

# Relationships in Community Engagement

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## ABSTRACT

This paper describes the results of a workshop that examined different models of community engagement for schools of Information Technology within New Zealand Institutes of Technology. A model is developed that is based on articulating the nature of the relationships between different stakeholders.

## Keywords

### 1. INTRODUCTION

This paper describes the development of a relationship model of community engagement. The model is derived from case studies presented to the CITREnz Computing South Island Educators Forum (CSIE).

Participants in the CSIE workshop each presented a short description of an activity that they were involved in (using the template in the Appendix). The theme for all these case studies was tertiary community/industry engagement.

### 2. RELATIONSHIP MODEL

Participants explored a number of potential models for describing community engagement. From these models, a set of principles were derived.

Models include:

- Participation (Arnstein's ladder [1])
- Knowledge transfer [8,11]
- Corporate Social Responsibility [2]
- Stakeholder mapping [5]
- Communities of Practice [3, 6]
- Stakeholder models [7]
- Business models (especially win-win)
- Outreach
- Leadership
- Action research [13]
- Capability maturity models [12]
- Innovation diffusion models [4, 10]
- Organisational learning [9]

The workshop participants mapped all the case studies to a table that summarised the engagement models (Figure 1). It was realised that all of them had relationships as the common thread. To understand the community engagement we had to understand the extent and nature of the relationships between the different parties. This model is represented in Figure 2. Note that the classification is somewhat arbitrary in some cases, particularly the distinction between Lecturer and Institution –

the separation is intended to represent the difference between a relationship that is primarily with the lecturer, from one that is formalised with the institutional body. The model does not purport to represent the entirety of the relationship, for example the student and institution clearly have a relationship, but it is only on the model if this relationship is clearly enhanced by the particular activity.



Figure 1: Institutional activities on a table of relationship models

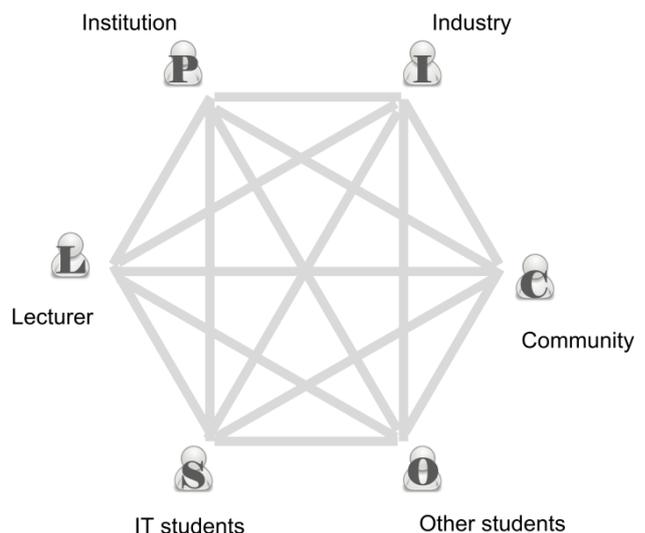


Figure 2: Community relationships model

### 3. CASE STUDIES

#### 3.1 Secondary school programming competition (SIT)

Ken Sutton teaching high school advanced programming techniques in preparation for international competition is an ongoing activity of Southern Institute of Technology (SIT). SIT has been running after school sessions for high school students to encourage participation in national and international programming challenges. Particular successes include three students travelling to India to represent NZ at SEARCC, one who participated in IOI 2005, and for the last two years two have attended the national NIOO training camp in Auckland. Although only anecdotal information is available, the project is encouraging talented students to take their IT studies to a tertiary level.

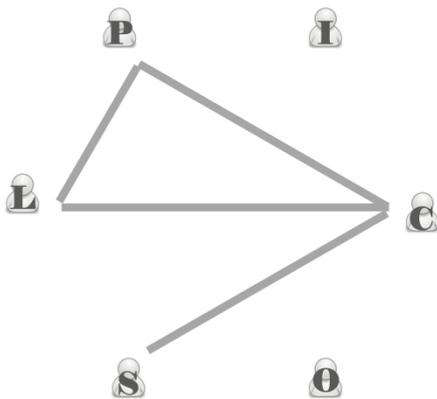


Figure 3: Secondary school programming competition

This case study is an example of a relationship between an individual lecturer and a community and although there are no direct connections to students, it provides this in the longer term through a pathway into tertiary study (Figure 3).

#### 3.2 Enterprise Engine (Otago Polytechnic)

Otago Polytechnic is developing an Enterprise Engine to invest in student start-ups. This will operate through micro-funding business vouchers and curriculum alignment. An evaluation of Polytechnic activity in the entrepreneurial arena showed that the space was fragmented and not actually addressing barriers faced by student led start-ups. The Enterprise Engine is aimed at providing a whole pathway of support for enterprising activity. Some activities have been trialed, others are planned for development. In addition to significant business opportunities the intention is to recognise enterprise and graduate outcomes across the institution. This case study is focused on the institution forming relationships with businesses both new and existing. It is also successful in making connections between students, especially across disciplines.

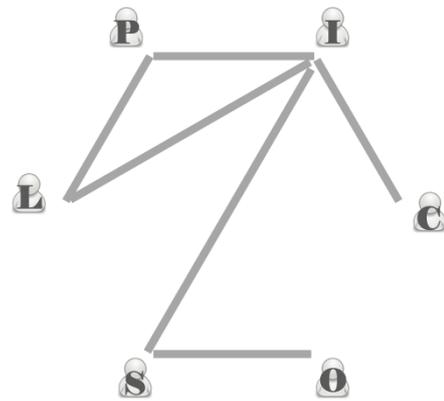


Figure 4: Enterprise Engine

#### 3.3 Insourcing the helpdesk for SIT using students (SIT)

SIT have an existing relationship with a national company (Gen-I) which manages their IT infrastructure, including their helpdesk. Gen-I ran the SIT helpdesk from an Auckland location. SIT wanted to change this structure so that the helpdesk was based in Invercargill and therefore some of SIT students could be employed to be on the helpdesk as tier-1 support. This formed a three way relationship between Gen-I, the student, and SIT. SIT received an improved service due to the organisational knowledge of the students. Gen-I were able to offer an improved service, as well as have an improved recruiting process through SITs prior knowledge of the students. The students received an employment opportunity while still receiving transitional support from SIT. The helpdesk provides us an example of building connections between the institution, business and students.

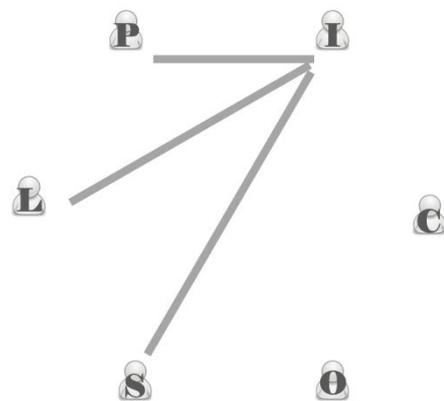


Figure 5: Insourcing Helpdesk

#### 3.4 Using Programming to Assist Primary Mathematics (Otago Polytechnic)

The students in Otago Polytechnic's BIT second year Java Programming class are developing an applet that is based on the mathematic goals of a lower decile primary school. The applet will be given to the teachers for use in their classrooms. The BIT students do not form a relationship with the school children (Figure 6). Otago Polytechnic forms a relationship with the school. In this example the relationships are indirect, future work will aim to create direct relationships – for example between the students and the school.

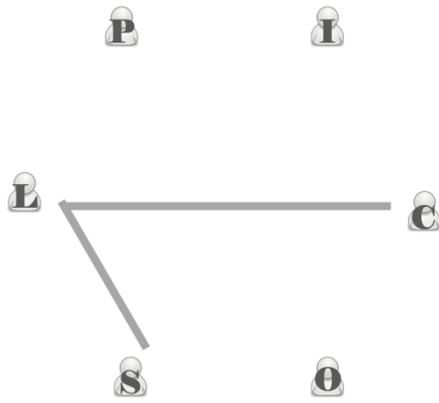


Figure 6: Developing tools for primary school maths

### 3.5 Community computing (Otago Polytechnic)

Otago Polytechnic is supporting IT in the households of our wider polytechnic community. Following discussion with a Programme Manager in the Foundation School, an exploration was undertaken into the possibilities of providing computers to their students. Issues surrounding licensing, but also internet access, technical support, educational support need to be explored. The intention is that IT students will engage with this programme both in terms of technical work on computer maintenance and in engaging with individual's households and communities. Initial findings support the programme but stress the importance of looking wider than the students but to their households and communities and to the importance of engaging people with an overall digital experience not just a computer. Not just for the Otago Polytechnic students but for their households. This community IT infrastructure project is based around building relationships – this network effect can be seen in a dense relationships model (Figure 7).

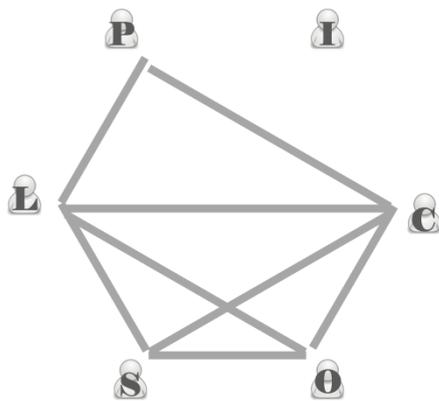


Figure 7: Community computing.

### 3.6 HCI for children with disabilities (SIT)

Staff and students of SIT are using rapid physical prototyping (phidgets) to provide interactive experiences for children with disabilities. SIT has built a relationship with a special education school that works with disabled children. This came about from a request from the primary school teacher to help to develop devices to attempt to enhance communication for a group of children with severe disabilities. Although not formally assessed, the children and school enthusiastically welcomed the communication system. The project has now been extended with a new group of SIT students. It is worthwhile noting that this HCI development is research with an uncertain outcome. It was important that this uncertainty be communicated as part of the relationship building. This case study of applied HCI has

relationships between the lecturer and institution and the social group (special education school). It directly exposed the students to a group of computer users with specific needs, very different from traditional development focus (Figure 8).

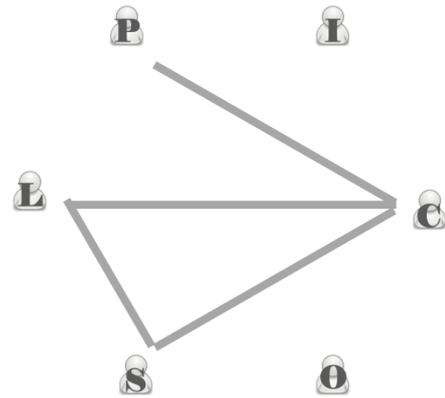


Figure 8: HCI for children with disabilities

### 3.7 Raspberry Pi in secondary schools (NMIT)

NMIT liaisons with local secondary schools in the use of RP to explore its potential in the delivery of the digital curriculum. Historically NMIT has not had as high a profile as desired with secondary schools in the Nelson region. The RP is a simple computer and as it is designed for education, NMIT approached local secondary schools to explore how RPs could be used in the digital curriculum. One of the schools had already invested in RPs and enrolled all the students in the National codeworx challenge run by Orion Health. NMIT are now supporting five schools from across the region in the codeworx challenge. NMIT is also sponsoring some extra RPs and some peripherals. The next stage is to run a workshop for teachers to practice and brainstorm. NMIT students will then work with schools in the initial setup and school teams will visit the NMIT Campus for monthly sharing, problem solving and brainstorming sessions. This case study is explicitly aimed at fostering better relationships with feeder schools and building connections with high school teachers and students (Figure 9). NMIT aims to be seen as a viable alternative that is innovative yet approachable. An important part of the approach is an intentional win-win outcome: something in it for NMIT (direct contact with teachers and students) and something in it for the schools (help with the subject they are not experts in, and support for students in becoming NZ's next generation of IT professionals).

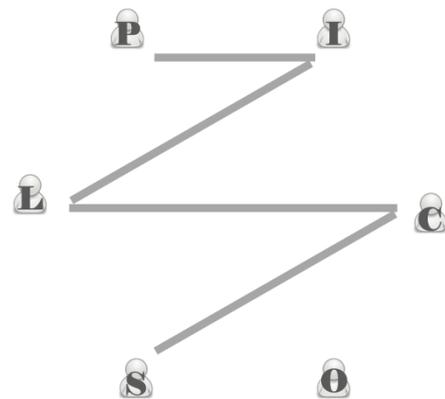


Figure 9: Raspberry Pi in secondary schools

### 3.8 Stories and hands-on hardware (CPIT)

CPIT is working in engaging students. In one example they are taking what could be considered dry computer architecture

concepts and reworking this material with the goal of as much hands-on as possible. In a separate work stream CPIT is aiming to develop a greater of storytelling practice is an integral part of teaching practice. These case studies highlight perhaps the most important relationship in the IT education community, that of the academic and student (Figure 10). We still have lots to learn in how we engage people in this.

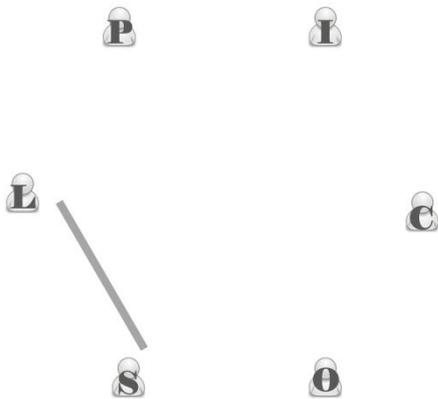


Figure 10: Stories and hands-on hardware

### 3.9 Job Shop (Otago Polytechnic)

OP has been developing a job shop that allows students to complete commercial work for clients. The work is organised by OP staff and assigned to students. The continual success of the job shop is based upon the quality of the work and the reputation of the institution. Relationships between the staff who run the job shop and potential clients need to be established and maintained in order for the job shop to be successful. Relationships may be established between students and clients as individual jobs require. This venture has the potential to influence the position/relationship of the institution with the local communities (Figure 11).

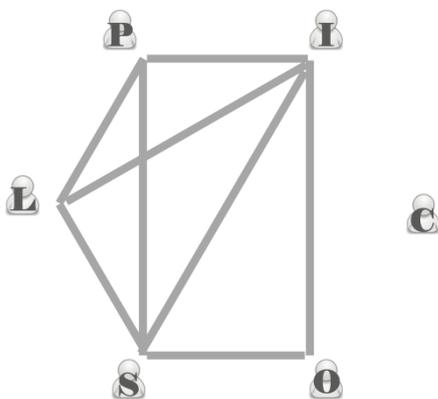


Figure 11: Jobshop

Although not presented as a case study at the workshop, we present two further case studies to investigate the applicability of the model.

### 3.10 Capstone

Most institutions have a capstone project where final year students undertake a significant piece of development work, often in a partnership with an external client (Figure 12). The capstone has a strong relationship between the student and the community or industry (or both). It is also an opportunity for the supervising academic to develop their own relationship with the community and industry. In some projects there is the potential for IT students to collaborate with students from other disciplines, particularly design and business. We have not drawn relationship lines between community/industry and the

institution (P) as the capstone projects tend to go “under the radar” in terms of institutional relationships.

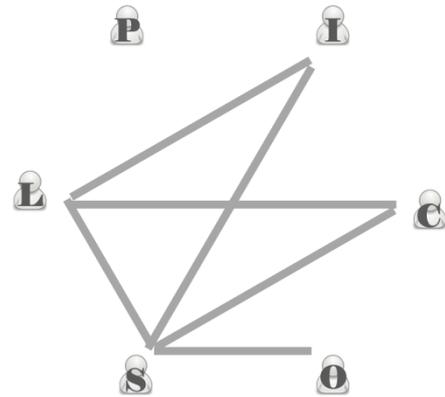


Figure 12: Capstone

### 3.11 Sustainable Community Enterprise (Otago Polytechnic)

To push the model to the limit, we describe here a project that was intentionally established to build relationships (Figure 13).. Sustainable Community Enterprise is an initiative of Otago Polytechnic. It was intended to demonstrate a win:win:win approach for community engagement by tertiary institutions. Three subprojects are Port Chalmers Community Wifi, Polytechnic eWaste, and Alternative Energy Generation. All three involved direct partnerships between the community, institution, industry, academics and students. The premise is that every activity the institution engages in must have recognised benefits for the community (read sustainability), the institution (read positive impact on finances), and learning. What this means in practice, for example, is that we added to external contracts a requirement for students to be involved in the delivery of the service.

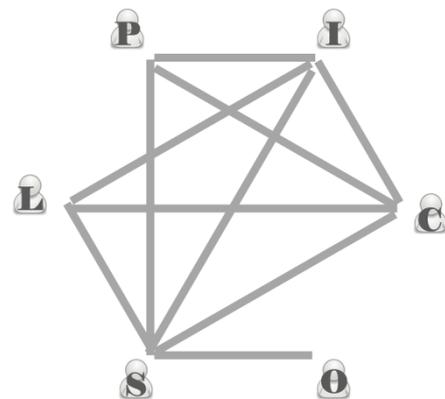


Figure 13: Sustainable community enterprise

## 4. DISCUSSION

It may seem almost trite to conclude that we need to focus on the relationships in community engagement, but this process has been useful in articulating the relationship benefits of different approaches to community engagement.

The model is clearly simple. It does not take into account the nature of the relationship nor any of the wide range of different theoretical approaches to considering engagement. Nevertheless, it is a useful first step in considering different approaches to community engagement. The value in this model is the exploration of relationships in a visual manner. We could have used alternative nodes – a separation of IT student and IT student group might have been interesting. It might be

interesting to attempt to quantify the relationships (and represent these visually such as with differently weighted lines). Different approaches to community engagement serve different purposes. It would be a mistake to use this model as a scoring system (more relationship lines better). It is not expected that each activity completes every relationship pairing. But would be a worthwhile exercise to examine an institution's portfolio of community engagement activities and to use this visual representation to explore opportunities for development..

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## Computing South Island Educators' Forum – Case Study

**Title:**

**Tweet:**

Abstract with a 140 Character Limit (!).

**Why?**

Driver, Why did you need this? How did this situation arise?

**What?**

Intervention (What did you do?).

**Wishes?**

Hoped for (measurable?) improvement. Why did you think this would work?

**Outcome?**

Did it work? Would you do it again? How would you do it differently?

**Thoughts?**

General Comments

Any traps for young players? Any other thoughts?

**Institution:**

**People Involved:**

**Qualification  
Level:**

**Subject Area:**

**When:**