

Northern Advanced Manufacturing Industry Group
(NAMIG)

Independent Evaluation
Final Milestone Report

by
Professor Andrew Beer
&
Mrs Cecile Cutler
Flinders University

in association with
Kristine Peters Project Management
December 2006

Executive Summary

This is the Third and Final Milestone Report for the evaluation of NAMIG and its Concept to Creation program (C2C). NAMIG is a vocational education initiative funded by the Australian Government's Department of Transport and Regional Services as part of the Sustainable Regions program. NAMIG is a collaboration between major employers, schools within northern Adelaide and the government sector.

NAMIG and its programs have been developed as a mechanism for encouraging young people in northern Adelaide to consider a career in advanced manufacturing. It aims to stimulate young people to undertake school subjects such as science and/or maths that are relevant to careers in Advanced Manufacturing.

NAMIG uses a problem-based learning approach with the upper high school students. NAMIG commenced in May 2005 and groups of students from participating schools within the region – public and independent – have visited factories and worked on problem-based learning projects.

This evaluation was commissioned in October 2005 as a long term project, to be completed in December 2006. In broad terms the purpose of this evaluation is to assess the impact of NAMIG and its operations and to map out a strategy for ensuring the sustainability of this initiative. The evaluation aims to provide an overview of the achievements of NAMIG and report on its efficiency and effectiveness in achieving its goals.

The First Evaluation Milestone Report found that:

- NAMIG had been developed with a comprehensive operations plan and clearly defined performance indicators;
- A review of the literature showed that the approach adopted by NAMIG was consistent with international best practice;
- The NAMIG program could be evaluated against its key performance indicators;
- NAMIG would evolve over time and it was expected that it would have a significant impact in 2006;
- The Pilot Project phase of the C2C program demonstrated the need to initiate the component projects and activities at the earliest possible time. It also demonstrated the need to collect the data used in the evaluation at an early stage.

The Second Evaluation Milestone Report found that:

- The C2C program has had demonstrable successes and represents a significant advance in facilitating the transition from school to employment, or further education.
- The C2C program raised the awareness of teachers and students alike of the advanced manufacturing industries located in the northern regions of

Adelaide. It also helped build links between the school students and the university sector, especially the University of South Australia.

- Students participating in the program reported that the problem-based learning approach embedded in C2C was very effective in both stimulating their interest in advanced manufacturing and in engaging their interest. The presentation of their work at the end of the pilot phase of the C2C program was also considered to be a very beneficial element of the program.
- The students felt that the 'Bring and Brag' (or Expo) day both provided an important end point to their participation in the pilot phase of the program and served as a visible marker of the value the wider community placed on themselves and their work.
- The whole C2C program, and especially the Expo, was seen to be an empowering experience for the students.
- The focus groups undertaken with students found that some saw that the C2C program had either strengthened their interest in attending university and/or given them options for alternative careers if their current plans did not eventuate.
- For a group of mature students, the C2C program strengthened the appetite of the majority to seek work in the electronics and advanced manufacturing industries.
- Teachers considered the C2C program to be very successful. While some teachers reported that they had to overcome a number of hurdles in participating effectively in the program, the teachers reported very positive outcomes from the C2C program. Teachers from one school argued that students who participated in the C2C program recorded noticeable improvements in other subjects when compared with students who were not involved with C2C. Students were seen to be better motivated, better focused on their studies and better able to conceptualise the real world application of their education.
- Industry participants placed very considerable value on their involvement with the C2C program. They saw the C2C program as an essential step in building a regional pool of skilled workers. Second, the industry participants placed great value on the work of the NAMIG Co-ordination Team in negotiating arrangements with the school sector, in organizing high quality events and in ensuring that processes continue in an efficient manner.

The Second Evaluation Milestone Report found that NAMIG had already met a significant percentage of its Key Performance Indicators (KPIs) with most of the outstanding KPIs in train pending the completion of the program.

This Final Evaluation Milestone Report finds that NAMIG and the C2C program:

- Has been successful in encouraging a greater awareness of careers in advanced manufacturing amongst high school age students in the northern suburbs of Adelaide. This success is reflected in a number of ways, including,

- increased enrolments in technology related courses (for example, Valley View High School has seen enrolments in electro technology increase to 20 students for 2007);
 - broad take up of the program by schools within the region; and
 - the extension of the C2C program to other year levels.
- NAMIG and the C2C program have a high level of support amongst industry participants and in the program and amongst industry-related bodies. These organizations and enterprises recognise that NAMIG and the C2C program has the capacity to deliver significant changes in the attitudes of high school students to education and participation in advanced manufacturing and this will directly add to the pool of skilled labour in the region;
 - NAMIG and C2C have been recognised as an innovative, dynamic and valuable labour market training program by public sector bodies at the national level. In its Inquiry into the Automotive Manufacturing Components Industry the House of Representatives Standing Committee on Employment, Workforce Relations and Workforce Participation concluded that

The Committee recommends that the Australian Government pilot the 'Concept to Creation' Program as developed by the Northern Advanced Manufacturing Industry Group in other areas of concentrated manufacturing employment and consider mechanisms to ensure access to on-going funding for these programs.

(Recommendation 5 p. 64).

- The national and international literature identifies a number of themes for successful work-focussed education programs. These themes can be identified as a locational dimension, financial stability, and the ability to respond to local conditions. They are however difficult to separate and each is intertwined with others.
 - Most schemes which appear successful are well established and receive significant support from industry; they may even be set up by industry partners as is the case with the Taft-Oil Academy (Giving Industry Options 2006).
 - Adequate funding is critical for success as many schemes operate in areas with considerable social disadvantage, ranging from US models where recent migration patterns has led to social disadvantage to regions with long term disadvantage due to reliance on a single industry or employer. The NAMIG program, in an area of long term high unemployment and also with significant long standing links to manufacturing fits this theme.
 - International experience shows that funding is not only important because of the need to combat social disadvantage, it is also necessary because schemes such as NAMIG need to be set up properly to run efficiently. The involvement of people at all levels is costly in time as well as in resources. Some of the literature identified the challenge of keeping staff;
 - **A key theme in the literature is the importance of the stability of the program once it is in place. This is complex. Stability means**

there is local acceptance, a constant and regular source of funding and people with foresight to see future success. The funding for NAMIG currently does not meet this criterion.

- Most of the highly successful programs identified in the international literature have evaluated their success against industry criteria regarding flow on into industrial partnerships and/or University education. This long term trajectory reinforces the need for stability in such programs.
- The industrial sector in high level engineering is highly mobile and, as the literature makes clear, it is essential to set up programs which remain in place with a clear commitment from industry for a significant period of time. NAMIG is in a difficult position in this regard as its funding is not long term and the industrial situation in South Australia, particularly in the northern suburbs of Adelaide, is not secure.
- Overall the literature suggests that NAMIG is making significant inroads into raising the career awareness of young people, but there may be a need to commit to more than two years of school interaction. If this does not occur there is a danger that the exposure the students have at years 9 and 10 may simply be seen as a useful project undertaken during their education, and not as a clear and identifiable link with advanced manufacturing techniques and careers;
- Some of the firms participating in C2C are so impressed by the C2C program and its outcomes that they are giving priority to those who have participated in their recruitment;
- There is a need to increase the number of industry participants in the C2C program in order to add breadth to the experiences on offer to students. While acknowledging that the focus of NAMIG is on the advanced technology sectors, it is important to recognise also that some students participating in the program have wider interests and would value an opportunity to gain knowledge of other industries;
- Independent of any vocational outcomes, the C2C program appears to offer students a high quality education experience. Students reported that it added to their capacity to work in teams, to plan for their own work, to apply to their analytical skills and to engage in problem solving. These are highly desirable outcomes from an educational – as well as an industry – perspective;
- One of the schools participating in the program reported that 70 of the 73 students involved with C2C received their SACE unit in 2006 and this is a very high level of achievement. The same school reported that some Year 11 students wished to re-engage with the topic;
- The overwhelming majority of students to complete a quantitative survey reported that the C2C program had raised their awareness of career options. Some students indicated that they would now pursue careers relevant to their vocational training within C2C;

- One of the issues to emerge through the evaluation was the impact of the C2C program on teachers. Problem-based learning places additional demands on teachers and while teachers are willing to accommodate these demands, schools and the NAMIG Co-ordination Team need to discuss the issue of teaching release. Some teachers reported high levels of fatigue associated with the further demands on their time arising out of C2C. It is important that future incarnations of the C2C program recognise this problem and that schools schedule adequate time for the completion of the C2C program;
- There is an on-going need to develop stronger relationships between the schools and industry. The professionalism of the Co-ordination Team has ensured the success of C2C but there is also a need to develop deep and embedded networks between the two most significant sets of partners in this initiative.