

# Editorial

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*Vasant Natarajan, Associate Editor*

(Ex-) President Kalam has fired the imagination of the youth of this country by urging them to strive to make India a developed country by the year 2020. But everyone realizes that several things have to change if this dream has to come true. One of these is that we have to bridge the huge urban-rural divide that exists in India today. Despite their obvious problems, our (mega)cities remain places of immense opportunities, causing millions to migrate to them from their rural homes, putting ever more pressure on their limited resources. This is also true of opportunities in education. Thus our top colleges and universities have a large number of students fighting for their limited seats.



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History has also shown us that scientific and technological prowess is the engine of economic growth for all round development. Today, US and Western Europe are so highly developed because of their technological advances over the last two hundred years. If we want to tap the enormous talent in rural India, we need to provide educational opportunities for students from rural backgrounds. IITs and other Engineering colleges admit students based on entrance exams, which skews the opportunity heavily in favour of urban students. There are numerous coaching classes, which are mainly urban based, that train the students (for a large fee, of course) on how to crack JEE or other entrance exams. A poor but bright rural student stands very little chance against a well-trained urban student. Despite this disadvantage, a few bright students from such backgrounds do manage to get into these colleges. And this has a huge multiplicative effect – his/her juniors become aware of such opportunities, start believing that they too can achieve the same, and suddenly there is a flood of bright students from the same place – highlighting the importance of reaching out to these rural areas. When there is so much discussion about reservation in our institutions of higher learning, what we really need is a quota for students coming from a rural background.

To address some of these issues, the government of Tamil Nadu is trying out a bold new idea – this year they have abolished the common entrance test (CET) for admission to Engineering and Medical colleges, and are going to admit students based on their performance in the XII Std Board exams. This not only eases the stress of the entrance exams and coaching classes on students, but also gives the students more time to concentrate on their subjects in school. The



results are obvious: this year there is a significant increase in the overall pass percentage, an increase in the percentage of students getting above 90% in science subjects, and most spectacularly, the number of students scoring high marks from rural areas has increased substantially more than the number from urban areas. What this means is that there is going to be a larger percentage of rural students getting into the top colleges, a sure sign that the disadvantage of their background is being reduced.

Such a scheme can easily be tried at the national level, say for admission into IITs and NITs. An obvious question that arises is how to compare the marks of students from various State and Central Boards (CBSE, ICSE, etc), some of which are known to give higher average marks compared to others. But this problem has been solved by the Birla Institute of Technology and Science (BITS) Pilani several decades ago. Since admission into their programmes is based on the student's performance in the school-leaving Board exam, they normalize the marks for each Board against the highest marks obtained that year. The students graduating from their courses perform just as well as students from colleges which use entrance exams, so this formula works quite well. Indeed, a further possible refinement to reduce the disadvantage of rural students is to normalize the marks not to the highest marks obtained in the entire Board but only to the highest marks obtained in the district from which the student comes. In effect, city students will be compared to other city students, while rural students will be compared amongst themselves.

Pressures of entrance exams are not the only pressures that young students face. Many times they join courses because their parents want them to, and not because they have any particular liking for the subject. What they do not realize is that a person is more likely to be successful in their career if they can choose what they study, follow their heart so to speak. The person featured in this issue of *Resonance*, John Backus, faced a similar problem when he joined an undergraduate Chemistry course to satisfy his father. But he finally did what he enjoyed, namely mathematical computations, and found his way to the portals of IBM to work in this area for the rest of his life. He invented Fortran, the first high-level computer language, and went on to win the Turing award, the highest award in computer science. What an advertisement for 'following your heart'.

