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Effective Teaching and Assessment Tools According to Gen-Z Learners: A Survey Based Study in Physics Education in Nagpur India

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Abstract

This paper presents methodologies derived from a comprehensive survey of students studying at different levels of the education system, as well as of educators in Physics. The survey aimed to understand Generation Z's expectations from education systems and integrate their perspectives into effective teaching and assessment strategies. Key findings reveal the need for innovative approaches to enhance cognitive learning. The paper also aims to offer a list of pedagogies in accordance with Bloom's taxonomy levels. These strategies prioritize student-centered learning, interactive engagement, and personalized feedback. By incorporating Generation Z's perceptions, educators can foster a more inclusive and effective learning environment, ultimately enriching the educational experience for the next generation of students. The survey highlights a strong shift toward competency-based, skill-oriented learning in line with the National Education Policy and global trends. Students increasingly value application and problem-solving over rote memorization, resonating with Bloom's revised taxonomy. This underscores the need for formative, competency-based assessments aligned with real-world skills. While traditional classroom note-taking remains important, diverse and flexible learning resources are equally essential to meet varied learning preferences. The findings discussed in the paper offer valuable insights for educators seeking to modernize teaching practices and improve student outcomes.

Keywords: cognitive, effective assessment, effective teaching, Gen-Z.

INTRODUCTION

Teaching, Learning, and Assessment are the three main components of any educational system. While learning completely depends on the cognitive abilities of the students, teaching is based on the capabilities of educators. Assessment is the only component that has a connection with the above two stakeholders. This assessment is the bridge joining the teaching and learning methods to each other and helps create a bond between a student and an educator. This bond is not only an emotional aspect but also develops a trust-based, liability- and expectation-based relationship between the two. With time, educators have evolved with different methods and techniques to engage students in the teaching-learning process. New methodologies and techniques must be developed to assess them as well. This requires inputs from all the stakeholders. Even students must participate in designing the assessment methods. Hence, a survey was carried out for hundred plus people, including students at middle schools, high schools, undergraduate and postgraduate colleges, and even a few doctoral

perusing along with a few educators. Effective teaching-learning methods are crucial for fostering academic success, promoting student engagement, and enhancing overall educational outcomes (Biggs, 2011). The rapidly changing landscape of education demands innovative and evidence-based approaches to cater to diverse learning styles, needs, and preferences (Hativa, 2013). Teaching-learning methods encompass a range of strategies, techniques, and tools that facilitate knowledge acquisition, retention, and application (Bloom, 1956). In recent years, there has been a shift from traditional teacher-centered approaches to more student-centered, collaborative, and technology-integrated methods (Johnson, 2016). This includes active learning strategies, problem-based learning, flipped classrooms, and experiential learning, among others (Prince, 2006).

Bloom's Taxonomy, a cornerstone of educational psychology, has undergone significant revisions since its inception in 1956 by Bloom (Bloom, 1956). Originally designed to categorize learning objectives into six cognitive domains, the taxonomy has evolved to accommodate changing educational landscapes and research findings. In 2001, Anderson and co-author led a major revision, updating the taxonomy to better reflect contemporary understanding of cognitive processes (Anderson, 2001). The revised taxonomy features six categories, each representing a distinct cognitive level:

1. Remembering
2. Understanding
3. Applying
4. Analyzing
5. Evaluating
6. Creating

This revised framework emphasizes the importance of active learning, critical thinking, and creativity. Further refinements have incorporated technological advancements, highlighting the role of digital literacy and multimedia learning (Churches, 2008).

Recent studies have also explored the application of Bloom's Taxonomy in diverse educational contexts, including online learning (Mims, 2015), STEM education (Herman, 2013), and inclusive teaching practices (McTighe, 2013).

The global education landscape is undergoing a significant transformation, driven by technological advancements, shifting societal needs, and evolving learner profiles (UNESCO, 2020). In India, the education sector is experiencing rapid growth, with a focus on accessibility, quality, and inclusivity. (Ministry of Education, 2020). Globally, education is being redefined by 1. Personalized learning 2. Digitalization and online learning 3. Skills-based education 4. Collaborative and project-based learning (Aithal & Maiya, 2023; Mahapatro, 2025)

In India, key initiatives include: 1. National Education Policy (NEP) 2020 (Ministry of Education, 2020), 2. Digital India initiative (Ministry of Electronics and Information Technology, 2020), 3. Skill India Mission (National Skill Development Corporation, 2020). 4. Rashtriya Uchchatar Shiksha Abhiyan (Ministry of Human Resource Development, 2020; Awasthi et al., 2025).

Despite progress, challenges persist: 1. Learning outcomes and quality (Annual Status of Education Report, 2020), 2. Equity and accessibility (Oxfam, 2020), 3. Teacher training and capacity building (UNICEF, 2020).

Teaching, learning, and assessment are the three foundational components of any educational system. In Physics education, these components are deeply interlinked—teaching facilitates conceptual understanding, learning builds cognitive application, and assessment bridges the two by providing measurable outcomes. Physics, being both a theoretical and experimental discipline, requires innovative pedagogy that engages students in conceptual reasoning, experimentation, and problem-solving.

Generation Z students, born approximately between 1997 and 2012, are characterized by digital nativity and an inclination toward fast, interactive, and technology-driven learning. This study seeks to explore how teaching and assessment methods can evolve in Physics education to match Gen-Z expectations and learning preferences.

The research objectives are to:

- Identify students' preferred teaching methodologies in Physics.
- Explore students' learning styles and engagement habits.

- Examine preferences for assessment formats and marking schemes.
- Analyse perceptions regarding practical learning and skill development.
- Recommend teaching-assessment alignment models suitable for Gen-Z Physics learners.

METHODS

Data were collected through an online questionnaire distributed via Google Forms.

Sampling Technique: The present study employed the Simple Random Sampling method using Google Forms, similar to the approach used by (Fauzi, 2019).

Sample: The research population consisted of all students enrolled in various academic years, ranging from high schools to doctoral perusing during the academic year 2017. From this, a sample of 104 students was selected through simple random sampling to ensure equal representation of different levels, origins, and backgrounds of students.

The questionnaire items were created based on relevant curriculum standards and further refined through review by two subject experts to ensure clarity and alignment with the study objectives. The instruments were piloted with a small group to identify and address any issues before full implementation. Future research is encouraged to carry out a comprehensive psychometric evaluation.

Research Design

The study adopted a descriptive survey design to gather quantitative and qualitative data from Generation Z learners and Physics educators.

Population, Sampling, and Participants

The population comprised Gen-Z (aged 16–25 years) science students and educators teaching Physics across schools and colleges in Nagpur, Maharashtra, India. A total of 120 participants were selected using simple random sampling through online distribution of a Google Forms questionnaire.

Data Collection and Instruments

Data were collected using a structured Google Forms closed-ended questionnaire, as tabulated in Table 1, and an observation sheet reviewed by two academic experts. The questionnaire included multiple-choice and short-response questions addressing learning styles, preferred teaching methods, and assessment choices in Physics. Participants provided informed consent electronically before participation.

Validity and Reliability

The observation tool and questionnaire underwent expert validation to assess content clarity, relevance, and alignment with the study objectives. A panel of subject matter experts reviewed each item to ensure that the instrument accurately measured the intended constructs, thereby establishing content validity. To assess reliability, a pilot test was conducted with 20 participants, and the internal consistency of the items was evaluated using Cronbach's alpha ($\alpha = 0.81$), which indicates acceptable reliability. Based on pilot feedback, minor revisions were made to refine ambiguous items before the tool's final administration.

Data Analysis

Descriptive statistics, including frequency and percentage distributions, were used for data analysis. Responses were categorized according to themes reflecting Bloom's Taxonomy levels and NEP 2020 outcomes. Graphical representations such as pie charts and tables were used to illustrate trends and relationships.

The categories of the participants obtained from one of the survey questions are as follows.

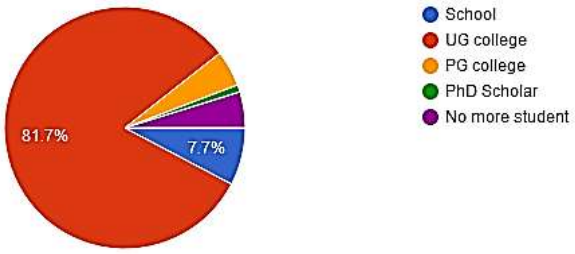

Figure 1. Respondents' Education Levels

The survey had randomly arranged questions. Which will be discussed thoroughly below.

When the participants were asked about whether they are happy with the current education pattern of 3 to 4 years for graduation, followed by 2 years of post-graduation and 5 to 6 years of doctoral studies, ~70% agrees with the system.

However, the new national educational policy NEP 2020 of India seems satisfied with the year-wise distribution of the above parameters and kept them as they are, with maybe additional thoughtfulness of multilevel entry and exit points in between the levels. Some may think that this multilevel entry and exit may increase the number of dropouts. However, this can provide the dropouts with confidence to pursue a good career further as they will get honored with a certificate for the levels they have completed, as well as an assurance of coming back and joining the same from the level they have left.

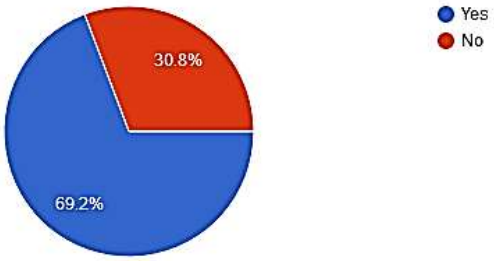

Figure 2. Respondents' Agreement with the Current Education System

Moving closer to the system in classrooms, the next question directly hit the perception about education in participants.

Table 1. The Objective Alignment Grid

Research Objectives	Questionnaire Items	Instrument Type
1. To identify students' preferred teaching methodologies	Q1. What kind of teaching methodology do you like the most?	Questionnaire (Google Form)
2. To explore students' learning styles and classroom engagement habits	Q2. What type of student are you?	Questionnaire
3. To examine students' preferences for assessment formats and marking schemes	Q3. What kind of examination/assessment do you like? Q4. What should be the contribution of this assessment pattern? Q12. Preferred grading system	Questionnaire
4. To evaluate students' motivations for study and priorities in education	Q7. What is more important to you? Q8. Why should you study? Q15. Where do you see yourself in your 40s?	Questionnaire
5. To assess students' views on practical learning and skill development	Q9. Are practical important? Q10. What can you learn from practical experience?	Questionnaire
6. To gather students' opinions on study patterns and curriculum design	Q13. Are you happy with the current study pattern? Q14. Suggestions for improvement	Questionnaire
7. To understand students' aspirations and long-term career goals	Q15. Where do you see yourself in your 40s?	Questionnaire

RESULTS AND DISCUSSION

The survey responses highlight a clear shift in the perception of education, particularly among the younger generation. Generation Z perceives education as a system for acquiring practical skills. This change reflects broader societal trends where access to basic education has become widespread, thanks to government initiatives and educational reforms. Education is no longer seen as a privilege but as a necessity, leading students to focus more on skill-building opportunities that enhance employability and career development.

This focus aligns with the vision of the National Education Policy (NEP), which emphasizes competency-based learning and curriculum updates to include more skill-oriented courses. Globally, education systems are also shifting toward competency-based and outcome-driven frameworks, and India's reforms position it in line with these international trends. The survey results underscore the urgency of developing an

education system that not only ensures universal access to learning but also prioritizes equipping learners with marketable skills to navigate a rapidly evolving job market.

Table 2. Respondents' Answers Need for Study

Why should you study?		
Options	Responses	%
To get a job	7	7
To gain knowledge	18	17
To develop skills	53	51
To be a better person	7	7
To be independent	14	13
Other	5	5
Total responses	104	100

The findings indicate a clear inclination among Gen-Z Physics learners toward blended teaching methods that integrate technology with traditional classroom delivery. Approximately 62% of respondents preferred a combination of chalkboard, PowerPoint, and video-based instruction. Students also favored interactive sessions, quick quizzes, and practical demonstrations for better comprehension of Physics concepts.

The responses are tabulated clearly shows the need for education has shifted from gaining knowledge to developing skills. When asked about why you should study? The results are tabulated in Table 2. However, this response was a little surprising as they gen-z thinks of education as a skill set acquisition system. It may not sound strange if they do not call themselves educated but would prefer to be called skillful. The reason might be that education is everybody's responsibility now, with all appreciation to the government making efforts towards it, the generation now is not aiming only to be educated, as it is a mandate for them, but they prefer to acquire a skillset that can help them in deciding their careers. Here it should be quoted once again that the modern education system should not be targeting to help everyone in providing basic education, but should concentrate on providing skilled courses to help them make a living. This point is also well addressed in the new NEP, and HEIs are updating their syllabi to add more skill-enhancing and oriented courses.

Table 3. Respondents' Answers Regarding Learning Methods and Tools

What kind of teaching methodology do you like the most?		
Options	Responses	%
Chalkboard lecture	8	8
Lecture with PPT and videos	8	8
Lecture with question answers and interactions	10	10
Lecture with activities or games	6	6
Online lecture	6	6
Lecture by peers teaching	0	0
No lecture, only self-study, group discussion, and doubt clearance	2	2
Others	64	62
Total responses	104	100

This response shows how the traditional chalk and board or lecture-only type teaching has reduced the popularity, and now the interests are being driven by the involvement of technology or hands on more during teaching. To be more precise, even though the combinational choices were available for selection (Table 3), participants still selected pure singular methods.

The next question contradicts the result of the previous a little bit. When asked about methods for taking notes, the participants responded as shown in the tabulated manner below.

Table 4. Respondents' Answers Regarding the Type of Student They Are

What type of student are you?		
Options	Responses	**%**
Want to read notes	15	14
I take my own notes during the lecture	56	54
I want dictation in the classroom	6	6
I will make my own notes from books	16	15
I don't need notes, I read books and watch videos	10	10
Other	1	1
Total responses	104	100

While a few are honest in asking for notes, expecting the notes to be given by the teacher, either ready to read or to be dictated in the classroom, a surprising number also depict no need for notes from the teacher, as they will get their own or may not even need them ever. While considering the notes to be written and prepared by students in

the classroom, you need an organized way of presenting lectures and content as well. This is mostly possible in chalk and board or PPT-oriented lectures, while activity-based or interactive sessions may not help children to take out their notes properly. In such cases, the educators responsibly increase their efforts towards providing proper reading material from an assessment point of view. This clearly shows that the need for assessment tools lies in the same line as teaching. One should not assess using the pen and paper method for a topic being taught in the classroom by some interactive or activity-based way unless guidance on reading material is provided either by making the topic in the books or providing the notes. A majority of respondents emphasized that hands-on practicals are essential for applying theoretical Physics knowledge. Over 90% agreed that practical work enhances understanding of core principles like motion, energy conservation, and electromagnetism. This finding aligns with NEP 2020's focus on experiential and competency-based education.

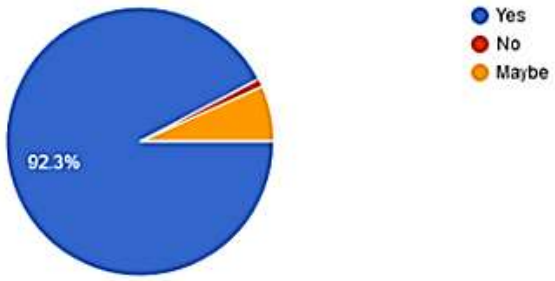

Figure 3. Respondents' Attitudes Regarding The Importance of Practice Alongside Theory

Practice is the only way to realize the theory. However, there is a huge gap in practical weightage in schools compared to college. Children in schools are having a lot of emphasis on theory, and very few hours are given to practical and hands-on practices. Also, the assessment is totally based on the theoretical knowledge. When these students move to the undergraduate level, they find it more interesting to study practically in the laboratories than theoretically in the classrooms. Also, from the employability point of view, the skill set required for placements is more practical-based than mere theoretical knowledge.

Table 5. Respondents' Answers Regarding the Importance of Practical Work

What can you learn from practical experience?		
Options	Responses	%
Application orientation	60	58
Motor skills	6	6
Measurement techniques	7	7
Theory in a better way	31	30
Total responses	104	100

Performing practical tasks truly fulfills students' first educational goal—acquiring tangible skills, such as operating equipment, troubleshooting errors, calibrating instruments, and interpreting data. Yet, as noted in TIME, contemporary education often underemphasizes these competencies in favor of standardized testing, despite their critical real-world relevance (Bourke et al., 2018).

Furthermore, assessment is frequently framed as a system of competition. Research argues that such ranking-driven models can mislead students about the purpose of evaluation, suggesting instead that alternative, non-competitive methods can better foster authentic learning and critical thinking (Smith, 2022). In fact, responses often reveal a divided student opinion on competitive assessment, with nearly half expressing discomfort or skepticism."

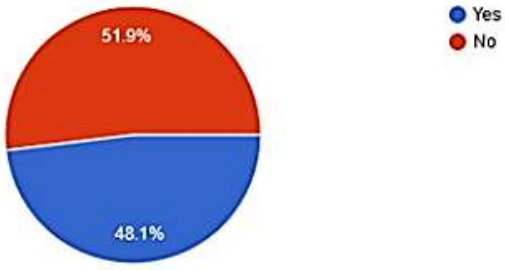

Figure 4. Respondents' Thinking on Competitiveness in Exams

Almost 49% still think that assessment is a competition. This phenomenon may be attributed to increasing competition in employment, wherein a large number of candidates become eligible for the same positions. Consequently, selection is merit-based, motivating individuals to continuously strive for excellence. In this context, competition ideally involves self-improvement, measuring progress

against one's own prior performance rather than solely aiming to outperform others. Nevertheless, it is unrealistic to eliminate the competitive mindset among Generation Z, who largely perceive education as a means of acquiring market-relevant skills, with employability determined by the strength of one's skill set. From this perspective, the ancient conception of education remains highly relevant, emphasizing the acquisition of knowledge and wisdom for personal growth and, ultimately, for the betterment of society.

When asked about assessment techniques, such as what kind of assessment they prefer, the responses were as follows.

Table 6. Respondents' Opinions on Exam Assessment Types

What kind of exam/assessment do you want?		
Options	Responses	%
Live question answer in class offline	19	18
Online quiz on Google Form or a similar app with MCQ	23	22
Pen and paper test descriptive mostly	34	33
PPT presentation	8	8
To design/develop something	18	17
Report/thesis submission	2	2
Total responses	104	100

Assessment preferences revealed that more than 50% of participants favoured short, conceptual questions or MCQs over long derivations. This suggests that Gen-Z students value conceptual clarity and real-time evaluation more than rote memorization. Their responses reflect a shift toward Bloom's higher-order skills—application, analysis, and creation.

It is clearly seen from the response of hundred plus student that not a single one likes to prepare a derivation as a part of their assessment. Also, the choice of long answers is very low in the assessment. Most of the students prefer MCQs, short answers, and numerical answers. The question is, cutting short the length of the answer may give you compete idea about the understanding of the subject the student has developed? Most of the entrance exams agree with it. Then why are still the long and descriptive, and derivation-based answers expected in the assessment? Where is that derivation the student is going to use in his future on his work table?

Table 7. Respondents' Opinions on Choice of Questions

What questions are your favourite?		
Options	Responses	%
MCQs	33	32
Short and obvious answers	18	17
Long and prescribed answers	6	6
Short but conceptual answers	30	29
Long derivations	0	0
Numerical based	12	12
Essay	4	4
Other	1	1
Total responses	104	100

When asked about when the assessments should be conducted? The responses are as follows.

Table 8. Respondents' Opinions on Exam Assessment Marking Schemes

What kind of examination/ assessment do you like (with marks)?		
Options	Responses	**%**
Option 1. Exam after each month/topic	31	30
Option 2. Exam only at the end	18	17
Option 3. Report submissions	1	1
Option 1 and Option 2	14	13
Option 1 and Option 3	17	16
Option 2 and Option 3	4	4
Option 1, Option 2, and Option 3	19	18
Total responses	104	100

With such exam frequencies, the unnecessary competitive spirits can be repressed. However, accepting report submission as a substitute for the final exam may lead to plagiarized or copied answers if not checked scrupulously. Even an exam after each month may have a short-term understanding of the concept, and even shorter memorization of the concept, as students mostly refresh their memories as they move on to the next level.

Assessment methods are as varied as assessment marking tools, too. The next question clearly shows a blend of opinions about the assessment systems. Now this is the question that needs a tiebreaker. It's having mixed responses, showing varied mindsets of varied people.

Table 9. Respondents' Opinions on Exam Assessment Pointer Scheme

Which system?		
Options	Responses	%
Five-point grading (poor, satisfactory, good, excellent, outstanding)	22	21
Percentile system	25	24
Percentage system	32	31
No grades, only pass or fail	25	24
Total responses	104	100

Education has evolved significantly over the years, still not in a position to justify some number association with once learning. Assessment tools are one part, and assessment results are another. And assessment results must align themselves as per the assessment tools and eventually with the topic of content whose understanding is being assessed. Although one fourth of the population showed interest in making the assessment the easiest of all, as a pass or fail declaration. One needs to have that threshold to decide the pass-fail criteria. Like for the course of employability or ethics, how will you decide this threshold? Whether you will expect students to get employed at the end of the course to say the course is attain or wait for one or two years to declare the result? Certainly not, that's why assessment criteria depend on and must vary from subject to subject and course to course.

When asked the same question in the survey about what they aimed at about a subject, the reply was as follows.

These varied answers are thanks to the educators who are following the OBE module. Educating a generation that will decide what is important to them is clearly a matter of individual choice regarding the subject. They don't want to be judged the same.

Table 10. Respondents' Needs About Any Subject

What is more important to you?		
Options	Responses	**%**
Getting passed	18	17
Getting top	32	31
Depend on the subject	41	39
Other	13	13
Total responses	104	100

The generational shift from valuing knowledge acquisition to prioritizing skill development closely aligns with the revised Bloom's Taxonomy. The updated framework emphasizes higher-order cognitive skills such as application, analysis, evaluation, and creation over rote memorization. This resonates strongly with survey participants' perspectives, as students increasingly seek education that empowers them to apply knowledge in real-world contexts rather than simply recall information.

The survey also provides insight into students' preferences for learning approaches. More than half of the participants expressed a preference for taking notes during lectures, demonstrating continued reliance on classroom-based, instructor-led teaching. This suggests that traditional methods still hold significance and offer value, especially in building foundational understanding. However, a notable portion of students prefer ready-made notes or textbooks, indicating a need for diverse and flexible learning resources that cater to different learning styles.

More than half of the population likes to take their notes during a lecture. This shows the reliability of students in the classroom teaching. But still, few are ready to read notes or refer to books for notes.

Table 11. Student Responses to Teaching Methods, Note-Taking Models, and Exam Preferences

Education Level	Teaching Method	Student Note-Taking Style	Exam Preference
School	Lecture with Q&A / PPT & videos	Take your own notes / from books	Frequent exams (monthly/topics)
UG College	Chalkboard Q&A, activities & games	Take your own notes vs. read/watch	Varied: some prefer monthly, some end-only
PG College	Lectures with activities or online formats	Read/watch resources, minimal notes	Mostly end-of-course exams with reports
PhD Scholar	Interactive Q&A lectures	Own notes	Combined exams and reports

Table 11 showed a surprising result that school students do not prefer chalk and board learning, which they are actually going through, while college students are clearly missing out on their chalk and board explanations of the topics. Also, all prefer their own note-taking habit, showing a sense of self-responsibility common in all generations. While an examination in the form of a report is an obvious choice for PG and PhD levels, it might only need rigorous reporting of their findings.

Table 12. Table Showing Responses in The Categories of Assessment Types and Weightage of Assessment Along with Favourite Type of Exam. Also about The Goal Behind Learning and the Importance of Practical

Education Level	Assessment Type & Weighting	Favorite Question Type	Priorities (Goal)	Value of Practical
School	Equal distribution of marks	MCQs or short, obvious answers	Getting top grades	Yes, to understand the theory
UG College	Mixed: equal distribution or 50-50	MCQs or short conceptual answers	Skill development or top rank	Yes, practical orientation
PG College	Weighted end or report-based	Long prescribed answers or MCQs	Being a better person / gaining knowledge	Yes, for the application
PhD Scholar	50/50 exams and reports	Short, conceptual answers	Knowledge gain / future educator	Yes, for measurement techniques

Insights from Broader Research can be drawn as follows:

College Students Prefer Interactive Learning:

Over one-third of undergraduates favour interactive lectures, where traditional teaching is combined with active tasks like case studies and small-group discussions.

Active Learning Boosts Engagement and Outcomes:

Active learning methods in STEM significantly lower dropout rates and improve understanding. In physics, students learn twice as much when active learning is implemented.

Education Level and Format Preferences Vary:

Younger students (e.g., younger Gen Z) often prefer on-campus, communal learning. In contrast, mature students tend to favour online education for its flexibility and convenience.

In essence:

Learners across all levels value interactive teaching, practically oriented learning, and consistent assessments—with advanced learners favouring deeper engagement and flexible grading methods. As well stated (Perna, M. C., 2024) Gen Z is ambitious and proactive about acquiring new skills, often pushing back against older generational stereotypes. Gen Z learners—spanning the UK, US, and India—prioritize life skills beyond academic achievement, specifically confidence, creativity, critical thinking, and independence as essential for navigating higher education and early career stages (Education, 2025).

From the above findings, one thing is clear: the other side of the classroom is very smart, impatient, and highly driven by the fantasized world of computers or mobile phones. Teaching such a generation for the last decade, with the availability of smartphones to everyone, and with speedy internet, puts your tech credibility in question. Students are supposed to be learning when you teach, but they are also judging your teaching capabilities through their learning, or sometimes through not learning. As consumers (Cuseo, J. (n.d.), 2002) claims that students can judge what is taught and how it is taught. So, teaching becomes a very crucial job in front of the classroom. And then there were many discussions on the teaching methodology, basically for the betterment of teacher-kind, as he is the one handling the other forty-plus varied, unstable, and young brains. In 1956, Benjamin Bloom led a set of educational psychologists who established a classification of levels of intellectual behaviour, famously known as Bloom's Taxonomy or Bloom's Pyramid (Bloom,

1956). These levels help educators to formulate their teaching methodologies and assessment levels.

Figure 5. The Original and Advanced Bloom's Levels are Shown

These levels are not only used for teaching progressively but also to evaluate students' understanding in the same manner. However, it is not expected of all the students to complete all the levels for all the courses. This will introduce the idea of student categorization, as those who have reached up to the second step of the pyramid will be called "attainment at level 1", step 4 will be "attainment at level 2," and step 6, or the top of the pyramid, will be "attainment at level 3".

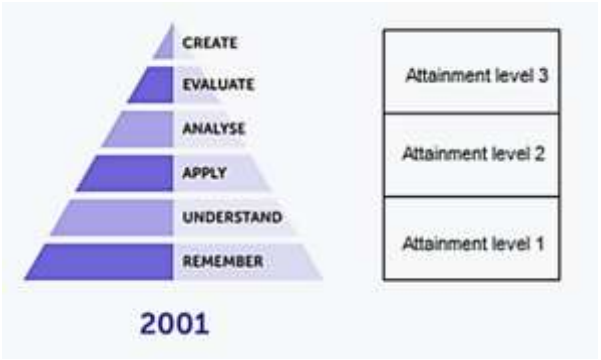

Figure 6. Outcome-Based Education's Attainment Levels Can Also be Defined by The Number of Students Stepping Up to Which Level of Bloom's Pyramid

Talking about assessment according to blooms levelling. Many educational researchers have given techniques for assessment as well. For example, below is the Miller Assessment Pyramid (Miller, 1990).

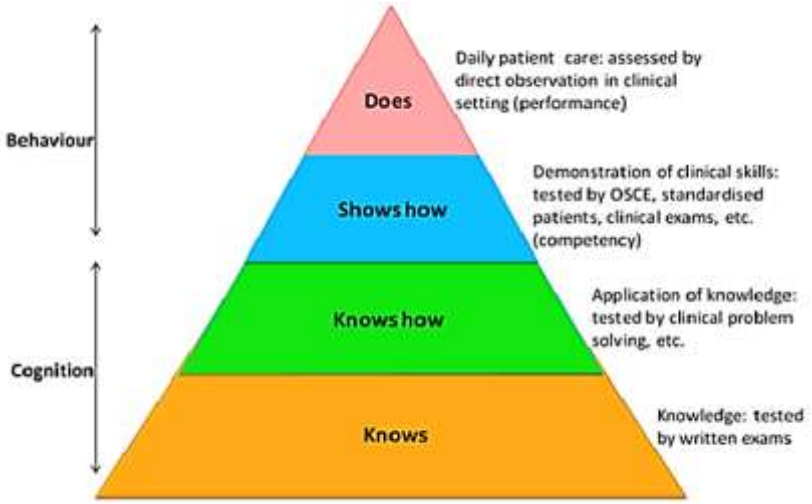

Figure 7. In The Similar Way Following Module for Assessment Tools for Students of Science and Technology is Proposed with Aligned Teaching Methodologies

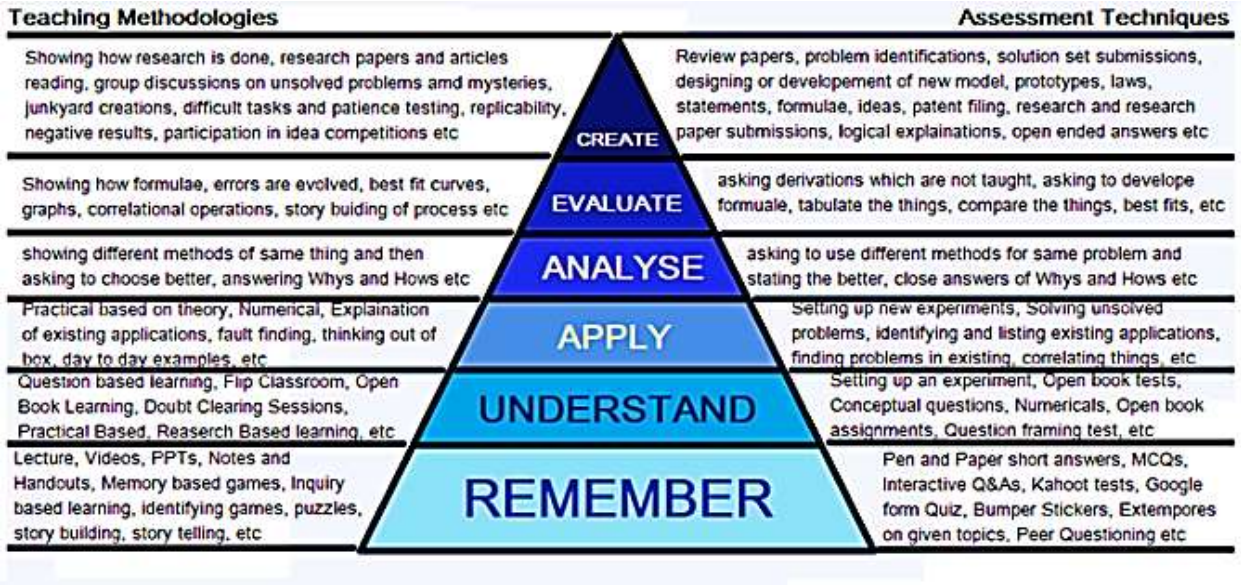

Figure 8. The Alignment of Teaching Methodologies and Assessment Techniques with Each Other and with Bloom's Hierarchy

CONCLUSION

The findings of this study indicate that contemporary learners require teaching approaches that move beyond traditional lecture-driven methods and adapt to the dynamic, technology-rich environment in which students now operate. The results demonstrate that while foundational instructional practices remain valuable, they must be complemented with innovative, student-centered strategies that support engagement, critical thinking, and real-world application. Learners today demonstrate a clear preference for interactive tools such as virtual labs, videos, collaborative platforms, and problem-based learning activities, reflecting a shift toward experiential and technology-supported pedagogy. Similarly, the study highlights the need for assessment practices that prioritize growth, analysis, and creation rather than memorization. Aligning assessment with Bloom's revised taxonomy and competency-based evaluation better supports both learner development and the expectations of 21st-century education.

Based on these findings, it is recommended that educators and academic institutions integrate technology-enhanced learning resources and contextualized teaching methods into regular classroom practice to strengthen student motivation and improve learning outcomes. Schools and universities should consider redesigning assessment systems to include formative evaluations, reflective tasks, and application-based activities that measure higher-order thinking skills. Curriculum designers and policy makers may also use these insights to refine instructional frameworks in line with the skill-oriented direction of national reforms such as the National Education Policy. These recommendations aim to assist educators, administrators, and curriculum planners in creating learning environments that are adaptive, relevant, and aligned with the evolving needs of modern learners.

As education continues to evolve, stakeholders need to acknowledge that learning is not a static process but an ever-growing pursuit shaped by curiosity, context, and technological progress. Encouraging a culture of continuous improvement among both learners and educators can help institutions remain responsive to emerging challenges and opportunities. In doing so, the education system can move closer to fostering environments where students develop not only academic competence but also the adaptability and creativity needed for lifelong learning.

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