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SP - (15893) - EXAMINING HIGH STAKES PHYSICS AND CHEMISTRY EXAMINATIONS USING BLOOM'S REVISED TAXONOMY

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Short Abstract

EXAMINING HIGH STAKES PHYSICS AND CHEMISTRY EXAMINATIONS USING BLOOM'S REVISED TAXONOMY

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A common feature of many educational systems are high stakes examinations which mark the end of upper secondary education. Based on specific syllabi these examinations assess the knowledge and cognitive skills of students. The challenge for these examinations is to pose questions which not only assess students' content knowledge but also assess student's cognitive skills. This study compares the cognitive skills demand of the high stake written physics and chemistry examinations of six countries (Ireland, the Netherlands, New South Wales, South Africa, Scotland and England) using a defined list of action-verbs associated with Bloom' revised taxonomy. The examination year of 2016 was selected as the syllabi and examination system of these six countries had not changed in the three previous years and there was strong correlation between the topics under examination. All question-parts from these examinations were coded for the six cognitive levels using a defined list of action verbs. In physics examinations, the cognitive level 'apply' was coded most frequently, ranging from 16% (New South Wales) to 68% (Scotland), while in chemistry 'apply' coded from 19% (Ireland) to 48% (England). Only three of the examinations had question-parts which coded for the cognitive level 'evaluate', ranging from 3% to 8% (in physics) while in chemistry just two of the examinations coded for this cognitive level, i.e. Netherland (2%) and Scotland (1%). No question parts for either subjects coded for the cognitive level'create'. This analysis using Blooom's revised taxonomy highlights the differences in the cognitive demand of physical sciences examinations in these countries.

Keywords: Cognitive skills, Physics Examination, Chemistry Examination, Blooms Revised Taxonomy