CDIO at Singapore Polytechnic

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Singapore Polytechnic (SP) is the oldest of the 5 polytechnics in Singapore. Polytechnics in Singapore admit students who have completed their GCE O-Level examination into 3-year diploma programs. Many of our students win prestigious scholarships, gain admissions to highly reputable universities and graduate with top class honours.

Prior to joining in 2004, the initial interest in the CDIO Initiative was the design-build experiences. In all our engineering programs, the Year 3 students are required to complete a final-year project. In an effort to improve the quality of the final-year projects, a pilot program was implemented where students were tasked to work on projects requiring them to utilise knowledge from three subjects. The students enjoyed the different approach; the students' projects were innovative; and the students were observed to be more motivated and self directed.

In September 2006, management agreed to adopt the CDIO framework in the engineering programs. A working committee was formed to prepare 13 engineering programs from 4 schools for implementation in academic year 2008, starting with Year 1. Much progress was achieved since then. The 5th International CDIO Conference was organised by, and held at, SP in June 2009. More than 500 delegates from 56 educational institutions participated. SP's School of Chemical and Life Sciences won the 2010 IChemE Singapore Award for Excellence in Education and Training in Chemical Engineering for its revamp of the Diploma in Chemical Engineering using the CDIO (Conceive – Design – Implement – Operate) framework. This Diploma program has been accredited since 1996 by the Institute of Chemical Engineers (IChemE), UK.

Going forward, SP has adopted Design Thinking to develop the necessary Conceive and Design skills in our students. Programs adopting the CDIO Framework have increased to 17 in 5 academic schools. Although CDIO was designed as an engineering education model, SP has adopted its framework and skills in both engineering as well as non-engineering programs. We will see our first batch of graduates from these CDIO programs in April 2011.

Some of the critical success factors were the support from management, and the close collaboration of drivers, early adopters and education specialists. The management provided resources for training and redevelopment of workspaces. Teaching staff attended the International CDIO Conferences and Collaborators' Meetings as well as visited other CDIO collaborators. Various teams worked closely to customise the CDIO syllabus and to interpret the CDIO standards for the local context. Changes were made to the curriculum, the learning activities and

assessments. In addition, a comprehensive evaluation program, which included student as co-participants, was put in place to monitor the impact of the changes to students' learning and motivation and for program improvement.