STANDARD OF FINAL YEAR STUDENT TEACHERS' MAIN SUMMATIVE ASSESSMENT PAPERS AT A UNIVERSITY OF TECHNOLOGY

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Abstract

There are specific standards that are recommended for setting main summative assessment papers in accordance with Bloom's taxonomy of the cognitive domain. For final year student teachers, the recommendation is that eighty percent of the question paper must be pitched at Bloom taxonomy's upper cognitive levels, which are analyzing, evaluating, and creating. Only twenty percent of the question paper must be pitched at Bloom's lower cognitive levels, namely, remembering, understanding, and applying. This distribution is designed to assess higher order thinking and thus instill, promote, and reinforce independent and critical thinking, as well as problem-solving skills in final year students from the faculty of humanities as the final measure to prepare them for the envisaged world of work. To determine whether examiners comply with this recommendation, I analyzed ten question papers from the faculty of humanities through document analysis. The study found that some examiners pitch their question papers at Bloom's lower cognitive levels. Some spread the questions almost evenly throughout the paper, while only a few distribute the questions close to the required recommendations. Of concern was that some examiners inappropriately used action verbs belonging to Bloom's higher levels. This was evident through the posed questions and what the memorandum or marking guide revealed. It is imperative that questions are pitched at the recommended level, most significantly for final year student teachers. It is recommended that examiners be re-trained in setting question papers in line with the revised Bloom's taxonomy protocol. It is recommended also, that experts in assessment and Bloom's taxonomy be brought in to conduct workshops on the appropriate use of appropriate action verbs.

Keywords: Assessment, Bloom's taxonomy, lower order thinking, problem solving skills, higher order thinking.

1. Introduction

Fourth and final year students are at a very critical stage of their journey to becoming qualified school teachers. Their summative assessment must therefore be of a very high standard that prepares them for the eventual world of work. This essentially means that the quality of their summative assessment papers must be very good, i.e., the questions should mostly be pitched at Bloom taxonomy's high cognitive levels, namely, analyzing, evaluating, and creating (Anderson and Krathwohl, 2001).

At the Central University of Technology (CUT), summative assessments for fourth year Bachelor of Education (B-Ed) students, are conducted twice per annum; in the periods between May and June, as well as November and December. The Central University of Technology (CUT), in its assessment manual, prescribes that fourth-year summative assessment papers be pitched eighty percent at Bloom's high cognitive levels, and only twenty percent at Bloom's lover cognitive levels (Hay Et.al., 2004).

Senior management at the CUT has in recent times reiterated the importance of setting summative assessment papers at the correct levels in terms of Bloom's taxonomy of the cognitive domain. For this reason, this study sought to investigate whether examiners, when setting summative assessment papers, comply with the recommendations as outlined in the CUT's assessment manual.

2. Bloom's taxonomy of the cognitive domain

Granello (2001) assets that Bloom's taxonomy is one of the first models created to provide teachers with a systematic classification of cognitive operations. Bloom's taxonomy of the cognitive domain is a six-level approach to the intellectual expectations of the classroom and classroom assessment (Booker, 2007).

This taxonomy indicates six hierarchical levels of cognitive complexity that are ordered from the least to the most complex level as follows: knowledge, comprehension, application, analysis, synthesis, and evaluation (Granello 2001). A revision of these levels has been conducted to suit the demands of the modern-day assessment needs.

3. Revised Bloom's taxonomy

Bloom's taxonomy was revised and slightly modified to suit the needs of the constantly changing dynamics of teaching and learning around assessment, as follows:

The lowest level was changed from **knowledge** to **remembering**, **comprehension** was changed to **understanding**, **application** to **applying**, and **analysis** to **analyzing**. **Evaluation** was moved a level down and renamed **evaluating**, and finally **synthesis** was moved to the top of the structure and changed to **creating** (Wilson, 2006). Below is a diagrammatical representation of the revised Bloom's taxonomy adopted from (Schultz, 2005).

Figure 1. Revised Bloom's taxonomy.
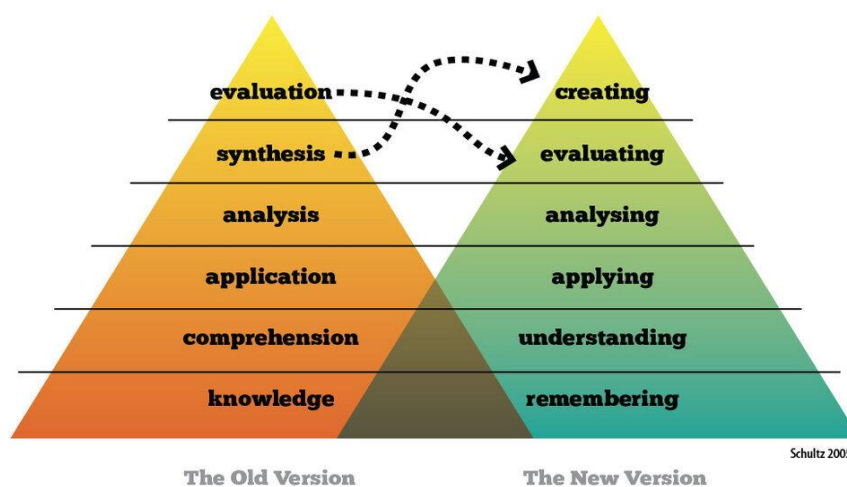
In this structure, the lower levels, remembering, understanding, and applying, are representative of lower-order thinking and according to the CUT's assessment recommendations, must constitute twenty percent of the B-Ed fourth year summative assessment paper. The upper levels, analysing, evaluating, and creating are representative of higher-order thinking, which is where eighty percent of the questions in a fourth-year B-Ed summative assessment paper should be pitched.

4. Lower order thinking (LOT)

The recall or remembering of facts as well as the application of knowledge to situations and contexts that are recognizable to learners or students, is what defines lower order thinking (Thompson, 2008). This alludes to learners, in their attempt to answer questions, reproducing the memorized concepts and mentioning facts word for word. This kind of thinking cannot be applied in unfamiliar situations or to solve unrecognizable problems.

Qasrawi and Abdelrahman (2020) opine that modern day education must take students far beyond memorizing and reproducing the content but bring them to a place where they are able to solve unfamiliar problems using the knowledge and insight that they have gained. Abosalem (2016) reiterates the notion that the assessment of lower order thinking entails asking learners questions that prompts simple applications and routine steps to arrive at the answer.

According to Khan and Inamullah (2011), lower order questions in a question paper seem to always take the shape of closed questions for which the response or answer is already known. A typical example could be, "who is the president of South Africa?". Such a question does not require learners to think deeply about the answer, but to go into their memory banks to try and recall the answer. Such questions do not require students to think critically as they do not pose a problem to be solved.

5. Higher order thinking (HOT)

Assessing higher order thinking involves posing questions that allow students to express their opinions and explore their experiences on the content in manner that demonstrates understanding of the content (Stayanchi, 2017). Abosalem (2016) asserts that higher order questions request students to interpret, analyze, manipulate information as well as substantiate facts. All of these action verbs prohibit students from following routine steps to get to the answer as they must think deeply and critically to provide answers that convince the teacher that they have a deeper understanding of the content.

Thompson (2008) is of the perception that assessing for higher order thinking in a summative assessment paper insinuates that the questions may have information that is similar to what students dealt with during teaching and learning but present an element of newness and unfamiliarity for them. Sagala and Andriani (2019) classify HOT into four main categories, namely, problem-solving, critical thinking, creative thinking and decision making. To assess students' competence in applying these categories, teachers must challenge students tackle questions that are contextual but unfamiliar and not requiring routing steps to answer.

6. Methodology

The aim of this study was to investigate whether examiners for B-Ed final year students comply with the CUTs stipulations (80% higher order thinking and 20% lower order thinking) when they compile summative assessment papers. To carry out this investigation I analyzed ten B-Ed fourth year summative assessment papers set by ten lecturers at the Central University of Technology.

A qualitative intrinsic case study research design used in this study was intended to address the aim of this study. Suresh (2015: 1) reports that a case study involves a thorough observation of any social phenomenon, be it an individual, a family unit, an ethnic group or an institution. This study is a case study conducted at the University of Technology, which is an institution of higher education. A case study is a research approach that makes the investigation of a phenomenon within its context easy, using different sources of data.

7. Data collection

Document study was used in this study to investigate the compliance of examiners to Bloom's taxonomy. Karppinen and Moe (2012) describe documents as sources of information that can divulge the intentions and interests of their authors, and also reveal facts about the processes they describe.

There are documents in companies and institutions, such as minutes of meetings, agendas and newspapers, which are never compiled for the purpose of research (Strydom and Delport 2005: 315). As soon as these documents are collected and evaluated or analysed for the purpose of research, then the method of document study comes to the fore. The main data gathering strategy that the researcher chose was the collection of documents, specifically summative assessment instruments in the form of examination papers.

In this study, the documents in question are ten summative assessment papers, and the information they are meant to provide is the extent to which they assess higher order thinking and lower order thinking. I collected ten 2022 summative assessment papers from ten lecturers in the faculty of humanities at the CUT for analysis and named the papers A, B, C, D, E, F, G, H, I and J.

8. Findings

After the analysis of all ten summative assessment papers was completed, the following results were obtained:

It was discovered that all ten question papers addressed the lowest cognitive level (remembering) and none addressed the highest level (creating). All ten question papers required students to mention, name, state or outline, which are, according to Bloom's taxonomy, used to test students' ability to recall information. A typical example was question 2.1 of paper B in which students were required to "Mention two other factors on which a force on a current-carrying conductor depends".

Table 1. Paper A: Five cognitive levels addressed.

Paper	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
	52%	30%	7%	7%	4%	0%

Paper A addressed remembering, understanding, applying, analyzing and evaluating were addressed. The highest level, namely, creating, was not addressed in this paper.

Table 2 is a summary of the summative assessment papers that had the highest percentage of questions assessing lower order thinking levels, namely remembering, understanding and applying.

Table 2. Examination papers with highest weights in the lower band.

LOWER BAND			
PAPER	REMEMBERING	UNDERSTANDING	APPLYING
A	52%		
B			47%
C		70%	
D			49%
G		63%	
H		74%	
J			79%

Seven out ten papers that were analyzed, as shown in Table 2 had most of the questions assessing lower order thinking levels.

Table 3 illustrates the weights of questions in terms of percentages across the examination papers.

Table 3. Distribution of questions in terms of percentage across the lower and higher bands.

PAPER	LOWER ORDER THINKING BAND (%)	IN HIGHER ORDER THINKING BAND (%)
A	100%	0%
B	84%	16%
C	82%	18%
D	90%	10%
E	59%	41%
F	41%	59%
G	80%	20%
H	82%	18%
I	28%	72%
J	100%	0%

Out of the ten papers that were analyzed, only one paper (I) had over seventy percent of the whole paper pitched at one of the higher levels, namely analyzing. Paper F came close with 59% in the higher band and 41% in the lower band. Papers A and J were the two papers that were pitched only in the lower band in that paper A addressed remembering and understanding while paper J addressed all three lower levels. None of the higher levels were addressed by papers A and J.

The overall average percentage of questions pitched at Bloom's lower cognitive levels, assessing lower order thinking for all ten papers was 24.9%, while that of the higher levels was only 8.5%.

9. Discussion of results

This study found that examiners do not take Bloom's taxonomy into account when they compile summative assessment papers for B-Ed fourth year students. Evidence shows that most examiners tend to ask lower order thinking questions that outweigh higher order thinking questions. This has the challenge that students are not equipped to think critically and independently, neither are they able to solve unfamiliar and unprepared problems.

The study highlighted the need for examiners to constantly and consistently consult and comply with the recommendations of the CUT regarding the distribution of questions when compiling summative assessment papers.

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