



Bloom's Taxonomy in Pakistani School Education: A Pathway to Enhance Higher Order Thinking Skills (HOTS)

Zahra Saeed¹

¹M.Phil English Literature, University of Management and Technology (UMT), Lahore and Lecturer (BS-17) in English Literature, Higher Education Department (HED), Government of the Punjab

ARTICLE INFO		ABSTRACT
Article History:		<i>Bloom's Taxonomy, a pedagogical framework for classifying cognitive learning objectives, plays a pivotal role in shaping educational practices globally. However, its effective application in Pakistan's educational system remains a challenge, particularly in the context of integrating Higher Order Thinking Skills (HOTS) alongside Lower Order Thinking Skills (LOTS). This review assesses the current status of Bloom's Taxonomy in Pakistani schools, highlights systemic barriers to its implementation, and explores the significance of policy reforms to foster HOTS in both public and private sectors. The review argues that while there are pockets of progress, the prevalence of rote memorization in classrooms prevents the realization of the full potential of Bloom's framework. It proposes specific reforms aimed at fostering a deeper, more comprehensive learning approach through the integration of HOTS.</i>
Received:	December 29, 2024	
Revised:	January 12, 2025	
Accepted:	January 17, 2025	
Available Online:	January 20, 2025	
Keywords:		
<i>Bloom's Taxonomy, Higher Order Thinking Skills (HOTS), Lower Order Thinking Skills (LOTS), Pakistani education, public and private sectors, policy recommendations</i>		
Corresponding Author:		
Zahra Saeed		
Email:		
zssheikh11@gmail.com		



Introduction

Bloom's Taxonomy, first developed by Benjamin Bloom in 1956 and revised in 2001 by Anderson and Krathwohl, is a framework that categorizes different levels of cognitive learning objectives. The Taxonomy is structured in a hierarchical manner, starting with lower-order thinking skills (LOTS) at the base, and progressing to higher-order thinking skills (HOTS) at the top (Bloom, 1956).

The original taxonomy included six levels: Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation, which were later updated to Remembering, Understanding, Applying,

Analyzing, Evaluating, and Creating in the revised version (Qasrawi & Abdelrehman, 2020). These cognitive levels guide educators in designing learning experiences, assessments, and educational goals that encourage students to progress through increasingly complex stages of understanding and critical thinking (Amjad, 2024). While LOTS focus on recalling information and basic understanding, HOTS require deeper engagement with the material. HOTS include the abilities to analyze, evaluate, and create, rather than merely memorizing or repeating information (Qasrawi & Abdelrehman, 2020).

The incorporation of HOTS into education promotes critical thinking, problem-solving, and creativity, which are essential skills for success in the modern world (Qasrawi & Abdelrehman, 2020). HOTS not only encourage students to synthesize new ideas but also to approach problems with a strategic mindset, reflecting real-world challenges (Qasrawi & Abdelrehman, 2020).

In the context of Pakistani education, fostering HOTS is particularly crucial, as it helps shift away from traditional rote memorization and promotes a more dynamic, skill-based approach to learning that can better prepare students for higher education and the workforce (Amjad, 2024; Nazir & Islam, 2021; & Qasrawi & Abdelrehman, 2020).

Pakistan's education system has long been criticized for its reliance on rote learning, a practice that undermines the development of critical thinking, creativity, and problem-solving skills in students. As argued by Ahmad et al. (2014) in "Critical Analysis of the Problems of Education in Pakistan: Possible Solutions" that despite efforts at educational reform, the classroom culture in both public and private schools often remains heavily focused on memorization, a reflection of the national assessment framework that values recall over deeper understanding.

This argument is supported by a study by Hassan (2024) that analyzed the curriculum objectives of secondary and higher secondary levels in Pakistan on Bloom's Taxonomy. The researcher found that course content was heavily focused on LOTS and minimally on HOTS in both levels. The same has been also confirmed by Nazir and Islam in 2021.

Bloom's Taxonomy, first introduced by Benjamin Bloom in 1956 and later revised by Anderson and Krathwohl (2001), offers a structured framework to facilitate the development of cognitive skills across different levels. By categorizing cognitive skills from lower-order thinking (e.g., remembering, understanding) to higher-order thinking (e.g., analyzing, evaluating, creating), the Taxonomy offers an invaluable tool for educators.

In the context of Pakistan, the integration of HOTS within educational practices has proven to be difficult, primarily due to ingrained traditional methods and assessment practices. The government's focus on public exams often leads to an emphasis on LOTS, at the expense of critical thinking and cognitive depth. This review seeks to explore the potential for Bloom's Taxonomy to serve as a bridge to more holistic learning approaches in Pakistani classrooms, particularly through policies that encourage the systematic inclusion of HOTS. The objective of this review is to evaluate the existing challenges, explore ways to foster HOTS, and recommend policy strategies to better align the education system with the evolving demands of the 21st-century global workforce.

To promote the inclusion of HOTS in Pakistani education, comprehensive policy reforms are necessary. The government must prioritize teacher training, revise the national curriculum, and establish new assessment systems that reward cognitive depth. Furthermore, increased resource

allocation to schools, particularly in rural areas, will be essential to support the development of higher-order cognitive skills.

In a nutshell, the integration of HOTS into the Pakistani education system is crucial for preparing students to thrive in the modern world. By leveraging the potential of Bloom's Taxonomy and aligning educational practices with the demands of the 21st century, Pakistan can transform its education system into one that fosters critical thinking, creativity, and problem-solving skills, better equipping students for the challenges and opportunities of the future. Therefore, the present review presents a case for emphasizing the incorporation of HOTS alongside LOTS to uplift the quality of school education in Pakistan in both public and private sectors.

Literature Review

Overview of Bloom's Taxonomy

Bloom's Taxonomy is widely acknowledged as one of the most effective frameworks for structuring educational goals and objectives. Originally designed in 1956 by Benjamin Bloom, the Taxonomy aimed to categorize cognitive skills to help educators design curricula and assessments that foster deeper learning. The taxonomy consists of six cognitive levels: knowledge, comprehension, application, analysis, synthesis, and evaluation (Bloom, 1956). The revised version by Anderson and Krathwohl (2001) modified this original structure, replacing the terms with verbs (e.g., remembering, understanding, applying, analyzing, evaluating, creating) to make it more adaptable to modern educational contexts.

Though, Bloom's Taxonomy is one of the most widely recognized frameworks for categorizing educational objectives and cognitive skills. However, there are several other frameworks that share similar goals—helping educators design curricula, assessments, and teaching strategies that promote cognitive development—but they often differ in their structure, terminology, and focus. Comparing Bloom's Taxonomy with other models like the SOLO Taxonomy (Structure of Observed Learning Outcome), Marzano's Taxonomy, and Webb's Depth of Knowledge (DOK) framework highlights both shared principles and distinct differences.

Higher Order Thinking Skills (HOTS) have become a central focus in education systems around the world, particularly in countries like Finland, Singapore, and Canada (Reiman, 2023)

These nations emphasize HOTS as part of a broader educational philosophy aimed at developing students' critical thinking, creativity, and problem-solving abilities. In Finland, for example, the national curriculum encourages inquiry-based learning and the application of knowledge in real-world contexts, moving beyond rote memorization. Singapore, known for its rigorous yet innovative education system, integrates HOTS into its curriculum by promoting deep learning and encouraging students to analyze, evaluate, and create in various subjects. Similarly, Canada's education system focuses on fostering critical thinking through collaborative learning and inquiry-based methodologies that require students to engage with content at deeper cognitive levels. These countries recognize that in today's rapidly changing world, students need more than just factual knowledge—they must be equipped with the cognitive tools necessary to adapt to new challenges, innovate, and contribute meaningfully to society.

Pakistan, too, should follow this approach to enhance its educational outcomes. Currently, the Pakistani education system places heavy emphasis on memorization and standardized testing, which limits the development of HOTS. By incorporating HOTS into the curriculum, Pakistan could foster a generation of students who are not only knowledgeable but also capable of applying their learning in practical and creative ways. This shift would better prepare students for the complexities of the modern workforce and equip them to tackle the challenges of an increasingly globalized and technologically advanced world.

The concept of HOTS plays a significant role within the Taxonomy, as it encourages students to engage with information in a more reflective, analytical, and creative way. The development of HOTS helps students move beyond basic memorization, equipping them with the intellectual tools necessary for solving complex problems and thinking critically in academic and real-life situations (Qasrawi & Abdelrehman, 2020). Given the evolving demands of the modern world, fostering HOTS is no longer a luxury but a necessity in preparing students for the challenges of the 21st century (Anderson & Krathwohl, 2001).

Bloom's Taxonomy and the Educational Context in Pakistan

In Pakistan, the implementation of Bloom's Taxonomy, particularly with respect to HOTS, remains a challenge. The country's education system, especially in public schools, has historically emphasized rote learning due to an exam-oriented curriculum. A number of studies have been conducted assessing the status of Bloom's Taxonomy, HOTS and LOTS in Pakistan, a few of which are described below:

Hassan (2023) in "Analysis Based On Bloom's Taxonomy: Pakistan's Federal English Curriculum And Examination Content For Matric" investigates the alignment of the objectives of English Curriculum in Matric and the Annual exam content i.e. the Board Exams in Pakistan. The researcher focused on addressing the importance of English language assessment within Matric system as well as to assess discrepancy between the English assessment objectives and the test content with an aim to contribute towards an improved, reliable and valid English language assessment. The study presented a case for focusing on incorporating higher levels of Bloom's taxonomy to all related stake holders such as, test developers, users and the educational researchers in Pakistan.

Husain, Faize and Faize (2021) conducted a study "The state of education in Pakistan: assessment through Bloom's Taxonomy" to assess the quality of education in Pakistani context. They argued that the ideal objectives contrived in educational policies have never been assessed within Pakistani context. They conducted interviews, quizzes and focus discussions with nearly 1500 students of middle, secondary and higher secondary levels of education inclusive of both genders from Play Group to Class 12. The research confirmed that the educational objectives as explained in Bloom's taxonomy have not been satisfactorily achieved in Pakistan. The researchers emphasized towards uplifting the educational quality in Pakistan through inclusion of ideal educational objectives.

Amin et al. (2024) in "Bloom's Taxonomy and Prospective Teachers' Preparation in Pakistan" analyzed the application of the Bloom's Taxonomy in preparation of potential teachers in Pakistan. The study highlights the fact the female potential teachers are much more likely to showcase mastery of LOTS or low level skills as defined by Bloom's taxonomy i.e. remembering and understanding whereas, male potential teachers tend to excel at HOTS or high level skills in

Bloom's taxonomy such as, critical and analytical skills (analyzing and evaluating) in Pakistan. The research further found that the freshman students showed greater achievements at the low levels of Bloom's Taxonomy as compared to the students who were at later years of their education.

Hussain and Munir (2015) highlight that Pakistani students often focus on memorizing textbooks without fully understanding or analyzing the content, a direct consequence of the national examination system that largely rewards recall over cognitive depth. This issue is further exacerbated in rural areas, where resources and trained educators are limited, creating an uneven playing field for students across regions.

A study by Shams and Rashid (2019) argues that while the National Education Policy (2009) advocates for a shift toward a more skill-based education system, there has been limited success in incorporating HOTS into the curricula and teaching practices. The lack of teacher training and professional development programs aimed at fostering critical thinking skills has led to a systemic resistance to change. Although some private institutions have begun to integrate more progressive teaching methods, the overall impact has been limited.

In contrast, international research demonstrates the success of Bloom's Taxonomy in promoting HOTS. For instance, countries like Finland and Singapore have reformed their education systems to emphasize both LOTS and HOTS, ensuring that students are not only knowledgeable but also capable of applying, analyzing, and creating in various contexts (Anderson & Krathwohl, 2001). Such approaches have led to improved academic outcomes and better preparation for the global workforce.

Methodology

The methodology for this review involves a thorough examination of existing literature on Bloom's Taxonomy and its application within Pakistan's educational system. Academic articles, government reports, and case studies were reviewed to identify the current status of Bloom's Taxonomy, particularly its application in fostering HOTS in Pakistani schools. A qualitative approach was employed, with a focus on synthesizing key themes such as barriers to implementation, existing educational reforms, and policy recommendations.

Barriers to HOTS Implementation in Pakistan

The challenges to the successful implementation of Bloom's Taxonomy, particularly with respect to HOTS, are multifaceted. One of the primary barriers is the heavy reliance on exams that test factual knowledge rather than higher cognitive skills. The examination system in Pakistan typically emphasizes memorization, with little room for evaluating students' ability to apply or analyze information. As a result, the focus remains on LOTS, which directly contradicts the need for developing HOTS.

Furthermore, teacher preparation and training are significant obstacles. The curriculum itself provides little guidance on how to teach HOTS, and many teachers continue to rely on outdated pedagogical methods that do not encourage critical engagement with content (Alim & Farooq, 2014). Many educators lack exposure to modern teaching strategies that foster higher-order thinking, such as inquiry-based learning, collaborative learning, and project-based learning.

Resource constraints are another critical factor. In many parts of Pakistan, especially rural areas, schools struggle with overcrowded classrooms, a shortage of teaching materials, and limited access to technology. These conditions make it difficult to implement the types of teaching strategies required to foster HOTS, such as interactive lessons, technology integration, or research-based projects (Zafar, 2017).

Teacher Training and Development

Teacher training is one of the key levers that can drive the adoption of Bloom's Taxonomy and the inclusion of HOTS in the classroom. According to Hussain and Munir (2015), teacher professional development in Pakistan often focuses on content knowledge rather than on pedagogical strategies that enhance cognitive skills. As a result, teachers are often unprepared to use higher-order thinking strategies in their teaching.

Training teachers to move beyond rote instruction requires a paradigm shift in the way teachers view their role in the classroom. Professional development programs should not only focus on enhancing content knowledge but also on equipping teachers with the skills to facilitate inquiry-based learning, critical thinking, and collaborative problem-solving. Teachers must be trained to design lesson plans that move students through the different cognitive levels outlined in Bloom's Taxonomy, encouraging students to engage with content at a deeper, more reflective level.

Government Policies and Their Role in Promoting HOTS

Pakistan's National Education Policy (2009) highlights the importance of a shift toward a skill-based education system, recognizing the need to equip students with cognitive and creative skills that are essential for success in the modern world. However, despite the policy's emphasis on HOTS, the actual implementation in schools has been slow. A major reason for this delay is the lack of alignment between national policies and local educational practices.

The policy recommendations that aim to integrate HOTS into the curriculum must be accompanied by specific actions at the government level. This includes revising the national curriculum to focus more on critical thinking and problem-solving skills and establishing assessment systems that reflect these cognitive levels. Moreover, the government must allocate resources for teacher training and professional development programs aimed at teaching HOTS effectively. Additionally, curriculum designers should collaborate with international experts to ensure that Pakistan's educational framework includes a more holistic approach to learning.

Discussion

The Importance of HOTS in a Globalized World

In today's globalized world, HOTS are increasingly recognized as critical competencies for academic success and career preparedness. The ability to analyze, evaluate, and create is essential for navigating complex global challenges and contributing to economic development. In Pakistan, where youth unemployment is a significant issue, fostering HOTS in students could provide them with the skills required for the competitive job market (Zafar, 2017).

Furthermore, HOTS are not just vital for professional success but also for active citizenship. Critical thinking and problem-solving skills are necessary for addressing social and political issues, ensuring that students are not only prepared for the workplace but also for their roles as informed citizens in a democratic society.

The Need for a Holistic Educational Reform

While national policies have acknowledged the need for educational reform, there is a pressing need for a more holistic approach that integrates HOTS across the entire education system. This includes reforming teaching methods, revising curricula, and developing assessment systems that promote higher-order cognitive skills. To achieve this, a collaborative effort between the government, educational institutions, teachers, and communities is required.

Public schools, especially in underprivileged areas, require additional support, including access to better learning materials, training programs, and teaching aids. Private schools, which often have better resources, should work alongside public institutions to share knowledge and expertise on integrating HOTS into teaching practices.

Summary and Conclusion

Bloom's Taxonomy offers a structured approach for educators to develop both LOTS and HOTS in students, providing a comprehensive framework for fostering cognitive growth. In Pakistan, the emphasis on rote learning and exam-centric education has hindered the full application of this framework, particularly with regard to HOTS. Systemic barriers, such as outdated pedagogical practices, insufficient teacher training, and a focus on memorization-based assessments, have prevented the effective incorporation of HOTS into the curriculum.

In the Pakistani context, the importance of incorporating Higher Order Thinking Skills (HOTS) into education cannot be overstated. The traditional emphasis on rote learning and memorization in Pakistani schools has led to a stagnant education system, where students often learn to recall information for exams but fail to apply it in real-world situations. This approach does not adequately prepare students for the complexities of the modern world, where problem-solving, creativity, and adaptability are key. HOTS, which include the ability to analyze, evaluate, and create, foster critical thinking and enable students to engage deeply with content. This shift is vital, especially in a rapidly evolving world driven by technological advancements and global interconnectivity.

Incorporating HOTS into the curriculum can help address several educational challenges facing Pakistan. Firstly, it promotes active learning, where students move beyond passive receipt of information and become active participants in their education. This can lead to better retention of knowledge and an ability to apply concepts across disciplines. Moreover, HOTS encourage students to think critically about social, economic, and political issues, which is crucial in a country like Pakistan, where challenges such as poverty, inequality, and environmental concerns require innovative solutions.

Furthermore, by emphasizing HOTS, Pakistani students can develop the cognitive skills necessary for success in the workforce. With a growing global job market that values problem-solving, creativity, and adaptability, students equipped with HOTS will be better prepared to compete in fields like science, technology, engineering, and mathematics (STEM), as well as other dynamic

sectors. In addition, fostering critical thinking can empower students to be more active and informed citizens, capable of making thoughtful decisions that contribute positively to society.

In conclusion, integrating HOTS into Pakistan's educational system is not only essential for individual student success but also for the nation's progress in an interconnected global economy. Encouraging the development of HOTS will equip future generations with the skills needed to address both local and global challenges, fostering a more innovative, adaptive, and resilient society.

References

1. Alim, M., & Farooq, R. (2014). Teaching methodologies and the development of higher order thinking skills in Pakistan. *International Journal of Educational Research*, 6(3), 234-245.
2. Anderson, L. W., & Krathwohl, D. R. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. Pearson.
3. Ahmad et al. (2014). "Critical Analysis of the Problems of Education in Pakistan: Possible Solutions," *International Journal of Evaluation and Research in Education (IJERE)*, Vol.3, No.2, pp. 79~84.
4. Amin, M., Naqvi, S. U. E L., Amin, H., Kayfi, S. Z., & Amjad, F. (2024). Bloom's Taxonomy and Prospective Teachers' Preparation in Pakistan. *Qlantic Journal of Social Sciences*, 5(2), 391-403. <https://doi.org/10.55737/qjss.791335465>
5. Amjad, Faisal. (2024). Bloom's Taxonomy and Prospective Teachers' Preparation in Pakistan. *Qlantic Journal of Social Sciences*. 5. 10.55737/qjss.791335465.
6. Bloom, B. S. (1956). *Taxonomy of educational objectives: Affective domain* (Vol. 2). Longmans, Green. Bloom, B. S. (2006). *Learning domains or Bloom's taxonomy*.
7. Bloom, B. S., Krathwohl, D. R., & Masia, B. B. (1984). *Bloom taxonomy of educational objectives*. In Allyn and Bacon. Pearson Education.
8. Chandio, M.T., Murtaza, S., Iqbal, R. (2016). "Bloom's Taxonomy: Improving Assessment and Teaching-Learning Process," *Journal of Education and Educational Development*, Vol. 3 No. 2, 203-221.
9. Hussain, S., & Munir, S. (2015). Rote learning in Pakistan: A critical examination. *Pakistan Journal of Education*, 32(1), 89-104.
10. Qasrawi, R., & BeniAndelrahman, A. (2020). The higher and lower-order thinking skills (HOTS and LOTS) in Unlock English textbooks (1st and 2nd editions) based on Bloom's Taxonomy: An analysis study. *International Online Journal of Education and Teaching (IOJET)*, 7(3). 744-758. <https://iojet.org/index.php/IOJET/article/view/866>
11. Reiman, E. (2023). Applying Bloom's taxonomy to individual learning in the CAF: Education, policies, and culture change [Working paper]. Transforming Military Cultures (TMC) Network.`
12. Shams, S., & Rashid, S. (2019). National Education Policy and the role of HOTS in Pakistan's education system. *Journal of Educational Development*, 8(2), 101-112.
13. Zafar, M. (2017). The need for cognitive skills in Pakistan's education system. *International Journal of Education and Development*, 5(4), 218-225.