Submitted on October 8th 2017 by Mr. Nick Borthwick, UNEVOC Coordinator of the UNEVOC Centre at Waikato Institute of Technology.

Design thinking gets students and teachers buzzing

Last month as part of the E2E (engineering education to employment) pilot, ten secondary teachers from Hamilton Girls' High School and Rototuna Senior High School participated in a two-day "Design Thinking for Educators" workshop at Wintec's Design Factory New Zealand, facilitated by Dallas Snape.

The E2E pilot is aimed at attracting more students into engineering tertiary study and addressing New Zealand's shortage of engineers with a target of 500 more graduates every year. The emphasis of the workshop was to integrate the design thinking process into science, technology and mathematics with an engineering focus and developing project based learning linked to an authentic industry problem.

A week after the workshop, the 10 teachers along with a mixed group of year 10 and year 11 students (five students from each school) returned to the Rotokauri campus to participate in a design thinking student challenge. This took place in student street of the Engineering and Trades facility and students were guided in the design thinking process, while being involved in an industry related issue.

Niall Fuller, Managing Director of Hunter Filling Systems presented a very interesting overview of his company and the type of engineering manufacturing they are involved in. He provided the main industry problem and challenge for the students. Via video clips, the group observed a variety of filling solutions created by Hunter Filling Systems for a number of well-known household products in both the New Zealand and international markets.

In their school groups, students started with 'the marshmallow challenge' won by Hamilton Girl's High School building the tallest free-standing structure using the limited materials provided. This was a great lead-in to the main industry challenge – to design and produce a liquid filling system for disinfectant, to be dispensed into a one litre plastic bottle without foaming, minimal over-flow and wastage, and in the quickest time. Students started to discover, interpret, ideate and experiment by designing and developing their own prototype of a filling system for testing later in the afternoon.

At the end of the challenge, both groups presented their design thinking story and tested their prototypes. Although completely different in their approach and application, both prototypes had some design similarities to a couple of engineering filling systems currently developed by Hunter Filling Systems. Students also had the opportunity to experiment with a "bottom-up" filling system from Hunter, frequently used with foaming liquids. The industry challenge was won by Rototuna Senior High School, meeting the criteria and time efficiency in 26.52 seconds. Both groups developed fantastic prototypes and were great ambassadors for their schools.

Some feedback from the day:

“Thanks for involving us in this opportunity! Staff and the students have been buzzing about it which is always a great sign - an even better sign is when they come straight back and apply what they have learnt in their classroom and invite other teachers to come in and watch!”

“The students had an awesome time and one of the student’s is still talking with amazement about how the experience was 'engineering' and she had no idea that would be the types of things you would do.”

Figure 1 Niall Fuller, Managing Director Hunter Filling Systems

Figure 2 Hamilton Girls’ High School – win the marshmallow challenge

Figure 3 Rototuna Senior High School – win the industry challenge (26.52 seconds)

Figure 4 Hamilton Girls’ High School – very close (29.41 seconds)