

# Places, spaces and friendly faces: Energising the orientation experience for first year engineering students

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***Abstract:** It is well recognized that a smooth transition to university leads not only to better student satisfaction, but to stronger, deeper learning outcomes. The Quest for the Engineering Discipline (QED) at the University of South Australia (UniSA) was a new approach for the common first year in engineering in 2009. It was designed to foster strong links for first year students to the social, institutional and academic aspects of university life. To achieve this, the QED provided a labyrinth of engaging activities – complex in planning but simple in execution – to create a new orientation experience. The QED relied on strong, cross-institutional and cross-disciplinary collaboration among staff. It also piloted a new learning space and portfolio building software. Evaluation data shows the QED paved new pathways to understanding university life, learning and relationships as students took their first tentative steps toward becoming engineers.*

## Background

In February 2009, the engineering schools at the Mawson Lakes campus UniSA launched the Quest for the Engineering Discipline (QED), a new orientation program for all new engineering students.

A restructure of engineering programs at UniSA in 2008 saw the creation of a common first year, providing an opportunity to rethink approaches to orientation. The new common year meant students became ‘subsumed’ in the increasingly large numbers of students. To compensate for this, UniSA created a learning ‘home’ for the exclusive use of first year students, the ‘Experience 1 Studio’. It was used for the first time during the QED.

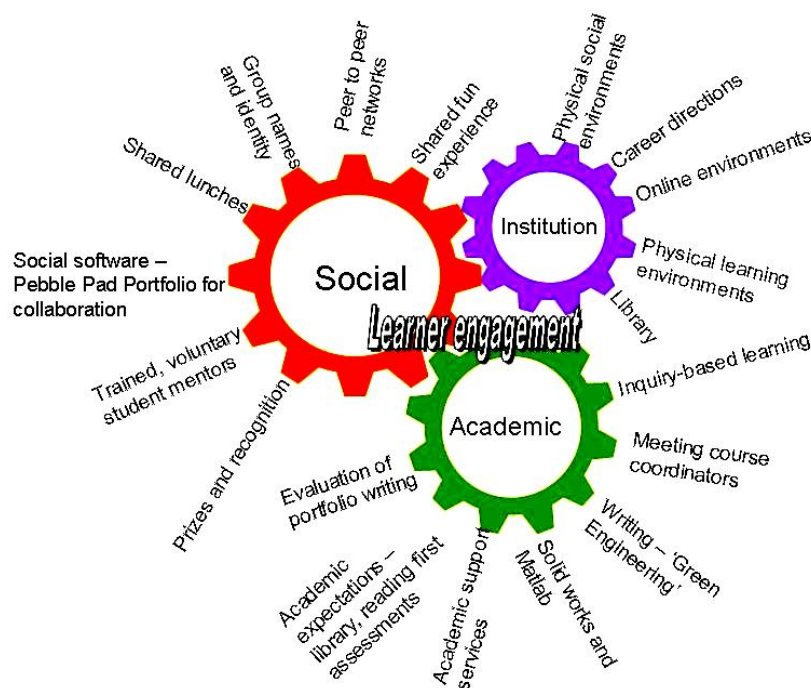
The importance of structured transition programs to success and retention has long been recognized. There is strong evidence students who engage with their studies and succeed in the first year are likely to persist and graduate (Pascarella & Terenzini, 2005). The more support students receive in making transitions, the better their adjustment to their new circumstances (Lowe & Cook, 2003). Hargraves (1998), in discussing the transition of first year engineering students to university, emphasizes:

the ‘little fish in a big pond’ feeling...not knowing any university staff (especially academics) and not knowing what is really expected...in terms of learning strategies and how [a] field of study fits into the more global aspects of the community.

The National Survey of Student Engagement (NSSE) found collaborative learning, student-faculty interaction, enriching educational experiences and a supportive campus environment are essential to success and retention (Krause & Coates, 2008). Further, Wilcox, Wynn & Fyvie-Gauld (2005) suggest the ‘social’ as the most important factor in retaining students, citing ‘emotional support’ and the ‘quality of relationships between staff and students’ as imperative to student success.

Despite this knowledge, Krause, Hartley, James & McInnes (2005) point to evidence from a decade of national studies, that less than half of students feel positive about their preparation. This is despite the recent political and commercial pressure on universities to improve retention of first year students. Krause (2006) points to the whole-of-institution responsibility in keeping a student enrolled. There needs to be a commitment by all stakeholders including academics, administrators and support staff to giving new students the best possible experiences in their orientation programs.

The QED is an abbreviation of the Latin phrase ‘quod erat demonstrandum’ – which means ‘which was to be demonstrated’. It is based on a similar program – the Computer and Information Science (CIS) Quest (Duff, Quinn, Johnston & Lock, 2007). This paper aims to demonstrate that orientation to the social, academic and institutional aspects of university leads to a more holistic and relevant experience for students. Therefore, the QED provides a labyrinth of novel elements which are intricate in design, but simple in execution (Duff et al., 2007). All elements are aimed to orientate students to three cogs of university alluded to in the literature - social, institutional and academic (See Figure 1).



**Figure 1: A holistic approach to the university orientation (Adapted from A et al 2007)**

## What we did

The QED team set out to provide a fun, problem-based learning experience in which students would complete a variety of tasks to introduce them to each other, their physical and virtual learning spaces and to university style learning. The tasks were outlined in the QED handbook, distributed to each student. The key elements of the QED were group work, mentors, a code-cracking ‘exercise’, an online portfolio-building task and prizes. Ultimately, the QED aimed to foster a sense of belonging.

## Places and Spaces

‘Places and Spaces’ can be understood to be both physical (the campus and institution) and virtual (online courseware and other locations). The ‘places and spaces’ components of the QED were facilitated by a handbook; a custom-built car-driving game; and PebblePad portfolio building software.

### The QED handbook

Each student was given a booklet and they were required to work in pre-ordained groups (of around 8 students per group) to complete five sets of questions based on *colleagues* (the social); *learning* (the academic); *campus* (the institutional); *school* (social and institutional); *career*. Table 1 demonstrates how the QED questions introduced students to institutional nomenclature and locations, embedding the learning along the way.

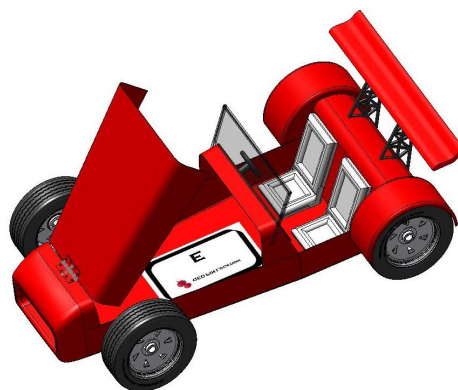
**Table 1: Embedding the learning in the questions – the complex appears simple**

Find the online discussion board on the *Computer Techniques (COMP 1036) website* and post a comment from your group. On the *discussion board* look for:

- A link to *PebblePad*, your electronic portfolio tool
- A welcome from your *course coordinator*
- The answer to these questions: *Where* do you go on campus to obtain your *student ID card* and name *three useful services or shops* you can find on your way there.

### The car driving game

While working through the activities in the QED handbook, the groups needed to find 10 alphabetical letters to form a QED ‘code’. These letters were found in physical and virtual spaces around the campus (see Figure 2). Once the students collected all 10 code letters, they were required to assemble them in alphabetical order and use them to unlock a car driving game. The game was run from the campus computer pools - another physical space. Each group was given 10 attempts to complete 3 laps as fast as they could in order to win a prize on the final (third) day. This game introduced students to the software packages they would encounter in their first year of study (MATLAB and SolidWorks) in a fun and non-threatening environment.



**Figure 2: Code hidden in a car created using SolidWorks which students had to find online (adapted from Hicks and Wink n. d.)**

### Pebble pad

Students were asked to journal their QED experience using PebblePad – a new portfolio building tool used for the first time at UniSA. The newness of PebblePad required the groups to troubleshoot – once again strengthening the social element of the QED. Kennedy, Judd, Churchward, Gray & Krause (2008) found while digitally native young students expect connectedness in a university environment, once they moved beyond their familiar online spaces of computers, mobile phones and email their ability to use institution-specific technology is not automatic. The QED provided a ‘safe’ launching pad into this new technology for the first weeks which would enable adeptness once studies began.

## The Experience 1 Studio

The QED was designed to familiarize the students with the physical space of the campus – introducing them for the first time to *their* space – the Experience 1 Studio. They were required to visit the studio to find a letter for the car-racing game. Here, some groups also participated in a discussion about *The Future of Green Engineering* (facilitated by mentors) and made use of whiteboards, computers and other facilities. Some groups also developed their Pebble pad portfolios in this space.

## Friendly faces

The friendly faces aspect of the QED relates to building the social element of starting university – making connections with colleagues, past students and staff.

## Groups

The emphasis on groups provided students with an opportunity to get-to-know each other, while introducing them to the specifics of learning at university within the discipline of engineering. In the Car Racing Game, teamwork was encouraged and different group members were encouraged to try and improve the group's car driving time which would earn them a group prize.

## Mentors

Each group was also assigned a senior year student mentor. This was important because the university savvy mentor provided not only a role model, but could show students the 'tricks of the trade' – troubleshooting problems encountered on the way. The mentors provided models of thinking, behavior and approaches to learning with which the new students could identify (Bandura, 1997).

## Lecturers

The QED aimed to help students relate to their lecturers as 'real people' - giving them a 'human face' (Krause, 2005). For example, students were asked to meet with their lecturers over lunch and find out their research interests. The QED also aimed to give students a sense of belonging to their school. At the end of the first day, they were given a school tour and opportunities to meet with program directors and support officers.

Students were also encouraged to 'link beginnings with endings' (Duff et al., 2007) by having an industry panel address them on the issue of sustainability and engineering. This was important because it opened minds to career possibilities and highlighted the *relevance* of their choice of program.

## Planning and management

A well-thought, strategic approach was necessary to ensure the QED's success because, as Wingate (2007) suggests, ad hoc approaches to teaching students how to learn at university simply do not work. Program support officers, academic staff and staff from the learning and teaching unit contributed equally to the QED - whether it was organizing the catering, devising the activities or marketing. A communication plan was essential to maximize student attendance. The plan included two program information evenings to promote the QED. There was also a three-stage email strategy targeted to perspective and enrolled students. Students were directed to a website which publicized prizes, a YouTube clip of the Experience 1 Studio, dates and information about participation. Finally students were sent a reminder SMS message – a novel way of contacting students at UniSA.

## Results

The success of QED and its aspirations to orientate students to the social, institutional and academic aspects of their new learning environment was measured by a paper-based student evaluation and staff reflections shared document.

The survey was distributed to the students on day 3 of the QED. The questions were based on a five point Likert scale and free text responses. 79 students participated in the survey.

Participants either agreed or strongly agreed (97%) that the social function of the QED – the opportunity to meet staff and students and begin to form networks – had been achieved. There was

also strong agreement (94%) that there had been learning about the physical space - campus, school and first year engineering as a result of participating in the QED.

Somewhat successful was the agreement rate in the items related to an 'understanding what university-style learning is about' (68%). The shift had been mainly from 'agree' to the 'neutral category' with only one respondent disagreeing but offering no further elaboration. While this could suggest the academic aspect remained somewhat confusing to some students, it might simply point to the fact that they have not yet started the academic year and therefore do not have a benchmark.

The survey showed that 10% of students disagreed about the helpfulness of their mentors. However, 73% found their mentors to be a helpful part of their orientation experience.

When asked what they valued most, 58 participants made 89 free text comments that were categorized as:

- Physical orientation to the buildings on our very large campus (38%)
- Being in mentor-led student groups (21%)
- Meeting support staff and lecturers (14%)
- Being part of the game (10%)
- Introduction to software and computing facilities (6%)
- Free food (3%)

One item in the survey related to how the experience might be improved for next year's QED orientees. Only 31 (or 39%) contributed comments for the orientation organizing team to consider. Preparedness of mentors (22%) and more explicit instructions about navigating the QED and its activities (16%) were the most noteworthy items. Other comments ranged from making the QED longer/shorter/harder/more competitive and/or easier.

Staff reflections in the weeks following the QED suggested that the mentors needed more screening and training (especially in the use of new software i.e. PebblePad) and it was necessary therefore to allow more lead time. The newness of the event and its complexity – coupled with the fact that its organization coincided with the holiday break for many staff - meant lead times were fairly short. They also recognized that there needed to be more staff at the social events – including the lunch and presentation ceremony. Finally, it was suggested that more could be done to create a festive atmosphere.

## Discussion

As a result of the student evaluation of the QED and ensuing staff reflections, there are lessons to improve what looks to be a promising start to an ongoing program. Better preparation of mentors and longer lead-times for the QED's organization are just two areas to strengthen.

Notwithstanding these, the QED was lauded by the students as a successful social event which enabled them to become familiar with the institutional and learning landscapes of UniSA. As Wilcox, Wynn and Fyvie-Gauld (2005) suggest, this is a most valuable investment in the quality of the university experience.

One of the most satisfying aspects of the QED was the way in which staff came together to deliver a finely executed holistic program dedicated to welcoming new students as they took their tentative first steps at university (Krause 2005a; Wingate, 2007).

Further work is required in the tracking of retention and success and how elements of the QED segue into student work. However, early data gathered show the QED was valued by the students and it has given them a supportive them head start into their new life at UniSA.

As Hargraves (1998) suggests, the perception of teaching of first-year students has been overshadowed by the Holy Grail of research in terms of promotion and other institutional rewards. At UniSA the QED demonstrates a culture shift with its high level of collaboration amongst staff at all levels and commitment to creating a space, place and friendly institutional face for new students. This is critical in the current higher education environment where the quality of student experience in the vital first few months have such an impact on success and retention (Krause 2006)

## Conclusion

The QED set out to achieve a novel, engaging and socially satisfying introduction to university for new engineering students. The most successful ‘front-runners’ in the orientation trilogy – social, institution and academic – were ‘institution’ and ‘social’.

The next step in determining the success of the QED is to look at the overall retention data for these students compared with those who went through in previous years where the orientation program was somewhat less engaging.

What we can say, though, is through the QED, students were given a sense of belonging, a taste of learning, welcoming faces and new friends – surely a great start to a new life.

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