

Incorporation of Design or Emerging Technologies into the Undergraduate Program

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Abstract:

Considering the current undergraduate education and the expectation of the society, combining my own education and teaching experience, this paper gives some concrete advices for the undergraduate education. The cause of the paper is to make the Chinese education in engineering more competitive, by introducing into the new thoughts and technology all over the world. The Chinese students should have the more innovation capability to meet the more challenges of society development.

Key words: undergraduate education, root-on-student, innovation education, career programming

Foreword:

The successful education is the foundation of the nation's great development. Looking forward to flourish the nation's economy, the nation should do its best to improve the level of undergraduate and graduate education, cultivating more excellent persons in the area of science & technology. After about 30-year hard working, our nation had gained great achievement in education. Especially in recent years, the applying for enrollment in Chinese universities becomes relative easy. It is enlarging the enrollment that make the more and more students go into university. Yet, the S&T and society progress so fast that all colleges have to renew the education method and teaching technology. In this paper, I provided some advice for the undergraduate education in engineering as follows.

Effectively strengthen the undergraduate education.

It is vital that a college success in undergraduate education or not. It affects the college's reputation. Mostly, the famous university is owing to the excellent undergraduate education. Generally, the important persons in politics and economy are bachelors. And they graduated from the world-class university. So, the excellent undergraduate education brings up the successful person. On the other hand, they drive their mother colleges.

But, what is the quality of the undergraduate education? How many university faculties care these things? The orientation of the university and the relative policy are decisive factors. In the university, undergraduate education is absolutely the most important thing. Research University is based on the successful undergraduate education. The title of the Research University will come when conditions are ripe. Otherwise, it will be spiritless, just like a river without origins or a tree without roots. For example, a university with poor education level, every student except to leave it as early as possible. It is impossible that it becomes a first-class Research University.

Considering the situation both society and university in China, I think the absolutely majority of the universities should locate its cause in undergraduate education. Because of the society and company

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need a great deal of undergraduate students with innovation spirit. The high degree people with middle age are welcome just in universities or graduate schools. The main responsibility and obligation of a university is to cultivate outstanding person for the society. I think the scene that many of successful peoples come to university to thank for its cultivation and teaching must be the most impressive. So, Chinese university must develop the undergraduate education along the down-to-earth development path.

Undergraduate education is so important for a university that our universities should think much of it. It is most important thing to deal with not only the current, but for a long time.

Implement reasonable 'Theory-Practice Program'; enhance the students' comprehensive capability.

In engineering curriculum, the students need to do a lot of practice. The practice program is very important for an undergraduate student in engineering. Just doing a lot of exercise, the students have the capability to cognize and operate the engineering thing. Just by this, the students may have the actual skill to confront the challenge of the world.

For the sake of the students are more competitive, they should receive more practice programs. For the sake of the students more competitions, the college must adjust it's former 'college-department-specialty' system. The brand new 'education-research system' must be adopted. In this system, laboratory and Research Center are the hard cores. Concrete propositions are as follows.

First of all, lively engineering instance must be applied in the course. This can activate students' more curiosity and fillip the interest concealed in their hearts. So long as the interest is filliped, the energy and power in the young guy is tremendous and all conquering. In the future, their interests will mostly become the milestone that will dominate his/her life and career.

Secondly, the university should attach importance to the existing practice courses in earnest. For example, discussing program, course design, graduated program, and so on. The students should take full advantage of these chances of exercise. But the educational administrator must make sure that the subjects in these courses are adaptive to an undergraduate student. The subject must be novel and worthy. At the same time, the technology parameters in assistant teaching material must be up to date.

Finally, make the best of hard and soft resource in university. These include laboratory, Engineering Research Center, the relative equipment, the ongoing research program, and so on. The laboratory should have the scientific management and make its function maximum. At the same time, the university had better to incorporate undergraduate students study into the research work. For instance, the College of Engineering, China Agriculture University has carried out the 'Undergraduate Research Program'. In this program, many undergraduate students joined in the research program according to their interests, some students have written quite good academic papers. Furthermore, they are interested in their research field. what a beneficial experience for the lucky students!

Implement the 'Theory-Practice Program' and enhance the student's practical capability. In university, the education and research works are supplements each other. The best result is to gain both of the successes.

Carry out the 'root-on-students' policy in education.

In China, a common family usually spends many years' savings on cultivating an undergraduate student, even dozens of years. Most of families have sacrificed that which is most valuable. They want

their children become able and valuable persons. And, the university should regard the education and the cultivation as the most important thing. So, the university has the responsibility to carrying out the 'root-on-student' policy.

Some days ago, I saw a program in the network of the University of Leeds. It is about what should be considered before opening a course. In the program, the educational administrators and faculties are required to do some preparations for the course. I was deeply affected by two regulations: the first, the educational administrators should know about whether any student is deformity or need special cares so that they decide the appropriate floor. Secondly, the teacher should think about if every student adapts for the textbook and if anybody needs special help. Make sure that the demand is met before the first class.

The world-class university feels no regret to its title. Because, every faculty and every regulation is serve the students. In English universities, it is a tradition that the professors dine with the students. The person beside you maybe is the famous professor in a field. This academic environment is very important for the undergraduates. The university in China should carry out the 'root-on-student' policy. Some of my advices are as follows.

Firstly, the famous university professors should participate in more university courses. Let the students enjoy the best education of the university. The academician Qian Weichang had said:" if you don't teach, you are not a teacher; if you don't carry on research program, you are not a good teacher." Then, in majority universities, the actuality is: most of the young teachers are not good teachers; some of the professors are not teachers. One of the standards of excellent university is its academic level; furthermore the quantity of famous professor in a university is an important factor. The famous professor should teach more university courses. One of the advantages is the quality of the education can be improved; the other is the young teachers have more time for carrying on research programs.

Secondly, make the students the master of the university. The students should participate in the discussing about the layout and construction of the university. Some experiences of the China Agriculture University can be shared. Firstly, the university trained quite a few student reporters, they answer for the reports happened on the campus. Secondly, the students participate in assessing the faculties' work. All of students are willing to cooperate with the university. The university respects the opinion of the students, and the students love their university.

The university should carry out the 'root-on-student' policy. The university and the students are the contrary sides of a coin; at the same time, they are interdependent. All of the faculties should serve the students heart and soul. Then, the students love their university, and admire her.

Improve the innovation education for undergraduate students in engineering.

Everyone has realized the importance of the science innovation. As a college of engineering, cultivating the innovation undergraduate is its duty-bound responsibility. Because of the universities hold the majority of the education resource. Up to now, our university innovation education has improved rapidly, but the complete innovation education system has not formed. For the sake of the students more competitive, the following are noteworthy.

Firstly, the university teacher must be the person that has the innovation capability. Innovation education is to make a student to have the innovation capability. The key factor is the teacher. The excellent teacher not only teaches the course content well, but also communicates his ideas about the curriculum to the students. These ideas include his attitude toward the curriculum, his methods to deal

with questions, his opinion upon the career, and so on. Just these little things embody the innovation education spirit.

Secondly, the university constitutes the right innovation education system. The right system makes sure that the innovation education in university is in a good shape. In current, the professor would like to apply for research programs, because it can bring more benefits to him. On the contrary, the teacher who is engaged in innovation education gains less advantage. So, the environment of the innovation education should be improved. The system should guarantee that the teachers who pursue the innovation education gain his deserved benefits.

Finally, the examination embodies the idea of innovation education. The university makes the form of the examination diversification. For example, students can pass an examination by academic papers, teach assistant, research assistant, and so on. This gives students more degree of freedom; make the students innovation capability maximum.

The university should constitute the right innovation education system; strengthen the students' innovation capability. Incorporate the innovation education into the undergraduate teachings. Let the Chinese undergraduate students more competitive.

Reinforce the career education and programming for undergraduate students.

No matter how high degree the students gain, they finally require finding a job as their livelihoods. However, how to choose the career that's fit for them is a puzzle. Hard to Find Job becomes a common topic for undergraduates in recent years. I don't think this is the real circumstance. The main problem consists in that the students haven't a right estimate about their own abilities, career objective and society requirement.

A giant in China had addressed as follows: everyone have the equivalent intellect. The successful people just chose the right research field that will have a bright future in the subsequent years. There is wisdom in China: A man Can Succeed in Any Occupation. But, quite a few students lose their career ways when they face the complicated and mysterious society challenge. So, the educational administrator should let the students having the ability to correctly judge the market, career and their capacities.

In university, the career programming and education needs the professional personnel. Nowadays, the personnel mainly formed by three sources: retaining retired faculty, the in-service faculty as a part-time job, retaining the needy graduate students in a welfare system. Frankly speaking, all the personnel are not professional. In despite of they do their endeavor, the result is hard to make the students and the parents satisfying.

Up to now, I appreciated my college assistant. Then and there, there were a few professional assistants who had lots of experiences. Because of her encourage, ten of the whole classmates obtained the graduate degree. Now, we all had a satisfied career and easy lives. It is obvious that the professional assistant is important for the undergraduate.

Reinforce the career education and programming for undergraduate students. The students' cause is clear; the students' mentality is healthy; the students' mood is mild. All these are necessary if a student want to become a useful person.

All of the above are my firsthand information and thoughts came from my experience as a student in college formerly and a full-time faculty in university now.

Thank you for your time!
Please feel free to contact me.