Vidya Vikas Education Trust's
Universal College of Engineering
Kaman - Bhiwandi Road, Vasai, Maharashtra
Accredited with 'B+' grade by NAAC, approved by AICTE, DTE
Recognised as Gujrati Linguistic Minority

CURRENT WAVES

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College Profile

Everything you need to know about us.

Embraced by lush greenery and scenic beauty, Universal College of Engineering is a treasured place for aspiring engineers to leave their imprints towards success.

As a college within the wider network frame, we are one of the fastest growing institutions in India. Our institute has been accredited by National Assessment and Accreditation Council (**NAAC**) with **B+ grade** in the first cycle of accreditation. Times of India Survey **Ranked No. 1** in India among Top Emerging Private Engineering Institutes for 5 consecutive years 2015, 2016, 2017, 2018 and 2019 and the saga of accolades still continues.

In response to the expectations of quality technical education, our college is approved by the All India Council for Technical Education (**AICTE**), New Delhi; recognized by the Directorate of Technical Education (**DTE**), Government of Maharashtra; affiliated to Mumbai University.

Our college is also associated with professional bodies like IEEE, IETE, ISA and CSI to update the revolutionary technological advancements.

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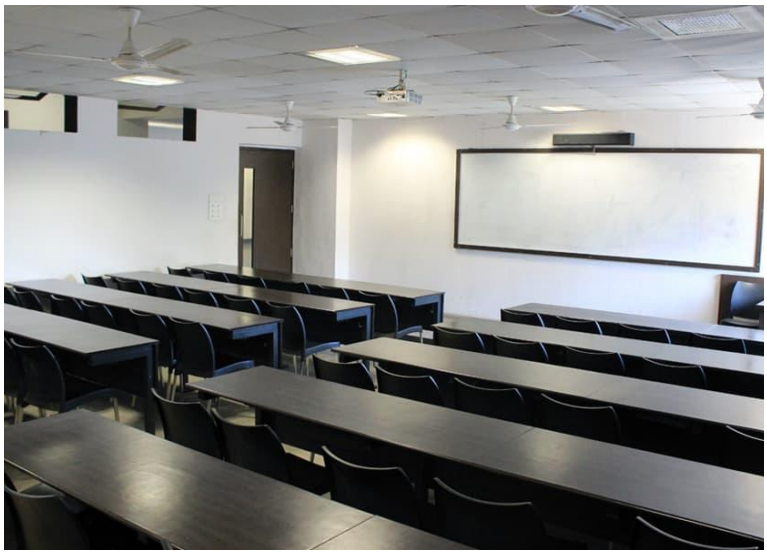
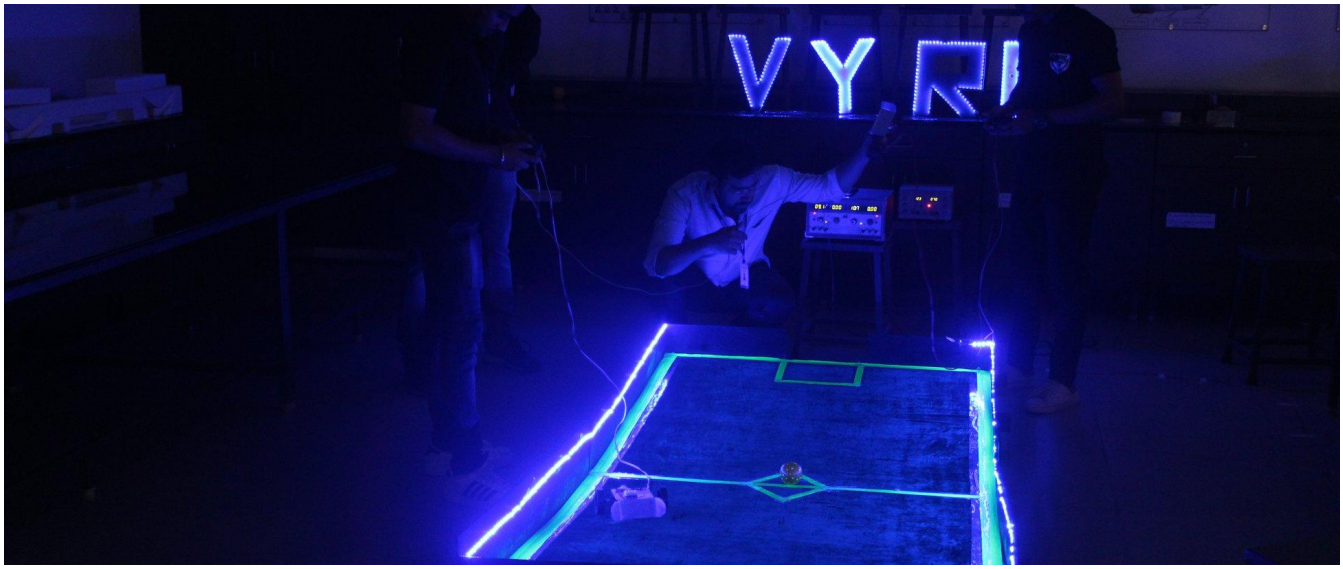
We offer 4 years full-time Bachelor of Technology in Computer Engineering, Civil Engineering, Artificial Intelligence & Machine Learning, Information Technology Engineering and Data Engineering.

The unique state-of-the-art facility of the institute has been carefully designed to accommodate the needs of the students. Laboratories are equipped with world-class facilities based on the latest technology of different sectors. Our smart classrooms are well ventilated, spacious and equipped with overhead and LCD projectors along with the public address system. College library provides a rich collection of specialist library resources and services to support students' academic work and enrich their research skills.



We are obliged to equip our students to get placed in highly reputed companies by mentoring their necessary skill set for cutting-edge technologies. The core highlighted areas are helping students with their technical competency, communication skills along with career guidance and counselling.

Universal College of Engineering has produced a large number of successful alumni who are working in reputed organisations in India and abroad and have contributed immensely to the cause of nation-building and society. We welcome all engineering aspirants to create an incredible legacy in the field of engineering.



Why Google committed $10 Billion to India's Digital Future

Google just promised to invest $10 Billion in India and we need to talk about it.

Business

The story

On 13th July, Google's CEO, Sundar Pichai had a big announcement to make.

> "Today, I'm excited to announce the Google for India Digitization Fund. Through this effort, we will invest ₹75,000 crore, or approximately $10 billion, into India over the next 5–7 years. We'll do this through a mix of equity investments, partnerships, and operational, infrastructure and ecosystem investments. This is a reflection of our confidence in the future of India and its digital economy."

And truth be told, it's a big bet. I mean, when was the last time you saw a foreign company commit such an exorbitant sum to the future of India?
It's quite an unprecedented push for India's digital dreams. And there was a four-point agenda that Google outlined to turn these dreams into reality.

1) Enabling affordable access and information for every Indian in their own language, whether it's Hindi, Tamil, Punjabi or any other.
Explanation: India isn't a large homogeneous market. Instead, it's an amalgamation of multiple micro markets with subtle differences in culture,

language, income, tradition, and wealth. So tech companies aspiring to foray deep into these micro-markets will have to adapt to these differences.

Consider for instance the language divide.

Back in 2018, India had an active internet user base of 530 Million. However, close to half these users preferred digital content in their own language. And don't scoff at this population. They come with an annual spending power of $300 billion. That's a massive market crying out for tailor-made products. You can't ignore them anymore.

Unfortunately, building a library rich in vernacular content will take time and money. Just look at the scale of the problem here—90% of the country's registered 135,000 publications don't even have a website since they only cater to local communities. And most of them couldn't scale their business online since they had very limited tools at their disposal.
In fact, back in 2018, Google said it was working with Indian language publishers to solve this very problem. They introduced Navlekha—a platform that was supposed to allow publishers to edit and produce content in local languages without any expert digital knowledge. And they were just scratching the surface here.

But if they really wanted to make a dent, they had to have better subtitles, better translation, better content, better accessibility, better everything. They needed to make investments to help grow the vernacular ecosystem.
And guess what? It's happening now.

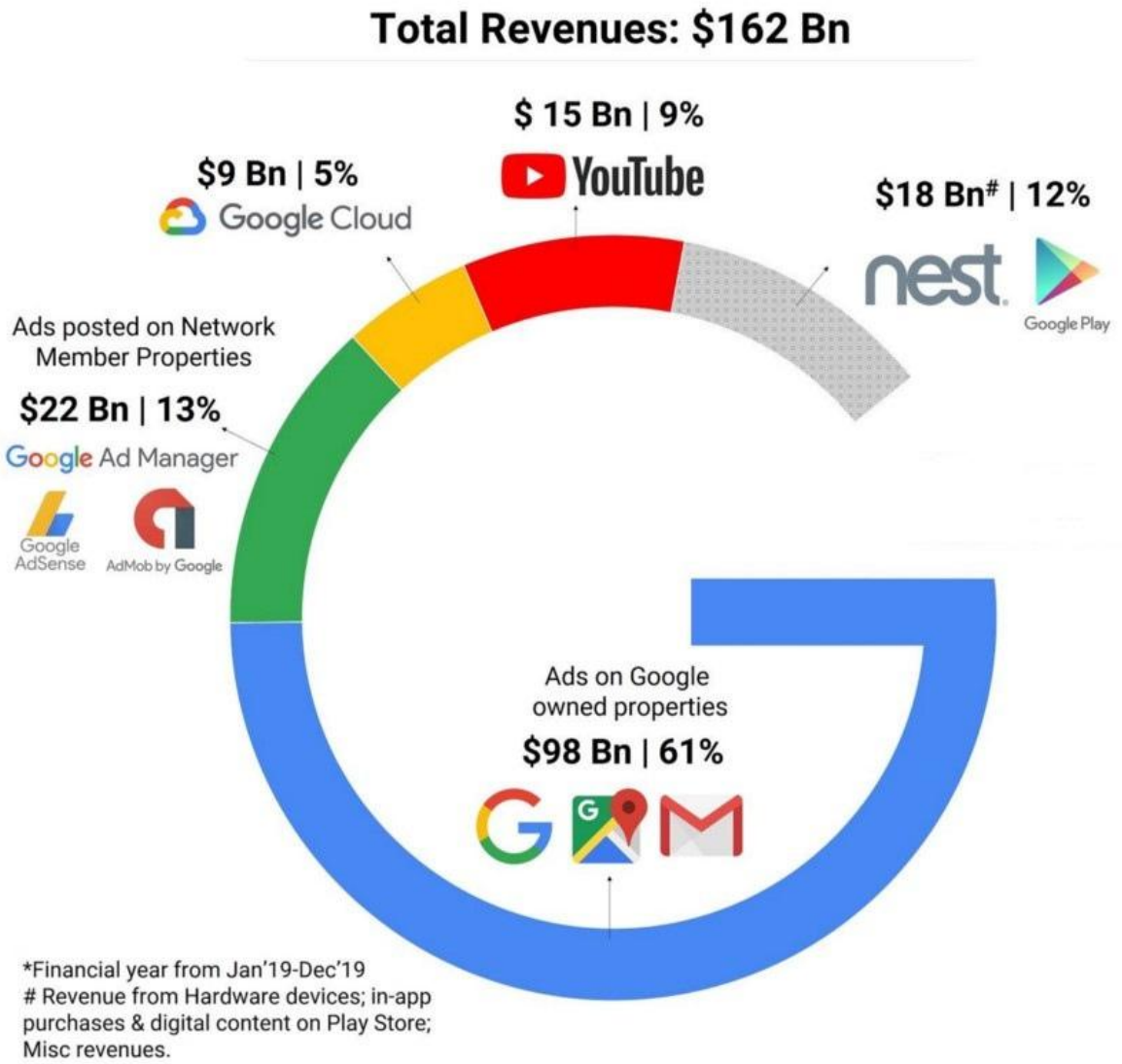
2) Building new products and services that are deeply relevant to India's unique needs

Every market has its own peculiar quirks and India is no different. When Samsung launched its ActivWash+ washing machine they added a built-in sink, given the tendency among Indians to pre-wash clothes by hand. This meant consumers no longer had to crouch on the floor and they could hand wash their clothes standing upright. I am not saying Google is trying to build washing machines here. But like most things, tech products are likely to witness a surge in adoption rates if they are built specifically for the audience they cater to.

In fact, Google is no stranger to this. Back in 2017, they wrote a rather elaborate memo on how they were building India-first products and features for the next billion Internet users.

> "Another India-first feature is the new "two-wheeler mode" in Google Maps. India is the largest two-wheeler market in the world, and the millions of motorcycle and scooter riders have different navigation needs than drivers of automobiles. Two-wheeler mode in Maps shows trip routes that use "shortcuts" not accessible to cars and trucks. It also provides customized traffic and arrival time estimations. And since so many Indians rely on local landmarks for navigation, two-wheeler mode will show major landmarks on the route so that riders can plan their trip before starting, and don't have to keep checking the phone on the go."

I think it's pretty clear what Google is trying to do here.



3) Empowering businesses as they continue or embark on their digital transformation

Think Google Pay. Currently the platform has over 3,000 online merchants and over 200,000 offline merchants. They use it to take payments, pay their suppliers, transfer money to employees and pay the odd electricity bill. And if Google can partner with other similar entities that are trying to help grow India's fledgling digital ecosystem, it would be a win-win for everyone involved.

Right?

T4) Leveraging technology and AI for social good, in areas like health, education, and agriculture

"Don't be evil" was a part of the company's corporate code of conduct since 2000. When Google reorganized in 2015, the parent company Alphabet assumed a slightly different version of the motto—"do the right thing."
So, point 4 ought to be self-explanatory. It's literally their motto.

But do bear in mind, that there is an ulterior motive here. Google wasn't going to spend this money and push the digitization initiative if it didn't make business sense. After all, a digital India translates to more people taking to the internet. And since Google makes most of its money offering advertising services online, you can get a sense of why they are making this bet right now.

Understanding the National Education Policy 2020

In this newsletter, we try to understand what's in the New Education Policy.

Policy

The story

It's been 34 years since India has made any major reforms in its education system. But on Wednesday, after 6 years of deliberation, the National Education Policy (NEP) was finally unveiled. The policy seeks to ramp up public investment in education from 4.4% of India's GDP to 6%, and through a host of changes, transform education for almost 300 million students in the country!

And to this end, the policy lays down comprehensive reforms that will impact every student- right from the tiny tot going to her first playschool to an ambitious masters' graduate considering a PhD programme. So let's dig in.

School Education

The NEP is breaking down the existing structure of India's K-12 education. There's no more 10+2 - 10 years of primary and secondary education followed by 2 years of higher secondary education. Schools in India will now follow the 5+3+3+4 structure.

But wait- 5+3+3+4= 15. Does this mean students are now required to spend 15 years in school?

Well, they already do. You see, most children (in cities) start their education by the age of 3 through playschools. The new structure is simply bringing playschools into the formal education ambit, and dividing the school structure based on the developmental stages of children.

So for the first 5 years, children aged 3 to 8 years will enter the foundational stage. Since maximum brain development happens at these ages, the curriculum will focus on learning languages, playing, and activities. After 5 years of this, these kids will enter grade 3, where the focus will shift to discovery, and interaction-based classroom learning. Linguistic and numeracy skills will be honed at this stage.

One contentious point here was the medium of instruction. There was some confusion that lessons till grade 5 would be taught strictly in the mother tongue or the local language prevalent in the region. But that's not entirely accurate. According to the policy, "*Wherever possible, the medium of instruction until at least Grade 5, but preferably till Grade 8 and beyond, will be the mother tongue... Thereafter, the home/local language shall continue to be taught as a language wherever possible. This will be followed by both public and private schools.*" So this phrase '**wherever possible**' clearly gives some wiggle room to schools. All in all, three languages are to be taught to all students and while states are allowed to decide what to pick, two of these languages have to be native to India.

Anyway, once these students get to grade 6, the pedagogy will evolve to more experiential learning in the sciences, mathematics, arts, social sciences and humanities.

This is also when students will be introduced to vocational training- they'll be taught technical skills that will allow them to take up jobs in specialised trades or crafts like pottery or carpentry. In fact, they'll also have to do a 10-day internship with local experts!

This will go on till students get to grade 9. Once there, they will be exposed to multidisciplinary studies where they get to pick the subjects they like from the ones available. No more Science vs Commerce. No more compartmentalization of those adept at mathematics and the ones interested in History. Basically, there are no more streams. You can choose to study Physics along with Sanskrit, or Political Science along with Computers, and your school will have to accommodate you. Even vocational courses and extra curricular activities will be given as much leverage as academic studies.

Of course, amid all these changes, something will have to be done about those career defining assessments that make students everywhere tremble- board exams. Unfortunately, the policy does not discontinue board exams. But it does lower their importance and make them easier. What's more, students will be allowed to take them again if they think there's scope for improvement!

Which brings us to...**College Education**

The National Testing Agency (NTA) will be charged with conducting (optional) entrance examinations for admissions into higher educational institutes across the country. This will be a standardised test, similar to the SAT which is used for college admissions in the US.

Higher Education

Once selected into a college, students will enroll in a 3 or 4 year undergraduate degree, with an option of leaving whenever they want. If you complete one year, you'll get a certificate. Two years gets you a diploma. If you stick it out for three or four years (depending on the course), you'll get a degree. And if you pursue a four-year programme with research, you'll be an eligible PhD candidate.

Another really cool bit here is the Academic Bank of Credit (ABC). An ABC will store the academic credits that students earn by taking courses from various recognized higher education institutions. Whenever you complete a course, a number of credits will be added to your bank. You can then transfer these credits if you decide to switch colleges. And even if you're forced to drop out for some reason, these credits will remain intact. Meaning you can come back years later and pick up from where you left off.

Another thing the policy focuses on is the need to make universities multidisciplinary. Meaning, they'll be expected to teach everything from arts, science, management, etc. under one roof. By 2040, the government seeks to phase out single-stream institutions in favour of this model.

All in all, the changes underlined in the NEP seem well thought out. As education expert Meeta Sengupta says, "This is an NEP that offers Choice, Chance and Change." But as always, implementation is key and we'll just have to wait and see how things turn out.

India's Ethanol Project

In this newsletter, we talk about India's ambitious ethanol project and all the challenges that we might face in the near future.

Policy

The story

India has been working hard to reduce its dependency on foreign oil. The conventional solution would probably entail seeking resources internally to ween off these inter-dependencies. But considering the precarious nature of fossil fuels, that probably won't happen. Instead, India is looking at an alternative—**Ethanol**.

It burns clean, it burns well and in theory, we could produce enough ethanol to meet our needs. Because unlike petrol, ethanol isn't a byproduct of crude oil. It's a complex derivative you extract while processing sugarcane.

You could extract it from sugarcane juice. You could extract it from molasses—the black viscous product you derive from refining sugarcane. Or you could extract it from the likes of corn, bamboo, and rotten potatoes.
Needless to say, we grow this stuff in abundance. Therefore, the government has made a concerted effort to promote ethanol as an alternative fuel option and all of this culminated in the final unveiling of the ambitious National Policy on Biofuels (2018).

The plan is simple—Ramp up ethanol production, slowly start blending it with petrol and get to a point where we could reduce oil imports by a rather substantial amount.

The government wants to achieve a target blend rate of 10% by 2022. By 2030, they want to push it to 20%. So, technically by the end of this decade, we should see ethanol replace roughly 20% of all incumbent fuel we consume. In most cases, consumers will probably be using a blended fuel mixture of petrol and ethanol. However, it's quite possible that we might also see the production of ethanol-only vehicles in the near future.

And while all of this should ideally reduce our dependency on foreign oil, there are some obvious challenges in adopting ethanol.

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And then, a good 60–80 crore litres from the supply pool was used to produce chemicals. That left us with about 100–120 crore litres and we barely managed to hit blend rates of about 3.5%.

Now although we've improved considerably since then and even managed to hit blend rates of 6% last year, we imported roughly 20% of our Ethanol from the US. Not necessarily the kind of progress you like to see.

Then there's seasonality. We still grow sugarcane in drought-prone areas like Maharashtra and when the monsoons aren't kind, supply problems can hit us bad. For instance, this year the average blend rate is hovering at about 5%. While you could attribute some of the problems to the nationwide lockdown, droughts in parts of Karnataka and Maharashtra also played a massive role in scuttling supply.

Also, even if we somehow did improve blend rates, we need to look at another major variable in the equation—the vehicles.

Usually, with low blend rates, a mixture of ethanol and petrol works just fine. However, as the concentration of ethanol in the fuel mixture starts increasing, interesting problems begin to crop up.

Consider Brazil.

Back in the late '70s, the Brazilian government began promoting the use of neat-ethanol vehicles to reduce the country's dependency on oil. These new variants were built to run on just ethanol. The scheme worked perfectly well so long as ethanol prices traded at a steep discount to oil. However, when oil prices crashed during the '90s, consumers turned away from these vehicles entirely and switched back to oil guzzling motorcars.

The Brazilian government had to respond once again. In the early 2000s, they started laying the groundwork to promote flex-fuel vehicles (FFV). These vehicles could run on both ethanol and petrol—offering consumers the flexibility to switch between multiple fuels depending on price and convenience. These vehicles can also withstand the corrosive nature of ethanol-blended fuels and offer some protection against engine stalling. By 2018, 38% of all vehicles sold in Brazil had flexible fuel engines.

India has also taken a cue from this little initiative and policymakers have been vocal about promoting FFVs to boost ethanol adoption in the country.

However, this approach might not necessarily be prudent.

After all, upgrading manufacturing facilities take years. Recouping that investment might take a few more years. In the end, if there's no real clarity on what path we are likely to pursue, we won't see a lot of progress.

Anyway, the bottom line here is simple. Ethanol adoption, in all likelihood, will reduce our import bill and aid farm income in a massive way. But it's safe to say that there's still a lot of work to be done before we get to meet our lofty target blend rates.