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Why IITs insist on Board exam performance for admission? Professor explains

“Undergraduate admissions in the IIT system have always given due weightage in class 12 exams as a minimum eligibility criterion...the importance of holistic development through school education is not just for IIT aspirants, but anyone striving for excellence in any field or area,” IIT Delhi professor Aditya Mittal writes

New Delhi | Updated: February 3, 2023 13:26 IST

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The importance of holistic development through school education is not just for IIT aspirants, but for anyone striving for excellence in any field or area. (Graphic by Anghsuman Maity)

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(‘A Lesson from IIT’ is a weekly column by an IIT faculty member on learning, science and technology on campus and beyond. The column appears every Friday)

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Why does one go to school? Is it only for developing the ability to read and write? The answer is an obvious no. In fact, distinctions between robotic literacy and holistic development can be observed from primary school owing to the fact that humans are social animals.

For hundreds of years, school “education” helped build one’s character and helped in the contribution to the development of a civilised society.

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Communication, critical thinking, learning from peer interactions, creating our own individualised recipes for physical and mental well-being, building awareness of our rights and responsibilities — these are all part of our schooling and help us explore society and our possible individual roles in it.

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from schools and government schools, schooling is so important, that they have entrance examinations specific for the IITs?

At the higher educational level, institutions have the academic autonomy to choose those who are equipped with the background desired to handle their curricula and have demonstrated interest and ability to excel in some particular direction. Over the years, the IIT system has always chosen to select their students via their own entrance examinations but without diluting the importance of a proper schooling experience.

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The science and engineering education imparted in the IIT system requires proper foundations in Chemistry, Mathematics and Physics. Thus, a probably known, but much less appreciated, fact remains that historically, and even today, primary material utilised for setting up of original questions in the IIT entrance examination (earlier called JEE and now called JEE Advanced) are NCERT textbooks in the above subjects.

Several public interactions with those making it into the IIT system have already shown that the preparation for JEE Advanced requires a thorough conceptual understanding of the NCERT material. That said, the minimum aggregate requirements from boards/schooling are not limited to just the three subjects, and include other subjects also. Thus, while giving due importance to holistic development during schooling as a minimum baseline for eligibility, the IIT system relies on admitting students solely on merit through transparent subject-based entrance examinations.

Board examinations and IITs: a history

At this point, it is important to look at the historical context of “eligibility” to study in the IIT system. Between the 1960s to ‘90s, entrance into the IIT system was based on the Joint Entrance Examination (JEE) – as the entrance was referred to then – along with minimum pass marks in the terminal board examinations marking the exit from the school system

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But some major transformations followed. Till 1964, the school system in India finished with a “higher secondary” level in class XI. The results of the board exams in class XI used to be declared independent of streams.

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In 1964, one RP Aggarwal, father of then student Asha Aggarwal who had topped the arts stream, requested the board system for separate arts and sciences results. This was because toppers of arts streams generally had first divisions (60 per cent) and distinctions (75 per cent) were almost non-existent. Science stream toppers, on the other hand, generally had above 70 per cent, with distinctions in exceptional cases.

From 1965, the class XI higher secondary results were declared separately; allowing creation of separate merit lists for arts and sciences.

Interestingly, Asha went on to become the female topper (third overall) in her Bachelors and Masters in Mathematics from [Delhi University](#), thereby justifying her father’s petition in 1964 that led to the 1965 transition of recognising stream-wise merit in school examinations.

It is also important to note that during those times, passing the class XI higher secondary board examinations – which covered the syllabus covered in classes IX, X and XI – was itself considered as an academic achievement and allowed access to a variety of jobs. In this system, schooling till class XI was followed by a four or five-year B. Tech. program in the IITs. In fact, anyone gaining admission to the IIT system through the JEE would compulsorily need to pass all subjects in the board examinations. Thus, anyone with a “compartment” in any subject in board examinations was required to clear/pass that subject before continuing their studies in an IIT.

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In the early 1970s, the class XI higher secondary board examination system was changed to a 10 plus two (class X (Secondary) and class XII (Senior Secondary) board examination system. So, the earlier system of schooling till class XI followed by a four/five-year B. Tech. program in the IITs changed to schooling till class XII followed by a four-year B. Tech. or a five-year integrated Masters or a five-year dual degree program in the IITs.

Subsequently, in 1970s, 1980s and 1990s, only passing class X and class XII board examinations were also considered as academic achievements allowing access to some jobs. While the number of students getting 70 per cent or higher increased, distinctions (75 per cent and above) were still restricted to toppers and absolute toppers started obtaining 80 per cent or above aggregate marks by the 1990s. Aggregates of 90 per cent or above were extreme rarities up to the mid-to-late 1990s. Thus, admission to IITs still required pass marks in the class XII board examinations as a minimum criterion for admissions in addition to performance in the JEE.

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The pass percentage increase and changed rules

The situation changed at the turn of the century. With the introduction of student-friendly policies and a heavy emphasis on the philosophy that no child should be left behind, the school system worked very hard to ensure an increase in the pass percentage of students in class XII boards.

As a result, simply passing the board examination was no longer considered a big academic achievement. For the first time in 2006, the IIT system introduced the requirement of 60 per cent aggregate marks in class XII board examinations as a minimum criterion for admissions in addition to the performance in JEE.

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Subsequently, a heavier emphasis on policy and assistance to weaker students to pass class XII boards with dignity resulted in a huge increase in the number of students scoring much higher aggregates in the boards. To paraphrase a popular advertisement, class X and XII aggregates of a large number of students started reflecting numbers (90, 95 and above) like the kind seen only in thermometers up to the 1990s.

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So, in 2013, the IIT system introduced a requirement of aggregate marks in class XII being in the top 20 percentile of respective boards. This ensured that students from different non-CBSE boards (such as state boards and ICSE some of which still had lower overall aggregates of toppers) also got an equal merit-based-opportunity to fulfil the requirement of the minimum board score aggregate for admissions to IITs in addition to their performance in the entrance examination.

Honouring the historical concept of “distinction” (aggregate 75 per cent or more), and based on data suggesting that CBSE top 20 percentile is generally in 75 per cent aggregate, the boards performance criterion was changed to whichever is “lower of 75 per cent aggregate or top 20 percentile of a given board” in 2015.

The bottom-line is that undergraduate admissions in the IIT system have always given due weightage in class 12 exams as a minimum eligibility criterion — this criterion has been revised from time to time depending on “[educonomic inflation](#)”.

What school teaches you

Striving for excellence requires sincerity, hard work, and discipline regardless of the field.

The qualities of sincerity, hard work, discipline (amongst many others) start developing in school itself. Working hard is a habit that is developed. Being honest is a quality that is nurtured. Being disciplined is a habit that is instilled. Communicating with peers and making presentations are practiced skills. Constructive critical thinking is an acquired quality. Creating avenues of choices and then making informed choices are also acquired qualities. These are only a few of the many more aspects one develops during school education.

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To become an IITian, to successfully navigate the educational freedom in the IIT system while developing a habit of rigor towards excellence, and to eventually represent the IIT system on the global stage, the above aspects expected out of school education are objectively included as minimum boards performance criteria for eligibility to study in the IIT system.

In a recent interaction with a much-loved Indian cricketer – who was a key member of the 1983 world cup winning team – this philosophy found resonance.

This cricketer, who runs a very successful cricket academy for youngsters, emphasises the importance of school and college education to all those in his academy. Regardless of their love for cricket and their performance in the sport, he strongly advises his students to ensure that they complete their education.

Clearly, the importance of holistic development through school education is not just for IIT aspirants, but for anyone striving for excellence in any field or area.

One can of course watch a “Taare Zameen Par” to criticise parental pressures without realising that eventually one of the protagonists is a school teacher representing the success of the school education system. One can watch a “3 Idiots” to make fun of the education systems without realising that the ultimate prize for an exceptionally talented protagonist was a pen given to him by his teacher!

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(The author is currently a professor at IIT Delhi and the dean of its student affairs body. He is also the former Chairman of JEE(Advanced) at IIT Delhi. The author is grateful to Prof. Asha Mittal (retired Associate Professor of Mathematics from Kirori Mal College, Delhi University), Prof. S. K. Gupta (retired Professor from IIT Delhi, former organizing Chairman of JEE, a B. Tech. from IIT Kanpur) and Mr. Dinesh (JEE Advanced office at IIT Delhi) for providing some information/data relevant to the article.)

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