GUJARAT TECHNOLOGICAL UNIVERSITY

GTU PERSPECTIVE (Please read it before you go through the interesting mail about the French experiment):

After the first cohort of 4-year engineering students had graduated, GTU decided to start working on a major effort to update the syllabi of BE. It was decided that the new syllabi should have a design orientation so that project-based learning processes may be implemented. In July 2013, the new syllabi were implemented for BE I.

In December 2013, we came to know that the new Director of IIT-BHU had decided to bring design orientation to the new syllabi of IIT-BHU. In March 2014, we learnt that Directors of all the IITs, after a Retreat along with large companies of Government of India, had decided to develop a 'design spine' in their learning processes. (Please see **http://www.thehindu.com/news/national/iits-to-collaborate-with-companies-increase-intake-of-foreign-students/article5584701.ece#.UvowKG8RJnY.gmailc**).

We have also learnt that in Asia-Pacific region, a network of Universities, under the leadership of a Professor from Japan, has taken up the challenge of making the learning processes in engineering Project-based.

GTU has initiated the process through its new syllabi. **Let us implement the syllabi in the best possible manner. Let us use the ideas being generated through the project on Active Learning and Creating Excitement in the workshops, laboratories and class-rooms (ALCE). Let us set question papers, which ask for understanding of concepts and not for rote-learning** (The GTU project on the Art and Science of Designing Question Papers is called Confluence. Please participate in the Confluence workshops.). **These three steps can make the learning systems in our institutions the best in the world.**

                  *   *   *

From an interesting e-mail from Ajay Bhagwat :

A French School for training Software Engineers:

Lesson to be learnt by the GTU family:

Let GTU Faculty and students understand the great importance of projects in the learning process.

If your engineering or MCA college/ institute/ polytechnic is not using difficult projects in its learning systems, it is not going to produce good technologists.

A Summary of the article:

- plans to turn out highly qualified, motivated software engineers, each of whom has gone through an intensive two- to three-year program designed to teach them everything they need to know to become outstanding programmers.
- Free engineering school, no tuition fee[1]
- TEACHING METHOD: throw all the students — 800 to 1,000 per year — into a single building in the heart of Paris, give them Macs with big Cinema displays, and throw increasingly difficult programming challenges at them. The students are given little direction about how to solve the problems, so they have to turn to each other — and to the Internet — to figure out the solutions.

- ADMISSION REQUIREMENTS: The only requirement is that they be between the ages of 18 and 30. No requirement of what they have done before.   Last year, 890 students were selected out of 70,000 people, who attempted the online qualification test. It was followed by a test of working on a project for 4,000 students. They went through a 4-week intensive project that had them working upwards of 100 hours a week on various coding challenges. In the end, 890 students were selected
- PASSING STANDARD: At École 42, a student has to complete 42 projects successfully to get a PASS. Students can come and go as they please; the school is open 24 hours a day. Students share all of their code on Github (naturally). They communicate with one another, and receive challenges and tests, via the school's intranet. Everything else they figure out on their own, whether it means learning trigonometry, figuring out the syntax for C code, or picking up techniques to index a database. **Tests are essentially pass-fail: Your team either completes the project or it doesn't.**

Please read the full article below:

http://venturebeat.com/2014/06/13/this-french-tech-school-has-no-teachers-no-books-no-tuition-and-it-could-change-everything/

This French tech school has no teachers, no books, no tuition — and it could change everything

JUNE 13, 2014 8:15 AM •

[DYLAN TWENEY](#)

PARIS — [École 42](#) might be one of the most ambitious experiments in engineering education.

It has no teachers. No books. No MOOCs. No dorms, gyms, labs, or student centers. No tuition.

And yet it plans to turn out highly qualified, motivated software engineers, each of whom has gone through an intensive two- to three-year program designed to teach them everything they need to know to become outstanding programmers.

The school, housed in a former government building used to educate teachers (ironically enough), was started by Xavier Niel. The founder and majority owner of French ISP [Free](#), Niel is a billionaire many times over. He's not well known in the U.S., but here he is revered as one of the country's great entrepreneurial successes in tech.

He is also irrepressibly upbeat, smiling and laughing almost nonstop for the hour that he led a tour through École 42 earlier this week. (Who wouldn't be, with that much wealth? Yet I have met much more dour billionaires before.)

Niel started École 42 with a 70 million euro donation. He has no plans for it to make money, ever.

Above: Free founder Xavier Niel, speaking at Ecole 42, the free engineering school he created.

Image Credit: Dylan Tweney/VentureBeat

"I know one business, and that's how to make software," Niel said. "I made a lot of money and I want to give something back to my country," he explained.

[1]To make the school self-sustaining, he figures that future alumni will give back to their school, just as alumni of other schools do. If a few of them become very rich, as Niel has, perhaps they, too, will give millions to keep it going.

The basic idea of École 42 is to throw all the students — 800 to 1,000 per year — into a single building in the heart of Paris, give them Macs with big Cinema displays, and throw increasingly difficult programming challenges at them. The students are given little direction about how to solve the problems, so they have to turn to each other — and to the Internet — to figure out the solutions.

Above: A student at Ecole 42 explains how he created a ray tracing program. Six months before he knew nothing about programming.

Image Credit: Dylan Tweney/VentureBeat

The challenges are surprisingly difficult. One student I talked with was coding a ray tracer and building an emulation of the 3-D dungeon in Castle Wolfenstein within his first few months at the school. Six months earlier, he had barely touched a computer and knew nothing of programming. He hadn't even finished high school.

In fact, 40 percent of École 42′s students haven't finished high school. Others have graduated from Stanford or MIT or other prestigious institutions. But École 42 doesn't care about their background — all it cares about is whether they can complete the projects and move on. The only requirement is that they be between the ages of 18 and 30.

"We don't ask anything about what they've done before," Niel said.

Yet École 42 is harder to get into than Harvard: Last year, 70,000 people attempted the online qualification test. 20,000 completed the test, and of those, 4,000 were invited to spend four weeks in Paris doing an intensive project that had them working upwards of 100 hours a week on various coding challenges. In the end, 890 students were selected for the school's inaugural class, which began in November, 2013. (The average age is 22, and 11 percent of the first class is female.)

890 students out of 70,000 applicants means an acceptance rate a little north of 1 percent, or if you only count those who completed the test, 4.5 percent. By contrast, Harvard accepts about 6 percent of its applicants. And, even with financial aid, it charges a whole lot more than zero for its classes.

The upshot: If it works, the school's course of education will produce coders who are incredibly self-motivated, well-rounded in all aspects of software engineering, and willing to work hard. (The four-week tryout alone, with its 100-hour weeks, blows away the French government's official 35-hour-work week.)

Nicolas Sadirac, a French entrepreneur and educator, is the school's director. Before École 42 he ran Epitech, a well-regarded, private, for-profit school that trained software engineers.

Above: Ecole 42 includes a few extra amenities — like a hot tub on the roof deck.

Image Credit: Dylan Tweney/VentureBeat

All of École 42′s projects are meant to be collaborative, so the students work in teams of two to five people. At first glance, the École's classrooms look a little bit like a factory floor or a coding sweatshop, with row after row of Aeron-style chairs facing row after row of big monitors. But a closer look reveals that the layout is designed to facilitate small-group collaboration, with the monitors staggered so that students can easily talk to one another, on the diagonals between the monitors or side by side with the people next to them. Students can come and go as they please; the school is open 24 hours a day and has a well-appointed cafeteria in the basement (with a wine cellar that can hold 5,000 bottles, just in case the school needs to host any parties).

Students share all of their code on Github (naturally). They communicate with one another, and receive challenges and tests, via the school's intranet. Everything else they figure out on their own, whether it means learning trigonometry, figuring out the syntax for C code, or picking up techniques to index a database.

Tests are essentially pass-fail: Your team either completes the project or it doesn't. One administrator compared it to making a car: In other schools, getting a test 90 percent right means an A; but if you make a car with just three out of four wheels, it is a failure. At École 42, you don't get points for making it part way there — you have to make a car with all four wheels.

The no-teachers approach makes sense, as nearly anything you need to know about programming can now be found, for free, on the Internet. Motivated people can easily teach themselves any language they need to know in a few months of intensive work. But motivation is what's hard to come by, and to sustain — ask anyone who has tried out Codecademy but not stuck with it. That has prompted the creation of "learn to code" bootcamps and schools around the world. École 42 takes a similar inspiration but allows the students to generate their own enthusiasm via collaborative (and somewhat competitive) teamwork.

Above: Exterior view of Ecole 42.

Image Credit: Dylan Tweney/VentureBeat

Sadirac and Niel say that some prestigious universities have already expressed interest in the school's approach. The two are considering syndicating the model to create similar schools in other countries.

But even if they never expand beyond Paris, École 42 could become a significant force in software education. France already has a reputation for creating great engineers (in software as well as in many other fields).

If École 42 adds another thousand highly-motivated, entrepreneurial software engineers to the mix every year, it could very quickly accelerate this country's competitiveness in tech.

And the model will force schools like Harvard to make an extra effort to justify their high tuitions. If you can get training like this for free, and you want to be a software engineer, why go to Harvard?

Disclosure: My airfare and hotel to France were paid for by BPIFrance, a state-owned investment bank.

Thanks and regards,

Ajay Bhagwat