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ACTIVE ENGINEERING EDUCATION

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Change Management for Transformation from Traditional Engineering Education to CDIO – STU Experience

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Type of Presentation: active paper (15-30 min)

Short Description (50 words or less to be published in the programme, please include the learning objectives for participants in your session)

This session summarizes how the changes having been brought into Shantou University since the commencement of CDIO reform in the College of Engineering. The changes having been enforced in the Chinese context. However, general rules of management change are still valid in this case.

Relevance to the Conference Theme, Strands, and/or CDIO Initiative

Facilitating change in engineering education

Abstract (maximum one A4 sheet)

Engineering education in China has been evolving from traditional engineering programs profoundly influenced by planned economy to present model. Although there have been continuous efforts aimed at reforming the system, engineering

graduates are still not very well prepared for globalized economy and society. The CDIO initiative provides a holistic approach to solving the problem. Starting from the end of 2005 CDIO was disseminated in the College of Engineering, Shantou University. Coincidently, at the same time McKindey Global Institute published a report “Addressing China’s Looming Talent Shortage”. Among others this has greatly enhanced the sense of urgency for reforms. Seminars were organized to discuss what CDIO is, and why and how CDIO should be initiated in the College. Champion faculty members were identified and task forces were then formed to effectively work on action plans. Program curricula, course structure and course syllabi were the first few items being reformed. 24 courses were piloted to accumulate experiences and to build up confidence on implementing the new approach. A World Engineer Forum and a series of student salons were formed to involve the students into the process of reform, as well as to broaden their perspectives. In the meantime workspace improvement was carried out. Apart from improving existing labs and modifying the lab rules for accommodating student’s activities, a CDIO Innovation Center was established as a common platform for student team projects of all the five programs in the College. After two years reform the CDIO framework has been setup and initial achievements have been received. Now, efforts are spent on monitoring, feedback and quality control. The College is introducing the ISO9001 quality assurance system to consolidate the achievements.

In comparison to universities in North America and Europe, administrations in Chinese universities have more power to introduce changes. However, as the successful transformation must be rooted from heart approvals of the faculty,

administration and the students, careful steps have been taken to introduce the change. These steps correlate very well with John Kotter's eight steps to successful change. This manifests that the general rules for a successful change is universal and, consequently, the STU experience is of value to the CDIO reform of other institutions.

John Kotter prescribes eight steps to successful change: 1) Establish a Sense of Urgency; 2) Form a Powerful Guiding Coalition; 3) Create a Vision; 4) Communicate that Vision; 5) Empower Others to Act on the Vision; 6) Plan for and Create Short-Term Wins; 7) Consolidate Improvements and Keep the Momentum for Change Moving; 8) Institutionalize the New Approaches. This paper will discuss actions have been taken and measures have been applied to ensure a smooth transformation from the traditional Chinese Engineering to CDIO. Brief discussions will also be given to the measures for the sustainability of the changes.

Active presentation techniques

Describe one or two ways in which you intend to engage the audience (for example, paired discussion, personal response using clickers or flash cards …). This section is a decisive factor in the acceptance of your proposal and the amount of time you will be allocated.

Active presentation technique(s) to be used:
Talk & discussion

Facilities/equipment required (tick all those appropriate)

√Computer projector (provided in all locations)

Overhead projector

√Flip charts and pens

Clickers (personal response system)
Coloured flash cards
Post-it notes
Other (please describe)

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