# Building sustainable learning spaces with industry partners through reciprocal mentoring

**Lina Pelliccione and Kathryn Dixon**
School of Education, Curtin University of Technology

This research aims to address current problems regarding availability of pre-service teacher education internship opportunities through the development of an ongoing and sustainable relationship with local primary school teachers and students. The culmination of the research will ultimately result in a reciprocal-mentoring model being developed which will create a mutually beneficial partnership between an Australian University (teacher education students and academic staff) and local primary school teachers and students. A *Collective Community* learning platform has been built and implemented which has enabled all stakeholders to work together on ICT-rich learning activities. The research has involved four very distinct phases. However, this paper reports on *Phase 3: University Readiness* of the larger study. This phase involved primary school students working with teacher education students, teachers and academic staff on an ICT activity for the day. The findings reveal that reciprocal mentoring can be mutually beneficial to all involved.

Keywords: Reciprocal mentoring, ICT, sustainable learning communities

## Introduction

One of the major problems currently facing University teacher education programs is that the present model of teacher internship is inadequate due to competition between Universities for available places, a lack of specific funding initiatives and less than satisfactory sustainable ongoing relationships between the higher education sector and schools. The School of Education needs to create more sustainable and effective industry relationships that lead to successful practicum placements. In order to achieve this, an innovative reciprocal mentoring model is being carefully examined.

Universities across the country are not unreasonably expected to contribute to their neighbouring communities. Relationships between the higher education sector and school communities need to be truly collaborative and of equal benefit to all partners (Anyon & Fernandez, 2007) in order to create sustainable and transformative learning and practice. Using an Information and Communication Technology (ICT) rich environment the overarching aim of this study is to encourage dialogue (Freire, 1973) across the traditional boundaries between schools and higher education through reciprocal mentoring (Leh, 2005). This will involve the following key participants: primary school students, school leaders, teachers, pre-service teacher education students and university academic staff. Distributed leadership through mentoring and mutual dialogue is a key recommendation of the recent Twomey (2008) Report, Education Workforce Initiatives and seeks to transform current education practices by calling upon all stakeholders to lead, to learn, to listen, and to develop 'community conversations'. The Horizon Report (2009) identifies the significant trends in the changing landscape of ICT. The report highlights the growing reliance upon web based environments in education across all sectors and how this is crucial to learning and teaching, social networking and collective intelligence. Clearly, ICT has changed the way we collaborate, communicate, learn and teach. The boundaries between schools and universities must become more fluid in order to navigate our way into this new environment.

## Reciprocal mentoring

Mentors are typically defined as experienced and knowledgeable individuals who are committed to supporting a protégé become competent. Traditionally mentoring is seen as a relationship between an older and a younger person, with the older person assuming the mentoring role. There have been many

studies into the different the various aspects of mentoring. For instance, mentoring strategies (Packard, 2004-2005); those who receive mentoring (Ragins & Cotton, 1999); benefits (Lankau & Scandura, 2002; Payne & Huff, 2005); conditions required for mentoring relationships to succeed (Eisenberger, Armeli, Rexwinkel, Lynch & Rhoades, 2001).

One of the most pertinent insights to this study is the work of Higgins and Kram (2001) who investigated the concept of developmental networks. This arose from the realisation that individuals typically had more than one mentor and that these mentors may come from other contexts. These 'social networks' were comprised of senior colleagues, peers, friends, family and community members who supported the development of the individual (Higgins & Kram, 2001). Harvey, McIntyre, Thomson Heames and Moeller (2009, p. 1347) suggest that "Networks with strong, diverse relationships appear to provide the most support for the protégé".

The concept of reverse mentoring has been around for over a decade but is featured more prominently due to the rapid development of technological change and innovation (Greengard, 2002). Reverse mentoring, simply inverts the typical mentoring role with the more experienced individual (regardless of age or position) takes on the mentor role, while the less experienced individual becomes the protégé. Similar to typical mentoring, reverse mentoring is applicable to many disciplines. Some of the benefits for mentors and protégé of such an approach involve engaged learners, improved morale, cost efficiency, diverse application, information access, personal satisfaction (Carr, 2002; Cotugna & Vickery, 1998). Interestingly, from on organisational point of view in a typical mentor relationship the mentor usually transfers existing knowledge about the organisation, while reverse mentoring, often involves knowledge that is transferred from outside of the organisation (Finkelstein et al., 2003).

While Gonzales and Thompson (1998) acknowledge the benefits of both traditional and reverse mentoring, they introduce the new concept of 'reciprocal mentoring' whereby they believe that the exchange of knowledge is more dynamic between the mentor and protégé. At various stages this relationship between the mentor and protégé may potentially have mutual benefits and can be seen as 'co-learners' (Chandler & Kram, 2005). Harvey et al., (2009, p. 1350) believe that "Mentoring networks are the base structure for reciprocal mentoring (i.e., two-way dyadic pairings for the sharing and creation of knowledge in the organization). The relationships may be cross-organizational or intra-organizational …".

## Research aims

The aim of the larger research project is to develop and evaluate a reciprocal mentoring model which includes students and teachers from a local government primary school, University pre-service teachers and university academic staff. The ICT environment, known as the Collective Community, developed specifically for this project will create and support this community of learners not only for the duration of this project but also into the future. Ultimately, the aim is to embed this mentoring model into the pre-service teacher education program in order to guarantee sustainable long term partnerships. This proposed study is framed then by the following research questions:

- How does reciprocal mentoring enhance school students', teachers', pre-service teachers' and university academics' practice in ICT skills?
- How does reciprocal mentoring contribute to the development of a sustainable learning community?
- How does the implementation of a reciprocal mentoring model build enduring relationships between higher education and school communities?
- How can a reciprocal mentoring model promote university readiness in school students?
- How is Freire's (1973) concept of dialogue (mutuality, supportive and strategic leadership, assets-based focus) embodied in the collaborative process?

## Methodology

This research has adopted an interpretive methodology (Cohen, Manion & Morrison, 2000), based upon case studies (Creswell, 2006). Various research instruments were administered including semi-structured interviews, observations, and questionnaires. Participants involved Year 6/7 students (n=55), school teachers (n=5), pre-service teachers in the Bachelor of Education Primary program (n=24, 1st year, and n=5 3rd year) and university staff (n=3). To ensure the voices of all participants are heard and to provide high quality descriptions of the mentoring and learning experiences that develop through the ICT community - the emphasis has been on collecting qualitative information although it will also be

supported by quantitative data. The research project has been divided into four distinct phases and it is important to note that phase three will be the focus of this paper.

### Phase one: Initial engagement

In order to develop a collaborative process that engaged all participants - a meeting with academic staff and school leaders was held at the local primary school. The major aim of this phase was to determine current ICT practice (staff and students) and by doing so identify the perceived elements essential to the development of a mutually significant relationship with the University.

### Phase two: Crossing boundaries

This phase involved the school teachers spending one of their professional development days at the School of Education. The aim was to develop relationships and work closely with academic staff and pre-service education students to immerse themselves in the potential uses of current technology classroom practice. Pre-service students were linked to teachers in small groups and mentored and guided the Primary School staff through a number of interactive activities held in the computer labs in the School of Education. The learning experiences included a key session familiarising them with the new purposefully built learning environment - Collective Community. Qualitative data were obtained through the administration of a questionnaire containing open ended items regarding the usefulness of reciprocal mentoring on the development and consolidation of ICT skills.

### Phase three: University readiness

In a similar process to phase two, phase three involved the primary school students from Years 6/7 working with pre-service teacher education students under the guidance of academic staff. One of the aims of this phase was to broaden the university experience for these primary school students. The school students actively participated in a number of ICT based learning experiences very similar to those experienced by their teachers throughout the day. The Collective Community learning environment was once again a dominant feature of their learning experience. A questionnaire was designed for the school children and one for the pre-service teachers which contained likert-scale items and open ended questions regarding their attitudes toward the experience at University. As identified earlier, this paper will report on this phase of the study only.

### Phase four: Situated learning

The final phase of this project will involve pre-service education students (n = 20) working with school children and their teachers at the primary school on a technology project that is mutually agreed upon by the participants. The Collective Community environment will enable all involved to share and showcase their projects. At the end of this process semi-structured interviews will be conducted with a sample of the primary school staff (n=5), including the principal, academic staff (n=5) and the pre-service education students (n=10).

## Results

As stated earlier, 55 primary school students and 29 School of Education pre-service teachers were involved in phase 3. Two questionnaires, one for the primary school students and one for the pre-service teachers were designed and administered at the end of the University Readiness day. The following section will present the results from each survey.

### Primary school student questionnaire

One of the first questions in the student questionnaire ask them to identify 'how you felt about coming to the University for the Learning Community Program?'. Table 1 provides a summary of the responses.

Fifty-five comments indicated that the students felt happy and excited. They were looking forward to coming to the University because they wanted to see what a university was like. They were looking forward to learning something new and felt that it was unusual for year seven students to be able to have the opportunity to work in a computer laboratory in a university setting. Twelve comments indicated that initially the students felt a little nervous as they had not been to a university before. They began to relax and enjoy the experience once they began work in the computer laboratory. Ten comments indicated that

**Table 1: How school students felt about coming to the university**

| | No of comments | Examples of school student comments |
|---|---|---|
| Happy and excited | 55 | I felt very excited about coming to the University today and I kept thinking on the way that we would have a chance to do some interesting work on our e-portfolios. |
| Nervous when we first arrived and when we went into the computer lab | 12 | I felt a bit nervous when we arrived and we all went into the big meeting room and also when we went into the lab at first but the teachers were nice and I thought this would help me in the future.<br>I haven't been to a university before, I felt I would be nervous but when we went into the lab and started to do some work I felt alright and the people were really nice. |
| Look forward to learning something new | 10 | I was looking forward to learning something new about computers because they are important for me in the future and I was looking forward to doing some work on my e-portfolio so I could show my teacher. |

the sample was looking forward to expanding their knowledge regarding computers and working on their e-portfolios which had been introduced to them at school.

Question two in the questionnaire asked the students to respond to, 'how did you feel about working in your group with students from the University'. Fifty-five comments indicated that the sample had a positive experience working with the pre-service teachers. They were positive about working on their e-portfolios and felt as though they had learned a significant amount of new knowledge regarding computers and the components and processes involved in creating an e-portfolio. The sample also commented on the impact that positive responses from the pre-service teachers had on them in regard to their work on the e-portfolios. The following are some examples directly taken from the student data:

> I felt very happy for these adults to help me start my first portfolio...and I think it would have been a great experience for them as well as us.

> It was great to have a different teacher and I hope they all become teachers because they were very nice...they said nice things about my slides and helped me to make them look nice.

> I was very happy because I was in a group with my friend...I got to learn a lot about computers in the lab.

**Table 2: School students' favourite part of the work for the day**

| | No of comments | Examples of school student comments |
|---|---|---|
| Pleased to be able to work on their ePortfolio | 42 | I liked being able to work on my achievements page for my portfolio and I liked being able to make it look nice and add the pictures. |
| Enjoyed working with PowerPoint and creating slides that they could use in their ePortfolios | 12 | I liked working on the pictures and the slides and I liked adding the pictures and work samples to the slides and making comments about myself.<br>I liked putting in pictures from the past and being able to type about my family and myself and I liked doing the photo story...and also looking at what the other students had done. |
| Enjoyed working with particular components and applications | 10 | I liked finding the dancing stickmen..and I liked messing around with the different pictures and fonts..being able to look back on the photos you had taken during your life was good. I liked making the slides and watching them get better as I learned more things. |
| Spare time including lunch had been enjoyable for the students. | 6 | I enjoyed the lunch because I got to meet other university students and I felt as though it was interesting. |
| Enjoyed the process of reflecting on their work in the ePortfolio once they had completed a section | 3 | I liked setting it up and then looking back on it again...I liked being able to go back over my work and change it to make it better the next time...I liked being able to make some changes to my photo story and thinking about my family. |

The school students were also asked to identify their favourite part of the work they had done. Table 2 presents these results. The majority of the comments made by the students of their most favourite part of the day focussed on the opportunity to work on their ePortfolio.

One of the questions asked the students whether the computer related activities were difficult. A total of 28 comments indicated that the students had experienced some difficulties with the activities as a result of working with new technology that they did not have access to in their school setting. Regardless of these difficulties the students felt as though they could ask for help and suggested that the pre-service teachers were easy to understand.

> I thought some of the activities were hard because we don't have this type of technology at school...at school we use Microsoft three and this was Microsoft seven that we used today, it was different to what I'm used to.

> I found working the overall system challenging as it was different to what I'm used to at school...I found making a picture fit tightly around the text hard, it didn't work because that operation is in Word.

> Some of it was hard like the hyperlinking because I had never done it before but the student teacher was very helpful and showed me what to do.

Sixteen comments suggested that the students did not experience any difficulties as the student teachers explained the processes involved clearly and were eager to help. Eleven comments indicated that as a result of having ready access to computer technology at home the students did not experience any difficulty with the activities. The questionnaire also asked the students to identify the most interesting things that they had learned from the day. Table 3 presents their responses.

**Table 3: School students' most interesting things learned**

| Summary of comments | No of comments |
|---|---|
| How to make hyperlinks | 42 |
| How to make photo-stories | 34 |
| How to make e-portfolios | 28 |
| How to create links in your power point | 12 |
| How to use power point | 10 |
| Learning how to use Microsoft 07 | 8 |
| Working with people you don't usually get to work with | 2 |

When asked 'what didn't you really enjoy about today?', 43 comments were made by the students indicating that they enjoyed everything about the day. Some students didn't enjoy writing about the work samples (8 comments), while some found it difficult to get started (3 comments). The following comments were mentioned only once: Learning something new; some people weren't able to help me; the lunch; and typing in the user name and password to get into Google. One of the key questions which clearly linked to the notion of reciprocal mentoring, was: Have you learned anything new today that you think you could help your classroom teacher with when you get back to school?

**Table 4: New information the school students can help their classroom teachers with**

| Summary of comments | No of comments |
|---|---|
| We could start showing younger students how to begin portfolios | 12 |
| I could help my teacher with changing backgrounds and patterns | 12 |
| I could help my teacher with power point | 10 |
| I could help my teacher with photo story | 10 |
| I could help my teacher to make hyperlinks | 8 |
| I could show my teacher how to make a portfolio | 3 |
| I could help my teacher with little things to make learning better | 2 |
| I have learnt a lot about slide shows, I could help my teacher | 1 |

The majority of the comments focussed on showing their classroom teacher the mechanical and technical aspects of creating an ePortfolio. Interestingly, twelve comments suggested that they could share their knowledge with younger students. A further following question asked the students to identify how they felt about helping their teachers at school with computers. Table 5 reveals their responses.

The sample were almost evenly divided between positive and negative responses when they were asked, Do you think your teachers at school would like you to help them with their computer problems? Twenty-nine students answered positively and twenty-six students answered in the negative. Positive comments

**Table 5: How school students feel about helping their teachers**

| Summary of comments | No of comments |
|---|---|
| I feel good about doing it, I think I could help them | 35 |
| I feel strange / uncomfortable about doing that | 7 |
| I feel OK about doing that but I wouldn't want to make any mistakes | 7 |
| I would feel important as not everyday do you get to help your teacher | 6 |
| I'm not that good at computers but I've learnt some things today that I could teach them | 4 |
| I wouldn't want to do this as we have lots of other things to do | 2 |
| It would be good to teach our teachers for a change | 2 |
| I wouldn't want to it's bad enough having to teach my mum | 1 |

included that the students felt as though by helping their teacher with computer problems they would have the opportunity to interact with them more and they thought this would be enjoyable. They also felt that as they are younger than their teachers they would be able to successfully help them with computer applications. A number of comments indicated that students would feel useful while helping their teachers as it would mean that they would not have to seek the advice of an expert external to the school. Other comments suggested that the students would enjoy feeling like a teacher themselves through the process of helping adults.

Negative comments included that the students felt that their teachers already knew everything about computers and so would not need their assistance. A number of comments indicated that it would not be a good idea to try to 'outsmart' the teacher as this would cause problems in the classroom. The remainder of the comments suggested that the students felt as though their teachers already possessed adequate knowledge of computers they wouldn't be interested in being told what to do by primary students. Several comments indicated that the students believed that their teachers would simply not be interested as they are not really keen on using computers in the first place.

When the school students were asked 'after today how could you help other students to use computers?,' the majority of the comments identified that they could teach them how to make a portfolio (16 comments). In addition, they could also show them how to make hyperlinks (14 comments), how to use PowerPoint properly (12 comments), and make their work more colourful and less boring (7 comments). Some students also noted that they could help other students with photo story (6 comments).

The school students were also asked, 'after today how could you help your teachers to use computers?'. The majority of them said they could help them to work on their e-portfolios (18 comments), while others noted that they could show them what they had learned so that the teachers can show other students (12 comments). Some of the comments (10) simply noted that they really didn't know how they could help. Six comments revealed that they could help the teachers be more creative.

**Pre-service teacher questionnaire**

The key section of the Pre-Service Teacher Questionnaire, for this paper, specifically asked the pre-service teachers about their experience with the school students. As stated earlier, there were 29 pre-service teacher education students, 24 students were first year students while 5 were in their third year. The students were asked, have the visiting primary students in your care today taught you anything you didn't already know?

The majority of the comments from the pre-service teachers identified that they had gained a greater understanding about the ability of school students of this age group and how to actually interact and engage with them in various environments (computer lab and outside in an open space). The majority (9 comments) of them were quite astounded at how competent and capable the students were with regards to the technology, and how quick they were to grasp new skills once they had been shown (3 comments). There were a number of comments that identified that the University readiness day taught them how to deal with the students more effectively, and helped them to realise that school students require constant supervision. One person also noted that they had developed a greater understanding about their own

personal teaching style. Interestingly, there were eight comments regarding the specific technical skills that the school students had taught them.

> They taught and made me realize a lot more about the program I thought I knew (obviously not that well).

> I learnt how to deal with children and this will further help me in my future as well as equip me for my prac work in the next semester.

> Yes, the students had a lot of knowledge about using PowerPoint especially in the area of design which they were more than willing to share with me.

All of the pre-service teachers responded in an extremely positive manner when they were asked to identify how they felt about working with the students? The responses (25 comments) ranged from very emotive words such as 'love it', 'enjoyed', fun', 'fantastic', 'great' and 'good', to very positive comments about the students themselves (5). Other comments revealed that the experience enabled them to see the student's level of ability regarding ICT (4), and enabled some to develop a greater understanding about themselves (gained confidence and re-affirmed that they had chosen the right career). Only one student said that they felt overwhelmed.

> I really enjoyed it. My confidence in teaching these skills progressed over the day and the children seemed to really enjoy the experience.

> I think it was a fantastic opportunity and I really enjoyed working with the students today. I was amazed by the skills the children had and how excited they were to participate in this project.

> Fantastic! Working with the kids really is the highlight - obviously chose the right career.
> It was a great experience, also learning from the students.

There were many responses to What were the highlights of the day? Not surprisingly, they all revolved around dealing with the school students. The pre-service teachers enjoyed watching the students achieve (7 comments) and actually teaching the students (5 comments). Others highlights consisted of , watching the students: create; interact; enjoy themselves; master new skills; concentrate for a good length of time; put their eportfolio together; quality of work. There were 2 comments that identified how rewarding the day had been. All of the 24 comments made be the pre-service teachers were very positive.

> The school students interacting with each other and also with most of us.

> The smiles on the kids' faces when they mastered a skill on powerpoint.

> The quality of the work and the student concentration on the task.

> Seeing how tech savvy some of the students are at such a young age.

> Being able to help them design and have them interact with us and feel comfortable in our environment.

The pre-service teachers identified that some of the challenging parts of the day arose from: keeping students on task (9 comments); coping with the different pace and ability of the students (4 comments); trying to help all of the students in the group at once (2 comments); encouraging students to write (2 comments). The following comments were only mentioned once: struggling spellers; using appropriate language for the age group; trying to solve problems; trying not to do it for the student; early finishers; being patient; and being on their feet all day. Interestingly, there were 7 comments that noted that there weren't any challenging aspects to the day. These students clearly felt very confident and in control throughout the day.

## Findings

These initial findings will present a summary of each of the questionnaires and then focus on addressing two of the key research questions for this phase of the study:

- How does reciprocal mentoring enhance school students, and pre-service teachers in ICT skills?
- How can a reciprocal mentoring model promote university readiness in school students?

**Summary school student questionnaire**

Even though some of the school students felt nervous about spending the day at the University, the majority of the comments (55) clearly indicated that they were really excited and looking forward to the experience. The questionnaire data revealed that this experience ended up being a very positive one for two key reasons. The first being, they enjoyed working on their eportfolios as the process enabled them to learn a variety of new skills and knowledge using the computer and secondly, the positive reactions they received from the pre-service teachers. Their favourite part of the day for the majority (42 comments) of the school students was the opportunity to work on their eportfolio. This was also strongly supported by the students' response to, 'what didn't you really enjoy about the day', where 43 of the comments made revealed that they enjoyed everything about the day.

There were a number of comments (28) which indicated that the students encountered some difficulties as the school students were unfamiliar with the software being used. The software at the University was much more current and up-to-date. However, regardless of this unfamiliarity the students felt very comfortable asking for help from the pre-service teachers who appeared to be very helpful and easy to understand. Interestingly, there were 16 comments from students indicating that they didn't experience any difficulties as their pre-service mentors provided them with clear instructions and help.

The students were able to reflect on what they found the most interesting to learn. The vast majority of the comments focussed on the technical skills, such as how to make a hyperlink (42), photo stories (34), and eportfolios (28). The school students also focussed on the technical skills associated with creating eportfolios when they were asked about what they could help their teachers with. It is only natural that the students would focus on their newly acquired technical skills. It was interesting to see that the majority of the students (35 comments) reacted positively to the idea of helping their teachers. Surprisingly though, the reaction was equally divided between positive and negative responses to the question, do you think your teachers at school would like you to help them with their computer problems? Those students who responded in a positive manner appeared to have the following mindset: helping the teacher would be enjoyable; younger students know more about computers; students like to feel useful; and students would enjoy feeling like a teacher. While the negative responses, were really based on the fact that their teachers didn't need, want or welcome any computer help.

Finally, the school students also identified a number of ways they can help other students as well as their teachers with computers. For instance, making an eportfolio, make hyperlinks, how to use PowerPoint properly, add colour and interest in their work, photo story, be more creative. This range clearly indicates their level of comfort and competence with the technology.

**Summary Pre-service teacher questionnaire**

The majority of the sample of pre-service teachers were first year students and the questionnaire was administered at the end of their very first semester. Clearly, the majority would be regarded as novices with dealing with school students. For the majority of the pre-service teachers this would have been their first experience with teaching. However, this was not their first exposure to using technology. The first year students had just completed a semester long core unit called, 'Technologies for Learning'. It would be appropriate to assume that this unit would have helped them to feel reasonably confident with the technology itself and thus more willing to share their skills with the school students.

The pre-service teachers were able to identify a range of valuable benefits that resulted in spending the day working with the school students to help them create their eportfolio. The experience enabled them to gain a greater awareness of students' ability levels and on a number of occasions they were very surprised to discover their competence and confidence with technology. There were 8 comments that revealed some of the school students actually taught the pre-service teachers new technical skills. Thus, some of the school students taking on the mentoring role for the pre-service teachers.

Other studies (Carr, 2002; Cotugna & Vickery, 1998; Leh, 2005) have also found that the reciprocal mentoring model has proven to be beneficial to both parties. This process has enabled both the school students and the pre-service teachers to improve their ICT skills in a very supportive and non-threatening environment. Some of the school students were anxious initially but were soon made to feel at home by their mentoring pre-service teacher. The data revealed that, even within the short time frame that there was a sense of mutual respect for each other that surfaced through their appreciation of each others' skills, knowledge, approach, and manner. As with other reciprocal mentoring studies (Leh, 2005; Morgan & Streb, 2001) increased self-esteem was also evident. The school students were very proud of their

eportfolio, while the pre-service teachers were very proud of being able to contribute to their achievements. The reciprocal mentoring model can promote university readiness in school students, exposing them to new ideas, and providing them with resources that allow them to engage with these ideas, in a very supportive and non-threatening environment.

## Conclusion

The project has been timely given the importance of the ongoing implementation of ICT in the education landscape as outlined in the Horizon Report (2009). ICT creates and supports sustainable learning communities particularly between organisations such as schools and higher education. The recently released Education Workforce Initiatives Report (Twomey, 2008) calls upon all participants in education at all levels to work together to develop relationships and conversations that cross traditional boundaries and by doing so enhance the learning opportunities for all. Through the development of a reciprocal-mentoring model this project has the potential to create sustainable partnerships and relationships between the University academic staff, pre-service teachers and teachers and students from one of the local primary school.

The aim of Phase 3 of the larger study was to develop relationships by having the school students work closely with the pre-service teachers to complete ICT based learning experiences and provide them with the opportunity to broaden their university experience. It also aimed to provide pre-service teachers with the opportunity to gain authentic learning experiences by working with school students in a technology rich environment.

The reciprocal mentoring process has enabled pre-service teachers to become 'co-learners' with the school students as they both gained valuable skills and knowledge through the exchange. The pre-service teachers have had the opportunity to practise their teaching skills in an authentic ICT setting. Often when pre-service teachers participate in their field experience programs they have very little opportunity to integrate technology in their learning experiences and thus practise their technology skills as well as their teaching skills.

The school students have built learning partnerships with the University pre-service teachers, academic staff and their own teachers through the reciprocal mentoring model. This study has shown that engaging with on-campus learning opportunities has increased their understanding of university life and enhance their university readiness. This project will nourish industry and regional relationships and will help to develop a shared definition of what it means to be ready for university. The project represents significant opportunities for research as the reciprocal mentoring model as applied across education sectors has not been previously developed.

## References

Anyon, Y., & Fernandez, M.A. (2007). Realising the potential of community-university partnerships. *Change,* 39, 6.

Carr, K. (2002). Building bridges and crossing borders: Using service learning to overcome cultural barriers to collaboration between science and education departments. *School Science & Mathematics,* 102, (6), pp. 285-298.

Chandler, D. E. & Kram, K. E. Gunz, H. & Peiper, M. (eds) (2005) Mentoring and Developmental Networks in the New Career Context. *Handbook of Career Studies* pp. 548-566. Sage Publications: Thousand Oaks, CA.

Cohen, L., Manion, L., & Morrison, K. (2000). *Research methods in education* (5th ed.). London: Routledge Falmer.

Cotugna, N. & Vickery, C. (1998). Reverse mentoring: A twist to teaching technology. *Journal of the American Dietetic Association,* 98, (10), pp. 1166-1168.

Creswell, J.W. (2005). *Educational research: Planning, conducting and evaluating quantitative and qualitative research.* New Jersey: Pearson Education.

Eisenberger, R., Armeli, S., Rexwinkel, B., Lynch, P. and Rhoades, L. (2001) Reciprocation of Perceived Organizational Support. *Journal of Applied Psychology,* 86 , pp. 42-51.

Finkelstein, L. M., Allen, T. D. & Rhoton, L. A. (2003) An Examination of the Role of Age in Mentoring Relationships. *Groups & Organizational Management,* 28, pp. 249-281.

Freire, P. (1973). *Education for critical consciousness.* New York: Continuum.

Greengard, S. (2002). Moving forward with reverse mentoring. *Workforce,* 81, (1), p. 15.

Gonzales, C. & Thompson, V. (1998). Reciprocal Mentoring in Technology Use: Reflecting with a Literacy Educator. *Journal of Information technology for Teacher Education,* 7, (2 ), pp. 163-176.

Harvey, M., McIntyre, N., Thompson Heames, J., & Moeller, M. (2009). Mentoring global female managers in the global marketplace: traditional, reverse, and reciprocal mentoring. *The International Journal of Human Resource Management,* 20(6), pp. 1344-1361.

Higgins, M. C. & Kram, K. (2001) Reconceptualizing Mentoring at Work: A Developmental Network Perspective. *Academy of Management Review, 26* , pp. 264-288.

Johnson, Laurence F., Levine, Alan, & Smith, Rachel S. (2009). *2009 Horizon Report.* Austin, TX: The New Media Consortium.

Lankau, M. & Scandura, T. (2002). An Investigation of Personal Learning in Mentoring Relationships: Content, Antecedents, and Consequences. *Academy of Management Journal,* 45, pp. 779-790.

Leh, A.S.C. (2005). Lessons learned from service learning and reverse mentoring in faculty development: A case study in technology training. *Journal of Technology and Teacher Education*, 13, p. 25-41.

Morgan, W. & Streb, M. (2001). Building citizenship: How student voice in service learning develops civic values. *Social Science Quarterly*, 82, (1), pp.156-169.

Packard, B. W. (2004-2005). Mentoring and retention in college science: Reflections on the sophomore year. *Journal of College Student Retention (online), 6,* (3), pp. 289-300.

Payne, S. C. and Huff, A. H. (2005). A Longitudinal Examination of the Influence of Mentoring on Organizational Commitment and Turnover. *Academy of Management Journal, 48* , pp. 176-192.

Ragins, B. R. and Cotton, J. (1999). Mentor Functions and Outcomes: A Comparison of Men and Women in Formal and Informal Mentoring Relationships. *Journal of Applied Psychology*, 84, pp. 529-550.

The New Media Consortium. (2008). *Horizon Report. (2008).* California: Creative Commons

Twomey, L. (2008). *Education Workforce Initiatives*. Perth, W.A.: Government of Western Australia

**Authors:** Dr Lina Pelliccione. Email: l.pelliccione@curtin.edu.au
Dr Kathryn Dixon. Email: k.dixon@curtin.edu.au

**Please cite as:** Pelliccione, L. & Dixon, K. (2009). Building sustainable learning spaces with industry partners through reciprocal mentoring. In *Same places, different spaces. Proceedings ascilite Auckland 2009*. http://www.ascilite.org.au/conferences/auckland09/procs/pelliccioni.pdf