A Comparative Analysis of Elementary Mathematics Teachers' Examination Questions And SBS Mathematics Questions According To Bloom's Taxonomy

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Abstract

This study has been planned for the purpose of comparative analysis of examination questions of elementary mathematics teachers and mathematics questions of Placement Examination (SBS) for 6th, 7th and 8th grades in 2010 in terms of Bloom's Taxonomy. Document analysis method was used in this study. Accordingly, 715 examination questions mathematics teachers working in 12 different primary schools asked in 2009-2010 academic year and 54 mathematics questions for 6th, 7th and 8th grades in SBS in 2010 were examined and classified by a committee including 3 mathematics educators. As a result, it was seen that 6th, 7th and 8th grade examination questions and SBS questions were generally concentrated on lower cognitive levels (Knowledge, Understanding and Application).

Keywords: Bloom's Taxonomy, Exam Questions, Mathematics Education.

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Extended Summary

This study aims to investigate the examination questions of elementary school mathematics teachers in 2009-2010 academic years and Placement Examination which was done for 6th, 7th and 8th grade students in 2011 in terms of determining their scientific level according to Bloom Taxonomy.

Document analysis method (Karasar, 2003) which enables to examine the features of a document or a text by quantifying these features with a content analysis has been used in this research. For this purposes, 715 exam questions which mathematics teachers addressed to students in 2009-2010 academic years were collected and these teachers work at 12 different elementary schools which are located in Erzurum city centre and determined by random sampling method. Additionally, 2010 placement examination questions were examined. The researchers classified all these questions according to the levels of Bloom Taxonomy. When different ideas were claimed about a certain question, researchers discussed and decided on the final situations of the classifications. The obtained data were analyzed with SPSS and visualized with the help of percentage and frequency tables.

It can be seen for the 6^{th} grade exam questions that % 66,6 of the questions is at knowledge, % 18,2 of them is at comprehension and % 15,2 is at application level. After examining 16 mathematics questions for 6^{th} grade students which were asked in 2010 placement examination, it is observed that 13 of the questions are lower cognitive and only 3 of them are metacognitive. % 6,25 of the lower cognitive level questions is at knowledge, % 31,25 of them is at comprehension and % 43,75 are at application level. While %12,5 of the metacognitive level questions belongs to analysis, % 6,25 of them belongs to synthesis level.

217 of 253 exam questions which mathematics teachers use for 7^{th} grade students are at lower cognitive and 36 of them are at metacognitive level. % 27,3 of lower cognitive level questions is at knowledge, % 19,4 of them is at comprehension and % 39,1 of them is at application level. All of metacognitive questions belong to analysis level. After examining 18 mathematics questions for 7^{th} grade students which were asked in placement examination, it is observed that 12 of the questions are lower cognitive and 6 of them are metacognitive level. % 5,6 of the lower cognitive level questions is at knowledge, % 27,8 of them is at comprehension and % 33,4 at application level. While % 16,6 of the metacognitive level questions belongs to analysis, % 16, 6 of them is at synthesis level.

231 exam questions which mathematics teachers use for 8^{th} grade students consist of 205 lower cognitive and 26 metacognitive level questions. % 13,4 of lower cognitive level questions is at knowledge, % 55,4 of them is at comprehension and % 19,9 of them is at application level. % 7,8 of metacognitive questions are at analysis and % 3,5 of them is at synthesis level. After examining 20 mathematics questions for 8^{th} grade students which were asked in placement examination, it is observed that 13 of the questions are lower cognitive and 7 of them are metacognitive level. % 10 of the lower cognitive level questions is at knowledge, %

20 of them is at comprehension and % 35 is at application level. While % 15 of the metacognitive level questions belongs to analysis, % 20 of them is at synthesis level.

It is seen that elementary school mathematics teachers generally use knowledge level questions for 6th grade students, application level questions for 7th grade students and application level questions for 8th grade questions. Placement Examination consist of the questions are generally at application level. According to these data, a correlation is observed between teachers' exam questions and placement examination questions asked for 7th grade students.

The obtained data show that the lower cognitive level questions both the exam questions which mathematics teachers ask and asked in the central placement examinations are in the center of interest. Additionally, it was determined that neither teachers' exam questions nor placement examination mathematics questions which belong to metacognitive level are at evaluation level, they are only at analysis and synthesis level.

The analysis of the mathematics questions which were asked in elementary school exams and central placement examinations show that lower cognitive level questions were used mostly in both exams. Similar studies indicate that % 80 of the questions which were asked to evaluate students were at lower cognitive level questions (Crooks, 1998, Barker & Hapkiewicz 2001). This study's results show a high correlation with the results of most studies (Azar, 2005; Çepni, 2003; Kemhacıoğlu, 2001; Çepni, Keleş & Ayvacı, 1999; Güler, Özek & Yaprak, 2004; Mutlu, Uşak & Aydoğdu, 2003; Karamustafaoğlu, Sevim, Karamustafaoğlu & Çepni, 2003; Özmen & Karamustafaoğlu, 2006; Crooks, 1998; Köğce, 2005; Köğce & Baki, 2009; Dindar & Demir, 2006; Özcan & Akcan, 2010; Karaman, 2005; Özcan & Oluk, 2007) about different courses and student levels in literature.

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