

BRIDGING THE GAP IN ENGINEERING ADVANCEMENT AT NED

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About the Author

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Abstract

The NED University of Engineering and technology is one of the oldest institution engineering universities in Pakistan. Initially, established as an Engineering College in 1922 by subscriptions from private donors, it was upgraded to a University in 1977 by the Government. Today, the University offers undergraduate programs in nineteen (19) Engineering disciplines including one each in Architecture and in Information Technology. It is also presently offering twenty-seven (27) Master's level postgraduate programs.

As a final year student of department of petroleum engineering, NED University, I am obviously concerned by the degrading standards of education in our University. For this very reason, I decided to express my views on this burning issue.

Coming form the A' levels background, I certainly found it tough to adjust to an austere system in place at NEDUET. Freedom is important for imagination to flourish. The great Albert Einstein famously said "*Imagination is more important than knowledge*" but unfortunately at NEDUET this very important aspect of engineering education is often neglected. The attitude of the teachers, teaching methods, testing instruments and the atmosphere in the classrooms and laboratories do not provide an environment conducive for original ideas to flourish. More often than not, theory and ideas are forced upon the students; depriving the students the right to question their validity. Consequently, the knowledge of majority of the students is limited to their class lectures.

In this essay, I have tried to address the major issues and challenges that students face in the University. Wherever possible I have tried to use my own experiences as examples. All the information in the essay is based on facts and references are provided where required. More importantly, I have gone onto suggest solutions in light of what limited knowledge and experience I have in teaching and studying. I have tried to be as accurate as possible but I must apologize for any imperfections. I hope that my essay is deemed fine enough to be selected for The 2009 NED Alumni International Convention and that my efforts are appreciated.

Thank You

Abdur Rafay Zafar

BRIDGING THE GAP IN ENGINEERING ADVANCEMENT AT NED

As an undergraduate student entering the final year of my degree at NEDUET, I feel strongly about the deteriorating standard of education at NEDUET. Despite producing a large number of successful engineers and professionals each year, NEDUET has failed to compete with the ever improving standards at Universities and Colleges around the globe. From what I have experienced during the three years of my studies at the University and talking to my friends studying abroad I have identified the following grey areas which need to be improved upon.

Faculty and teaching methods

Let me start off with a famous Chinese proverb “*Teachers open the door. You enter by yourself.*” Teaching is a noble profession but it also has a lot of responsibility with it. Most lecturers and professors at NEDUET are highly qualified in their respective fields. However, it is safe to say that they lack the necessary skill and demeanor to be teaching undergraduate students. A teacher must reach out to the students to solve their problems and answer their queries. The students should feel comfortable asking questions in class. They should not feel shy of making mistakes and trying something new. In fact teachers should encourage original ideas. Practical Engineering is all about ‘thinking out of the box’ and coming up with innovative solutions. A teacher cannot teach students to do that but he can certainly inspire confidence and encourage them to use their imagination rather than rely on books all the time. In the words of Edward Bulwer-Lyttonⁱ “*The best teacher is the one who suggests rather than dogmatizes, and inspires his listener with the wish to teach himself*”.

Similarly the teaching methods employed at NEDUET need to be modernized. Very few teachers make use of multimedia and PowerPoint presentations in their lectures. These teaching aids help the students comprehend the subject matter a lot better than usual dictation and notes. Moreover practical application should be used to complement theoretical knowledge as often as possible. When studying a 4-stroke engine for instance, it would be a big help to have a demo, an animation or even the real thing around the class room. Furthermore, some teachers also lack experience and knowledge of using the instruments

available in the laboratory. As a result students are left lacking in the practical aspect of their studies.

It is high time that NEDUET starts a comprehensive teacher's training program to train new and existing teachers on how to use the various teaching aids and facilities available to them. They should also be given psychological training to help them understand the psyche of students. Additionally, the University should try to recruit industry professionals having valuable practical knowledge and exposure to teach the students. This would help enhance the practical approach of the students so that they can compete internationally.

Resources and facilities

NEDUET is a public university and finances have always been an issue. There is a dire need for building new and upgrading existing infrastructure and acquiring the latest equipment, instruments and software to compete with the rest of the world. Such projects require substantial funding which can only be made possible through government support. The most worrying aspect of it all is the lack of repair and maintenance of existing facilities and infrastructure. The University must continue to expand while protecting and sustaining existing facilities and resources. Additionally, there is an instant need for books for the new departments that have been established in the past few years. The titles and volumes already present are insufficient to meet the demand from a rising number of students.

Testing instruments

I truly believe that this is one aspect which, if worked on, can bring about a drastic improvement in the standard of graduates produced by NEDUET. Testing instrument refers to the methods used to assess a student and evaluate his performance. While the rest of the world has advanced greatly in this field we are still lagging far behind. The tests and exams conducted at NEDUET are not standardized. Practical examinations are non-existent and have been replaced by viva voce. There are no marking schemes or assessment criteria laid down for papers or viva voce. It is impossible to compare students of different departments taking an examination for the same course because each teacher sets his own paper and checks and awards marks differently.

I would also like the paper pattern to be modified. A typical 80 mark theory paper would consist of 8 questions of 16 marks each and you only need to answer 5. Just by

preparing for 5 questions one can get full marks. This paper pattern is encouraging students to do selective study and leave out crucial chapters/parts just to gain full marks. However, this examination tactic comes back to haunt them in their future careers.

Technical Research

The value of any University is measured largely, by the quantity and quality of original research work being conducted and published by the Universityⁱⁱ. As the premier engineering University of Pakistan, NEDUET has to shoulder the responsibility of doing the majority of research work. I cannot think of any notable research being conducted currently at NEDUET or articles that have been published by NEDians in the recent past. Some senior faculty members do contribute articles in international journals but that is just about it. If we want to see NEDUET competing with the rest of the world than technical research is one area which requires a lot of hard work.

I believe that by working on the four areas highlighted above, can bring about a positive change in the standard of NEDUET and help bridge the gap that has widened over the years. A concerted effort must be made to address these issues on emergency basis.

The Petroleum Engineering Department (PED)

The PED was established just four years ago so we have had to face more than our fair share of problems. Petroleum Engineering has become the most demanded field among new admissions, which has raised the importance of the department greatly. This year the first batch (from 2004-2005) graduated and are now looking to enter the oil and gas industry. Faculty is the main issue for any newly established department. However, this matter has been resolved to a great extent, with the appointment of 3 new teachers in the current academic year (2008-09). The other problem we face is that of practical laboratories. The laboratories are equipped with the latest equipment but the with the exception of a few, teachers lack the training required to operate the delicate instruments. Thus, we are unable to take advantage of facilities worth millions of rupees. Additionally, there is a scarcity of books for Petroleum Engineering in the library. This is something which needs to be addressed immediately. Original books are very expensive so the students are compelled to use photocopies. However, many teachers refer 3-5 books and it can become expensive to have them all. Presently we are managing by sharing books among ourselves and at times using scanned softcopies.

However not all is gloomy at our end. It was encouraging to see the oil and gas industry taking interest in the department. They have offered internships and field trips on a regular basis. Pakistan Petroleum Limited, PPL has been working very closely with the administration. Many of the current engineers working at PPL are teaching courses in third and final year which is a great chance for us to learn. There have also been a few lectures, seminars and courses arranged by PED. There is still room for improvement but these are good signs for a department still in its infancy. SPE NED Students Chapterⁱⁱⁱ successfully held the SPE Annual Paper Contest in December 2008, for the very first time at the PED of NEDUET. Hopefully the graduates from the PED will also prove their worth in the industry further bolstering the reputation of the department.

What can the NED Alumni do?

NEDUET has produced some very successful engineers over the years. These professionals have a responsibility towards NEDUET. I believe that they can use their experience and knowledge to improve the standard of education at NEDUET. For this purpose I have the following suggestions.

Perhaps the best way alumni can help NEDUET is by joining the faculty. This may not be practical for those permanently settled abroad. However, those who are looking to come back to Pakistan, they should consider joining NED as a visiting faculty. This would help them keep their day job while contributing towards improving the quality of teaching at NEDUET.

Alumni who travel to Pakistan occasionally can also help the students by delivering lectures at the occasional seminars and workshops. Nowadays it is also possible to deliver lectures online in the form of webinars or web conferencing. The University will need to install the necessary hardware for this to work on a large scale. However, some of the current students have fast internet connections at home and they can avail such opportunities from home pc's.

Apart of teaching and sharing knowledge with the students, NED Alumni can also promote NEDUET abroad. They should support fresh NED graduates abroad and help them settle down in their new surroundings. Moreover, they should recommend NEDUET and its graduates wherever and whenever possible.

Financial support for students is also very much welcome. Many of the alumni abroad are doing extremely well in their jobs and businesses. It would be very noble if they could sponsor scholarships, independent research and even on-campus facilities. Setting up an international alumni fund would be major step in this regard.

What can we (current NEDians) do?

The first thing that all the current students must do is own NEDUET and be honest about it. There are thousands of young people out there who aspire to study at NEDUET yet only a few are fortunate enough to get the opportunity to study at this prestigious University. However, many of the students go astray after getting admission. Each and every student must take it as a personal responsibility to work to the best of their capabilities during their time at the University. This would ensure better results for everyone and consequently a better reputation for NEDUET.

Secondly, the students should actively participate in the various activities and events organized by the university. There are very few events held during a calendar year. Yet apart from sports, I do not see active participation in rest of the events. This includes the debating contest, the annual quiz and exhibition. Inter-university events are a great way of promoting NEDUET, but owing to the lack of interest from the students and mismanagement from the administration, this avenue as been completely ignored.

Lastly, individual students can also promote NEDUET online. One of the great online tools available for this purpose is blogging. In fact I have my own personal blog which I have been updating since April 2008. It is an excellent way to market myself, my interests and off course my university NEDUET. I would encourage my peers to do the same if they have some spare time. If a large number of students are interested, we can even create an online forum for NEDians for having online discussions and sharing ideas and information.

Conclusion

It must be clear by now that there is long and difficult road ahead of us. NEDUET needs us now more than ever before. I would like to call on all the current students and past graduates of the university to work together to reclaim the reputation and standing that NEDUET once possessed.

References

- i *English dramatist, novelist, & politician (1803 - 1873)*
- ii *Academic Rankings or World Universities, wikipedia.org*
- iii <http://ned.spe.org>