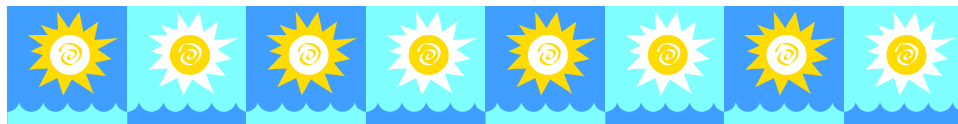


“Bridging The Gap In Engineering Advancement At NED”



By:
MOHAMMAD TURAB MEHDI
PETROLEUM ENGINEERING (SECOND YEAR)
NED UNIVERSITY



ABSTRACT

If someone ever asks me the secret that had kept the underdeveloped nations for centuries from prosperity and successfulness then I'll say that it is their lacking in **“self-reliance”**. Self reliance is a level of perfection that can only be attained by nations through optimization of their resources which is possible by walking down the path of **Engineering Advancement**. And as the charity must begin at home, so here I am presenting my ideas that may be helpful in setting “our house” in order and bringing engineering advancement at NED.

My writing will be in paragraph form, where I have identified the problem first and then addressed its solution side by side. Special care was taken of the originality and practicality of my ideas in my write-up. The actual essay is of 2019 words. Along with specific relevance to my department, care was taken that the solutions provided may also be such that they can be implemented in other engineering department likewise.

The ideas that will prove to be the **essence of my essay** along with many others will be; The **comparison** with neighboring universities of **India, Iran, Turkey and Saudi Arabia**, a **redefined role** of **NED alumni, international collaboration, extending services** to private and public sector and **up-gradation of our labs without university spending** for it, the system of **two-way flow of knowledge, Net Meeting sessions and Video Conferences, cloning the intelligence** and a very **smart way** to earn **Rs 10 million extra revenue** per year. Along with all these brilliant and distinct ideas the invaluable **ideas of my teachers** and **fellow students** hold the highest spot and have been mentioned **separately**.

After reading this abstract I don't know whether my essay will get short-listed for final consideration or not but I sincerely hope that my ideas will get valued and read at least once so my efforts of bringing change and advancement at NED do not go in vain.

Sources: My valued teachers, My friends and My own knowledge

THE ESSAY

The **NED University of Engineering and Technology** is the oldest institution now in Pakistan for teaching and turning out Graduate Engineers, having begun initially as an Engineering College in 1922. Like other such Government owned institutions in developing countries, it has had over the years to overcome various handicaps ranging from shortage of funds to “brain drain” of Faculty Members as well as students. Nevertheless, because of its transparent admission policy which has established its reputation over the years, it attracts the best students. But does the institution really live up to the expectations of students and industry in terms of engineering advancement? This is the question to which we will try to find an answer in this paper.

The local students who successfully make to NED feel pride on becoming a part of it. After all one has every reason to feel so as long as the institution retains its honour of producing better engineers than many others across the country. However, the honour of producing at least the country’s best graduates has been stolen away by some private sector universities (NUST and GIK) not long ago.

I recently met a final year student of mechanical engineering (oldest department) asking him what **annoyed him most** at NED. And he said,

“When I am in final year I am being taught 3 subjects by teachers who are just B.E. I mean this is **not fair** the final year **should be taught by professors and not by lecturers.**”

I felt crestfallen to know this. Since this is not the problem of mechanical department only but of **every other department** at NED. Over the years the NED has failed to attract professors of high caliber. This does not mean to undermine the current very competitive NED faculty in any way. Basically, the foreign returned professors and those with vast valuable experience drift towards the **extravagant salaries and perks of job** at private institutions. Moreover, there they get vast opportunities to practice and serve their subject in a much better way in state of the art research labs and ideal teaching

environments. The scenario at NED is averse to this. Even the best of the teachers earn no more than Rs 60,000 at best which is not even near to the half of the pay the other professors are getting in some now reputed engineering institutes. The **lab sessions** are carried out according to fixed set of scientific observations where the students and teachers observe and test basic phenomena on **outdated equipment** and in **outmoded ways**. The labs fail to present a scene of real engineering research labs where the students and teachers may be expected to think and act freely moving forward in a progressive manner with the latest technology. Realize that the university offers masters degree in electrical engineering, but **could not supply uninterruptible power** to a single department in its own innovative ways. Similarly, the automotive engineers **get no better in designing or manufacturing** and just end up with the knowledge of assembling automotives. The examples are great too many. The countries just in our neighbor are **manufacturing airplanes** at their own but we **fail** to produce even a cell phone at our own.

Now very little can be hoped of the government for allocation of funds for the improvement of public sector universities. Even in the Musharraf's era during which the higher education budget zoomed by twelve times over three years (a world record), the **budget of all 57 public sector universities** in Pakistan put together is \$500 million, which is about **40 per cent less** than only that of the **National University of Singapore**. Even the idea of forming some sort of panel to negotiate budget for higher education with the government would **not be practical** at all (a normal Pakistani understands it well). The next option may be to generate funds for itself and this is a viable option once we consider NED's meagre fee structure.

LUMS tuition fee per year = 250,000

IBA tuition fee per year = 119,986

GIK tuition fee per year = 240,000

NUST tuition fee per year = 90,250

NED tuition fee per year = 11,100 (except First Year)

So considering this, I am **not** suggesting our tuition fees to be in six-digits as well, as then it will get out of reach of many (low resources) brilliant students. But increasing the tuition fee just by Rs 2500 only per year per student will return university with **Rs10 million of extra revenue**. This self-generated revenue would be a big feat in helping to solve **faculty and lab related issues**. Regarding question of its implementation, it wouldn't be difficult. As the students who can pay Rs 11100 per year can also pay Rs 13,600 per year keeping in mind the up-gradation of universities facilities.

Moreover, **NED can consolidate its position** and honour in market and can create links and job avenues to its graduates in some very best firms by **extending services** to them at easier terms. For e.g. in addition to the academic programmes, **LUMS** also undertakes **research work and offers consultancy services**. Research projects under the Centre for Management and Economic Research (CMER) primarily deal with major economic and management issues faced by Pakistan and the region. The Small and Medium Enterprise Centre (SMEC) investigates the role that government policy and socio-political influences play in the development of small and medium enterprises. It also caters to the training and development needs of small and medium scale enterprises.

Likewise, NED can also come to the party by **extending testing and maintenance facilities**, and **plans and structures design** etc to **private and public sector firms** largely and regularly. It will require transformation of every inactive and occasional relationship into **working and regular collaboration**. This would directly lead to **up-gradation of universities labs** to very best standards without university spending for it and solely under the complete sponsorship of firms to whom these services will be offered.

When I took up the topic for this competition I interacted with my teachers and senior fellow students and this revealed some real problems and their solutions:

A B.E Civil engineering student said, "Universities and colleges are viewed largely as **public parks** or political dens where the students emerge as **pressure groups**."

Another told, "Here is **simple tribalism**. Now Punjabi students gang together against Pakhtoon students, Muhajirs versus Sindhis, Shias versus Sunnis, etc. On occasion,

student wolf packs attack each other with sticks, stones and pistols. There are many campus murders.”

A teacher of mine told me, “**Closed minds cannot innovate, create art and literature, or do science.**”

Another added, “Most students **memorize** an arbitrary set of rules and an endless number of facts and say that X is true and Y is false because that’s what the textbook says. (I grind my teeth whenever a student in my class gives me this argument!)”

Pakistani university and college students, as well as their teachers, are **far below** the internationally accepted levels in terms of basic subject understanding. As one indicator, performance scores of Pakistanis on the US Graduate Record Examinations, which test subject basics, are miserably poor compared to students from India or China. It should therefore be **normal practice** for teachers to **raise such questions** as: How do we know? What is important to measure? How to check the correctness of measurements? What is the evidence? How to make sense out of your results? Is there a counter explanation, or perhaps a simpler one? The aim should be to get students into the habit of posing such critical questions and framing reasoned answers.

Similarly, academic activities common in good universities around the world are noticeably **absent**. **Seminars and colloquia**, where faculties present for peer review the results of their on-going research, are **few and far between**. **Public lectures** or **discussions of contemporary scientific, cultural, or political issues** are almost **non-existent**.

Compare Pakistan’s premier university with those in its neighbours’ capitals. First to the east: **Jawaharlal Nehru University**, and the **Indian Institute of Technology**, in Delhi and then to the west: **Teheran’s Sharif University** of Technology, and the Institute for Theoretical Physics and Mathematics.

Their facilities are **simple and functional**, nothing like the air-conditioned and carpeted offices of most professors at QAU. And, more important, every **notice board is**

crammed with notices for seminars and colloquia, visitors from the very best foreign universities lecture there, research laboratories hum with activity, and pride and satisfaction are written all around.

These are impressive institutions filled with “**professional activity**”.

Moving deeper in the west, we will find The **King Fahad University Of Petroleum and Minerals** is currently working under fantastic collaboration with **Schlumberger**. Schlumberger has established a magnanimous **Dhahran Techno Valley and Dhahran Carbonate Research Center** at the university which is entirely dedicated to understanding carbonates and developing global solutions. On the same footings, another university in our region, **The Istanbul University**, has gone so far in his efforts and advancement that it has indicated perhaps the **largest petroleum trap** of the world in **north-west Turkey**. Studies suggest that this anticlinorium is approximately 300 km long and 40 km wide and extends between the Aegean Sea in the west and the area of the Sea of Marmara to the east. This premier **PE department** is in **Istanbul Technical University** has **11 PE PhD's** on their faculty. I suggest that **few regular video conferences** from such sources would help vastly. If a video conference is not possible, a **NetMeeting session** would be a good alternative to such great PE experts involved in improving education at my PE department. Furthermore, the **PPL** has already been quite benevolent towards our PE department in terms of faculty and funds. So pushing PPL for something substantial like that of King Fahad or Istanbul University, we can **come at par** with the premier institutes of this region.

It makes me remember an event of my cousin telling me once that while he was engaged in business studies at Canberra (Australia), two very eminent of his teachers used to **fly by their choppers** twice a week from Sydney all the way to Canberra, just to lecture there for a couple of hours. Though this idea may seem to be a bit “far-fetched”, but realize that the knowledge of all the years of experience they impart to these students is **infinitely** more than any sum of money they receive for it. When these students get out in the practical world, each one of them is like **a gem; “an exact clone”** of the **brilliance and intelligence** that was once shared with them by a **man of decades of experience**.

The need of the hour is to realize the essence of “**two-way flow of knowledge**”, which will include opening up links with all good universities across Pakistan and most importantly an **active and substantial International collaboration**. Once the wheel set in motion in this direction, my university’s standards will ‘**take their wings**’.

The standards can be raised at my NED too. However, it needs **serious alumni involvement** and guidance which can help alleviate these issues in the future. **NED alumni** have made their mark in all major industries and establishments of Pakistan, and multinationals both at home and abroad. The standard of teaching can be raised by **bringing in some trainers** from western countries as well as from our neighboring countries too by using their large experience and interaction in outer world. NED Alumni can also play its role in short-term as well by **arranging visits of some eminent foreign professors** for **seminars and workshops** to improve academic programmes. The NED alumni can, and should, help in this endeavor with a lobbying effort to **improve NEDUET leadership and governance**. An **alumni-managed fund** and **alumni-sponsored industry alliances** around the world will be the **major leaps** that we should undertake to stand at par with some very renowned institutions of the world in terms of technological advancement.

Bottom-line? If there is a will there is a way.

We do not need to re invent the wheel; we may have to adapt it a little bit. **Should we dare to hope?**

*Gather ye rosebuds while ye may,
Old Time is still a-flying:
And this same flower that smiles to-day
To-morrow will be dying.*