

Analysis and Comparison of MBSE and CBSE Social Science Examination Question Papers based on Revised Bloom's Taxonomy

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Abstract

This study analyzes Class X Social Science examination question papers from the Mizoram Board of School Education (MBSE) and the Central Board of Secondary Education (CBSE) over seven academic years (2018–2024) using Revised Bloom's Taxonomy. The research focuses on the cognitive process and knowledge dimensions, as well as the distribution of questions across lower-order, middle-order, and higher-order thinking skills. Findings reveal that MBSE predominantly emphasizes lower-order cognitive tasks, while CBSE focuses more on higher-order skills such as analysis and evaluation. Similarly, MBSE's questions target factual knowledge, whereas CBSE emphasizes conceptual and procedural knowledge. Both boards lack questions assessing metacognitive knowledge. Recommendations include increasing the inclusion of higher-order thinking questions and providing professional development for educators to align assessments with the framework provided by the Revised Bloom's Taxonomy, to foster and developed the different cognitive skills from LOTS to HOTS of the students.

Keywords: Analysis, MBSE, CBSE, Social Science, Examination Question papers, Revised Bloom's Taxonomy.

1. Introduction

Educational assessment is crucial in shaping the quality of students' learning experiences, guiding teachers' instructional practices, and evaluating curricula, school quality, and overall system performance. Assessments serve as tools for both formative improvement in teaching and learning and summative accountability for evaluating the performance of teachers, schools, and administrative bodies (Brown, 2022). Based on their application and the use of their results, assessments are categorized into formative and summative types. Formative assessment, often referred to as "assessment for learning," is integrated into the teaching and learning process to provide immediate feedback, facilitate necessary adjustments, and monitor student progress. This type of assessment is typically conducted in classroom settings. In contrast, summative assessment, or "assessment of learning," is conducted at the conclusion of a course or program through standardized exams and tests to evaluate student achievement and the effectiveness of the course (Sekyi, 2016).

Among various methods of educational assessment, question paper-based assessment is the most prevalent. This method involves designing a question paper to evaluate a student's ability to demonstrate acquired knowledge and understanding (Saha, 2021). The "quality" of a question paper is paramount in

achieving the assessment's objectives. Key qualities of a question paper differ based on educational levels but generally include the relevance of questions, comprehensive coverage in relation to the syllabus, accuracy and clarity of the questions, appropriate difficulty level, and answerability within the allocated time (Saha, 2021).

Examinations are a fundamental component of the educational system and significantly impact all aspects of the teaching-learning process. The National Curriculum Framework (NCF, 2005) highlights the importance of quality examination papers and advocates for a shift from rote memorization to learning that promotes the application of knowledge in real-world scenario. It further highlights the necessity for examination questions to assess students' analytical and evaluative skills. This includes incorporating questions that extend beyond textbook knowledge and include questions that stimulates the higher-order thinking skills (HOTS) of the students (Kaur, 2018).

Considering these factors, the investigator is curious about the present standards of which we assessed our students and aims to analyze the quality of questions in the HSLC examination papers from both the Mizoram Board of School Education (MBSE) and the Central Board of Secondary Education (CBSE). The study focuses on identifying the cognitive and knowledge levels of these questions as outlined in the framework of the Revised Bloom's Taxonomy. The outcomes of this research are anticipated to offer significant insights into the current standards of educational assessment being implemented.

2. Review of related literature

Various literature regarding the analysis of questions were taken into consideration with majority of the related studies evidently shows the predominant occurrence of lower cognitive and knowledge level questions.

Iqbal et al., (2019) also found out that, upon analyzing physics question papers (2014-18) developed by the Board of Intermediate and Secondary Education Rawalpindi, 57% of the questions were knowledge level, 18% were comprehension, 10% were application, 8% were analysis, 4% were synthesis and another 4% of the marks allotted were the cognitive dimension of evaluation. The findings reveled the imbalance between the lower cognitive level and higher cognitive level in the question papers assessed. The researchers suggested a more inclusion of higher level cognitive domains especially synthesize and evaluation in the Physics question papers in the near future.

Fayyaz et al., (2019) examines the question papers of M.A English at Punjab University based on the cognitive level of the Bloom's Taxonomy. Triangulation method was employed to ensure the reliability and validity of the study. The study revealed that 3.72% of questions were knowledge level, 83.72% were comprehension, 10.23% were application, 10.23% were analysis, 1.39% were evaluation level while there were no questions pertained to synthesis level. Based on the findings, the researcher's concluded that all examiners focused greatly on the lower order thinking skill questions rather than higher order thinking skill questions.

Thote & Gowri (2020) analyze grade 11 chemistry end term examination question papers of the academic year 2018-19 based on the Revised Bloom's Taxonomy. Content analysis and qualitative methodology was used to analyze the question papers and categorize them into three thinking skills – lower, middle, and higher order thinking skills. The researcher also tests the reliability of the study using The Cohen's Kappa and the kappa value were 0.802 for the cognitive process classification and 0.986 for the knowledge process classification, which is considered as having a high reliability. The findings revealed that out of all the 384 questions analyzed, 45% of the questions were higher order thinking skill type questions, 41%

were middle order thinking tasks, while only 14% of them were lower order thinking skills. The researchers conclude that the level of grade 11 chemistry examination question papers were well suited for assessing the student's higher order thinking skills.

Mahroof & Saeed (2021) analyze computer science question papers based on Bloom's Taxonomy. The sample of the study comprises of question papers developed by Board of Intermediate and Secondary Education for the year of 2015 and 2016, and the main tool for analysis was Conquest software. The findings revealed that majority of the questions were focusing on assessing the student's knowledge comprehension, and ignoring the assessment of the students ability to analyze, synthesize and evaluate. The researchers concluded that, based on Bloom's Taxonomy, the question papers under study were not good enough and suggested a training for the assessment committee who developed the test items.

3. Research Method

The study employed a mixed methods research design adopting a combination of qualitative and quantitative methods for collection and analysis of data. This study covers all the Class X Social Science Board Examination Question Papers of MBSE and CBSE over a span of seven consecutive years, i.e., 2018-2024. An analytical tool based on Revised Bloom's Taxonomy, developed by the researcher is used for the purpose of analyzing the question papers. This tool includes examples, keywords, and action verbs associated with different levels of cognitive and knowledge dimensions for the purpose of analyzing the question papers. The Revised Bloom's Taxonomy Analytical Tool created by the researcher was validated by experts in the School of Education, Mizoram University, and Institute of Advanced Studies in Education (IASE), Mizoram.

4. Results and Discussion

It is evident from table 1. that from the year 2018-2024, there were notable differences in the cognitive level distribution of Social Science examination questions between MBSE and CBSE. For questions at the "Remember" level, MBSE had a higher percentage, with 63.82% of questions, compared to 38.27% for CBSE. In contrast, questions at the "Understand" level were more frequent in CBSE, constituting 42.6% of the total, while only 33.07% of MBSE's questions were at this level. 2.17% of the CBSE questions were "Apply" level while no MBSE questions are found to be on this level. Regarding "Analyze" level questions, CBSE had a higher proportion, with 10.83% of the questions, compared to 1.81% for MBSE. "Evaluate" level questions were relatively rare for both boards, with CBSE questions having higher percentage of 5.05%, while only 0.52% of MBSE questions were at this cognitive level. Lastly, for the "Create" level, CBSE had 1.08% of its questions categorized at this level, while MBSE had only 0.78% questions pertaining to this level.

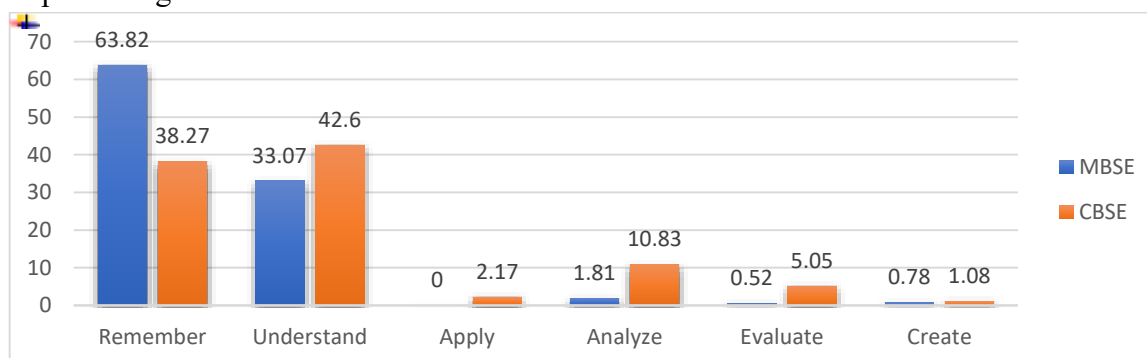


Table 1. Differences in Cognitive Process Dimension

During the year 2018-2024, For factual knowledge, MBSE had a significantly higher proportion (63.31%), while CBSE had 38.63%. Regarding the conceptual knowledge questions, CBSE had a substantially higher percentage, with 58.48% of its questions functions at this level, while MBSE had only 34.88%. procedural knowledge questions were less frequent for both boards, but CBSE had a higher occurrence, with 2.53% of questions, whereas MBSE had only 1.81%. The least occurring knowledge process dimension is the “Meta-cognitive knowledge” with only 0.36% of CBSE questions functions at this level while there exist no MBSE questions at this level, as shown in table 2.

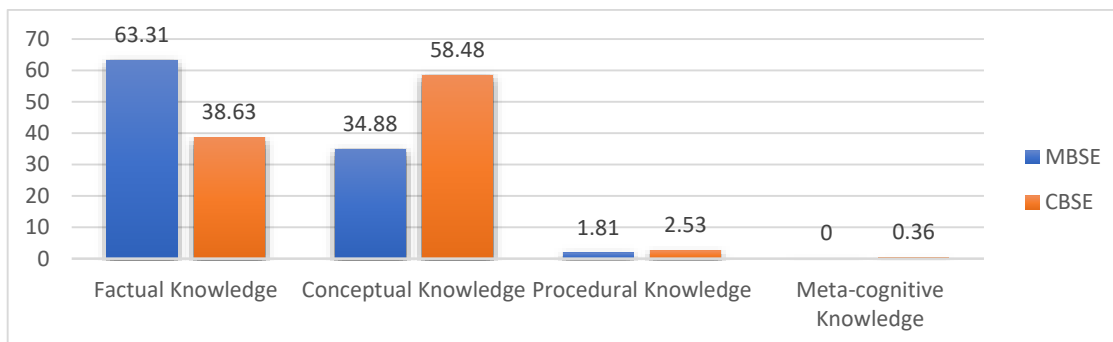


Table 2. Differences in Knowledge Process Dimensions

During the year 2018-2024, the distribution of Lower-Order Thinking Skills (LOTS), Middle-Order Thinking Skills (MOTS), and Higher-Order Thinking Skills (HOTS) varied between MBSE and CBSE in their Social Science examination questions. LOTS questions were significantly more common in MBSE, accounting for 63.82% of their questions, while only 38.27% of CBSE's questions were at this level. In contrast, MOTS questions appeared more frequently in CBSE, with 44.77% of questions functions at this level, compared to 33.07% of questions in MBSE. Similarly, HOTS questions were more prevalent in CBSE, comprising 16.96% of its questions, while only 3.11% of MBSE's questions were categorized as HOTS in this study, as shown in table 3.

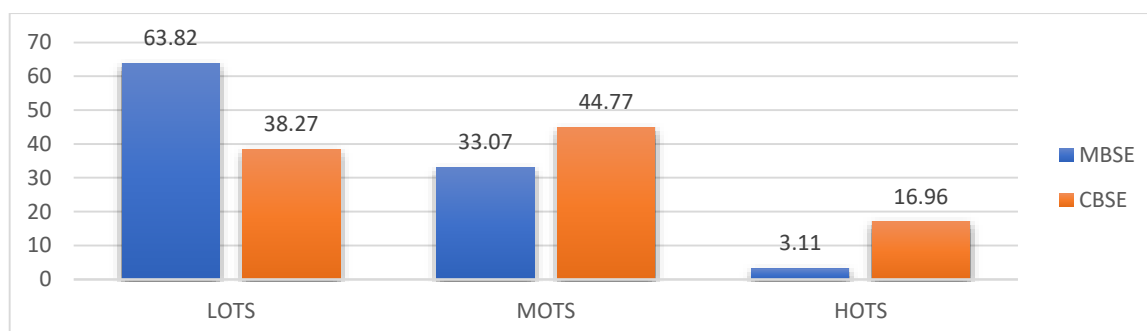


Table 3. Differences in the distribution of questions based on the lower, middle, and higher order thinking skills.

5. Conclusion

This study presents an in-depth analysis of Social Science board examination question papers from both MBSE and CBSE, utilizing the Revised Bloom’s Taxonomy to examine their cognitive, knowledge dimensions and thinking levels. The results indicate that MBSE predominantly emphasizes lower-order cognitive tasks, such as the recall of factual information, whereas CBSE places greater emphasis on middle

and higher-order cognitive processes, including understanding, apply, analysis, evaluation, and create. Additionally, CBSE tends to focus more on conceptual, while MBSE primarily targets factual knowledge. Looking at the knowledge process dimensions, it is evident that CBSE struggles to assess the procedural knowledge of the students while MBSE did not contain any procedural knowledge type questions. Both boards also show a notable absence of questions related to metacognitive knowledge. Therefore, MBSE's focus on lower-order thinking skills (LOTS) may limit students' engagement in more complex cognitive activities. Similarly, the predominant focus on remembering and understanding by MBSE and CBSE may also hinders the development of higher-cognitive skills in the students.

To address these imbalances, it is recommended that MBSE increase its focus on higher-order cognitive skills and broaden the variety of question types to foster deeper learning. Both MBSE and CBSE should work towards incorporating a more balanced range of cognitive and knowledge dimensions in their assessments. Professional development programs for educators and exam setters are essential to align question papers with the goals of enhancing critical thinking and preparing students for real-world challenges. This shift is necessary to meet the evolving demands of education and the objectives set by the National Education Policy (NEP) 2020.

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