----------|--------|-------|
| Cognitive processes knowledge domains | Remember | Understand | Apply | Analyse | Evaluate | Create | Total |
| Factual Knowledge | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conceptual Knowledge | 1 | 3 | 1 | 2 | 0 | 0 | 7 |
| Procedural Knowledge | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Metacognitive Knowledge | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 1 | 3 | 2 | 2 | 0 | 0 | 8 |

Knowledge" (53%) (Table 8). That the number of questions directed to "Analyze-Procedural Knowledge"—which is accepted as a higher level—within the scope of this course is higher than those under Educational Psychology is noteworthy. On the other hand, the questions testing "Apply-Procedural Knowledge" level within the scopes of both courses are very few. Although both courses have a strong practice/application dimension, it is remarkable to have determined that questions related with "Apply" level are not enough.

Being the third course (117) after "Educational Psychology" and "Teaching Principles and Methods" in terms of the number of questions asked in KPSS Educational Sciences Exam for the last six years, "Measurement and Evaluation in Education" is one of the courses in which analysis skills need to be applied more often. However, analyses have indicated that only 29 (25%) of the questions asked within the last six years are at "Analyze" level. Similar to other courses, more than half of the questions in this course are related with "Understand" (54%) level. Concerning knowledge domain, "Conceptual Knowledge" has received the highest number (71) of questions. When levels of questions were crossed on cognitive processes and knowledge domain matrix, "Understand-Conceptual Knowledge" has been determined to be assessed the most (44%). On the contrary, the questions within the scope of "Measurement and Evaluation in Education" are directed more to "Apply-Procedural Knowledge" than the previous two courses, which show that the questions regarding this course tested a higher level of cognitive skills and knowledge (Table 9).

The percentages of the 116 questions grouped under Guidance course across different levels are as follows: "Understand" 40%, "Analyze" 33%, "Remember" 22%, and "Apply" 5%. These results point that 62% of the questions test the lowest level of cognitive processes. Nevertheless, results show that guidance course differs from the other courses in terms of the rate of "Analyze" questions. Though the total number of questions is lower than those of other courses, the number of questions testing "Analyze" level is much higher than those of others. As for the knowledge domain, 81 and 19% of the questions have been identified to test "Conceptual

Knowledge" and "Procedural Knowledge" respectively. Upon crossing the levels of questions on cognitive processes and knowledge domain matrix, "Understand-Conceptual Knowledge" has been determined to have the highest percentage (35%) of questions (Table 10).

According to the analyses, among the 8 questions asked within the scope of Classroom Management during the last 6 years, the "Understand" level has received the highest percentage (38%). As for knowledge domain, "Conceptual Knowledge" (87%) has been noted as the most frequently tested level. Results of crossing the levels of questions on cognitive processes and knowledge domain matrix have shown that "Understand-Conceptual Knowledge" has the highest percentage (38%) of the questions (Table 11).

Analyses showed that among the 6 questions asked within the scope of Teaching Technologies and Material Design during the last 6 years the "Understand" level has received the highest percentage (83%). As for knowledge domain, "Conceptual Knowledge" (83%) has been noted as the most frequently tested level. Crossing the levels of questions on cognitive processes and knowledge domain matrix have revealed that "Understand-Conceptual Knowledge" has the highest percentage (67%) of the questions.

Analyses have shown that the 2 questions asked within the scope of Turkish Education History during the last 6 years are at "Understand" and "Conceptual Knowledge" level.

The only question asked within the scope of "Turkish Education System and School Management" during the last 6 years is at the "Understand" and "Conceptual Knowledge" level (Tables 12, 13 and 14).

DISCUSSION AND CONCLUSION

In order to analyze KPSS Educational Sciences Exam in terms of its relevance within teaching profession courses and Revised Bloom's taxonomy of educational objectives, this study has indicated that KPSS exam does not efficiently cover the content of teaching profession courses studied within teacher training programs.

Data analyses have revealed that 65% of the questions tested during the last 6 years regard the contents of

Table 12. Distribution of exam questions related with teaching technologies and material design across revised Bloom's taxonomy of educational objectives.

| Teaching technologies and material design (2006-2011) | | | | | | | |
|---|----------|------------|-------|---------|----------|--------|-------|
| Cognitive processes knowledge domains | Remember | Understand | Apply | Analyse | Evaluate | Create | Total |
| Factual Knowledge | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conceptual Knowledge | 0 | 4 | 0 | 1 | 0 | 0 | 5 |
| Procedural Knowledge | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Metacognitive Knowledge | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 5 | 0 | 1 | 0 | 0 | 6 |

Table 13. Distribution of exam questions related with turkish education history across revised Bloom's taxonomy of educational objectives.

| Turkish Education History (2006-2011) | | | | | | | |
|--|----------|------------|-------|---------|----------|--------|-------|
| Cognitive processes knowledge domains | Remember | Understand | Apply | Analyse | Evaluate | Create | Total |
| Factual Knowledge | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conceptual Knowledge | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| Procedural Knowledge | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Metacognitive Knowledge | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 2 | 0 | 0 | 0 | 0 | 2 |

Table 14. Distribution of exam questions related with turkish education system and school management across revised Bloom's taxonomy of educational objectives.

| Turkish Education System and School Management (2006-2011) | | | | | | | |
|--|----------|------------|-------|---------|----------|--------|-------|
| Cognitive processes knowledge domains | Remember | Understand | Apply | Analyse | Evaluate | Create | Total |
| Factual Knowledge | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conceptual Knowledge | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Procedural Knowledge | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Metacognitive Knowledge | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1 | 0 | 0 | 0 | 0 | 1 |

“Educational Psychology” and “Teaching Principles and Methods” courses. On the other hand, some of the significant courses with respect to professional teaching skills such as “Classroom Management”, “Teaching Technologies and Material Design”, “Turkish Education History”, and “Turkish Education System and School Management” are tested by only 2% of the questions. Under the light of these findings, it is possible to conclude that the questions asked in KPSS do not include all the courses; therefore, KPSS has a weak content validity in terms of teaching profession courses.

Similarly, analyses of exam questions with respect to cognitive processes and knowledge domain have pointed out that the majority of questions are related with the lowest levels of these two dimensions.

Results have shown that all the exam questions tested

during the last six years can reach up to four levels of cognitive processes and three levels of knowledge domain. As for cognitive processes, 74% of the questions have been identified to target only the first two levels, which are “Remember” and “Understand”. Concerning the knowledge domain, 85% of questions have been determined to test knowledge related with the lowest two levels, which are “Factual Knowledge” and “Conceptual Knowledge”. These findings prove that evaluations regarding teacher qualifications cannot test higher levels in either cognitive processes or knowledge domain; which clearly underlines the weak content validity of the evaluation process.

In conclusion, the current examination system employed to appoint teachers has been found invalid in terms of including all teaching profession courses and determining

cognitive levels of teacher candidates with respect to these courses. Based on the findings of the present study, the followings are suggested as some precautions to be taken in order to increase the validity of the exam:

1. Given the fact that KPSS exam administered upon graduation from a university can assess candidates only at cognitive levels and that it has a poor validity, discontinuing the exam may be an option. Instead, student quotas for teacher training programs can be rearranged in accordance with the present needs of the country; and selection of students for these programs may turn into a detailed process where candidates are assessed in terms of not only cognitive characteristics but also affective and dynamic features as well.
2. If KPSS continues to prevail for the recruitment of teachers, then it should be reformed so that higher levels of both cognitive processes and knowledge domain can be tested. In this sense, the number of questions related with "Apply" and "Analyze" levels of cognitive processes and "Procedural Knowledge" of knowledge domain should be increased.
3. It is crucial to determine not only the cognitive skills but also the affective features of teacher candidates such as interest and attitudes towards teaching profession, and self-perception. Since KPSS assesses only the cognitive characteristics of teacher candidates, it is not possible to evaluate them in terms of their affective characteristics concerning teaching profession. Thus, it may be wise to determine the affective features of teacher candidates either before or after the exam and to use this information during appointment.
4. Prepared to assess and evaluate teaching profession knowledge, the questions in the Educational Sciences part of KPSS can be developed to include all teaching profession courses studied in teacher training programs.

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