Assessing student engagement in cross campus work in learning: a teaching case in corporate network management

William Tibben
University of Wollongong, wjt@uow.edu.au

Shanmuga Sundram
INTI International College Subang, shanmugas.asamy@newinti.edu.my

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William Tibben
School of Computer Science and Information Technology
University of Wollongong
Wollongong NSW 2522
Email: wjt@uow.edu.au

Shanmuga Sundram
Faculty of Informatics
INTI International College Subang
Selengor, Malaysia
Email: shanmugas.asamy@newinti.edu.my

Abstract

Work integrated learning (WIL) activities aim to improve future employability of graduates. Increasing internationalisation of information technology professions suggests the need for cross cultural experiences to be included within WIL in Information Systems subjects. The paper reports on one such WIL activity carried out in cross campus group work exercise between students in Australia and Malaysia undertaking a Bachelor of Information Technology (BIT) degree at the University of Wollongong and partner institution INTI International College, Subang, Malaysia. The focus of the paper is on student engagement to ascertain whether students perceive value in this kind of learning activity. It is recognised that situated learning such as those that occur in WIL rely on positive student engagement in order for learning outcomes to be achieved.

Keywords Work in learning, problem based learning, internationalisation, assessment, student engagement

1   Introduction

Australian universities have been at the vanguard of the internalisation of education delivery through out the Asia Pacific. One example of this is the partnership between the University of Wollongong (UOW) and INTI International College, Subang, Malaysia. This partnership presents opportunities to improve student engagement with both curriculum and other students of diverse backgrounds. This paper describes one initiative that was aimed to enrich the learning experience of students through a cross-campus work integrated learning (WIL) activity.

WIL can be seen as a more recent incarnation of earlier initiatives in project-base learning (Ferns and Zegward, 2014; Mann, 1987). Both aim to present students with real world problem scenarios that ultimately aim to develop skills that improve the employability of graduates in the labour market (Archer and Davison, 2008). The reality for many graduates is that labour markets are increasingly international where competition for jobs comes from people whose origins are from overseas and, once employed, cooperation is required in teams with such people. This is particularly true for Information Systems (IS) graduates who make up a large proportion of graduates moving into the internationalised information technology (IT) field (Biao, 2007).

The teaching case described in this paper investigates a WIL activity that has a strong international flavour. The activity was delivered to both UOW and INTI students undertaking the subject ISIT302 Network Management as part of the University of Wollongong's (UOW) Bachelor of Information Technology (BIT) degree. The combining of cohorts for this activity was possible because the subject was delivered at the same time at both campuses even though lectures and other assessments items were coordinated separately by local academics. Groups were formed by respective subject coordinators to ensure groups were made up of students from both cohorts. They were required to use social media technologies and document management as well as UOW online learning tools (video conferencing, Moodle and Adobe Connect) to produce a report and a presentation as a team.

Along with online technologies another crucial element to this activity was the Employer Program at INTI International College. The Employer Program has been in existence for a number of years and has effectively served the needs of locally delivered subjects in Subang. Malaysia is the home to many multinational IT companies as reflected in the participation of names such as such as IBM in the cross campus exercises described here. These companies make available an experienced and senior member of their staff to develop a problem scenario, provide feedback and ultimately assist in the assessment of students' work. Its use here in ISIT302 as part of the delivery of UOW degrees at Subang was a debut. Wollongong-campus UOW students were indeed fortunate to be able to gain access to these industry professionals.

Assessment in WIL is notoriously difficult (Hodges, et al. 2014). In as much as outcomes are often focused on the product that is created by students, most educators agree that the process of learning is of critical importance in designing WIL activities. Hence, assessing the efficacy of the WIL activity in ISIT302 presented a number of challenges. Given the personal and situated nature of WIL activities ensuring student engagement in WIL activities is recognised as one essential element in achieving desired learning outcomes (Ferns and Zegward, 2014; Billet, 1994). To that end, this paper focuses on the steps that were taken to support as well as assess student engagement.

The paper begins with a brief review of relevant literature. It then moves on to describe in more detail the teaching case, particularly the steps that were taken to support student engagement during the activity. Results from student surveys are then represented and discussed.

2   Literature Review

There is a rich literature that supports the use of WIL activities by university graduate courses (Archer et al. 2008; Coll et al. 2011). This is particularly true for Information Systems graduates who are expected to not only possess managerial knowledge when graduating but also practical skills in the operation of computers and software (Brown, et al. 1989; Topi, et al. 2010). The focus of WIL activities are real world problem scenarios that exercise the mind in ways that more traditional areas of learning in university general are not able to.

Despite the benefits of WIL, the need to assess such activities present challenges (Hodges et al. 2014). WIL proponents claim that the formatives processes that have typically been viewed as leading up to summative assessments - that is, reports, essays or software artefacts - are actually more important in assessing desired learning outcomes in WIL (Cai, 2012). The reasons why *process* trumps *product* in WIL stems from a need to account for the diversity in students' learning. Learner differences have

traditionally been understood as differences in 'ability', a fixed cognitive characteristic of students (Scarion and Liddicoat, 2009). Diversity in learning approaches focuses on 'capability' with an eye to prospective learning in the work place (as opposed to past learning in class) (Ferns and Zegward, 2014). Hence, WIL exercises are considered as one important way to scaffold future employability (Scarion and Liddicoat, 2009).

WIL can be seen as an extension of earlier efforts in problem-based learning (PBL). PBL seeks to account for 'how' student learn as well as 'what' they learn "(Mann, 1987). Using 'asking' methodologies known as phenomenography PBL seeks to build on the ideas of personal construct psychology, allowing the learner to create their own constructs and meanings in describing their learning (Kelly, 1955). The PBL activity aims to build students' knowledge from basics to accepting real-world challenges. Bloom's (1964) three domains of learning: cognitive (knowing); conative (doing); affective (feeling) and the principle of Argyris and Schon's (1978) single (generalization; testing; experience; reflection) and double-loop learning (paradigm shift; emergent knowing; new understanding) are the phases of learning that allows students to adapt from basics to advanced level of knowledge. The common learning outcomes that are traced in all the PBL concepts mentioned above are (i) creating new knowledge; (ii) gaining new understanding of subject matter; (iii) being critical in knowledge base; (iv) maintaining knowledge retention for real-world use; and (v) life-long recollection of knowledge.

One significant development that distinguishes WIL activities from earlier PBL efforts has been the increasing use of social media technologies along with BYOD devices. Advances in education practice share a symbiotic relationship with technological developments (Finger et al., 2007; Fox et al., 2006). The accessibility of these technologies provides increased communication and collaborative capabilities between students over geographical distances.

WIL education practice along with the increased sophistication of technologies provided the impetus to the cross campus work integrated learning activity in ISIT302 Corporate Network Management. The simultaneous delivery of the same subject at the Wollongong campus of UOW and INTI provided an opportunity for the group based assessment item to be combined using both cohorts (all other assessment items such as the essay, quizzes and exam were managed in their respective locations). The final piece to this arrangement was the INTI Employer Project which has a stable of local employers willing to set problem scenarios as well as provide assessment support.

Given the complexity of these interactions steps taken to assess the outcomes of this exercise began with testing student engagement. Student engagement is considered an essential element to work integrated learning given the emphasis on diversity of learning. The next section will describe the steps that were taken to support students through the structured elements of the activity which provided key opportunities for students to engage with employer representative as well as each other.

The focus of this paper is best described by the research question: "to what extent did cross campus group work in ISIT302 engage students in a positive WIL experience". A qualitative research approach is adopted in this research called phenomenography (Akerlind, 2005). Phenomenography lies within an interpretivist paradigm and investigates the different ways people experience events and episodes in their lives. For that reason it is common to educational research (Akerlind, 2005).

3   Teaching Case Description

3.1   Subject Details

The subject ISIT302 Corporate Network Management contributes to the Network Design and Management major in UOW's Bachelor of Information technology. The subject aims to provide students with a knowledge of network management models that enable "the management of: physical components, staff in a network centre, network configuration, user accounts, network performance, security, faults and disasters" (ISIT302 Subject Description). Major assessment items include laboratory exercises (individual-15%), essay (individual-10%), ITIL research (group-10%), major project (25%-group) and exam (40%-individual). Both group activities were carried out by cross campus groups. The ITIL research exercise was primarily aimed as an ice-breaker exercise in preparation for the major project. (Inequality in cohort sizes meant that some groups were comprised of students solely from Wollongong campus).

Groups were formed by endeavouring to achieve groups made up of three Wollongong campus students and two INTI campus students. Previous marks in other subjects in the major were used to ensure students of similar achievements were grouped together. The numbers of students who

participated in the cross campus group work exercise was 23 (Wollongong campus) and 20 (INTI campus).

These groups were created on the eLearning site which was used to create group specific forums. An introductory message containing the details of group members including their UOW email address was posted by the UOW subject coordinator. Students were then directed to the relevant part of the eLearning site called Team Communications to make contact with their team members (see Figure 1).

The first exercise required students to research aspects of the Information Technology Infrastructure Library (ITIL) in order to not only gain familiarity with the ITIL as an industry standard but to establish lines of communications with group members. Students were given free reign to choose how they would communicate. This assessment item was due in Week 7

In parallel time the major project was introduced to both student cohorts using video conferencing. As indicated in Table 1, the first session consisted of an introductory session where the aims of the Employer Program were explained by program leader Jess Tinawin. It can be seen from Table 1 that a considerable amount of preparation work had already occurred in the lead up to the first session with students in Week 2.[1]

In the following week, the representative from the employer outlined the nature of the problem that students were required to address. Opportunities were given to students in both sessions to ask questions from the presenters. In 2014, the employer chosen to contribute to ISIT302 was IBM Malaysia. Tan Chin Bin, Infrastructure Services Consultant for IBM took responsibility for defining the problem, providing feedback to students as well as assessing final presentations.

The problem scenario is outlined in Box 1.

Three months after all 6 subsidiaries have successful migrated their systems to ABC Private Cloud, strange problem occurred. The network allocated to Subsidiary A seems to get into intermittent disruptions. When problem was detected by the users of Subsidiary A, they reported to Company ABC's Service Desk. After the IP addresses of the servers affected had been reset, the service was restored. However, similar disruption will happen again after a while. This had been repeated over days. As the problem can be resolved by resetting the IP addresses, the Service Desk agents decided not to create any incident records as they think it was a nuisance. The GCIO had not been notified on the interruptions. During a monthly operations meeting amongst the Chief Executive Officers (CEO), the CEO of Subsidiary A raised his un-satisfaction caused by the interruptions. The GCIO was tasked to investigate this. When instructed, the Network Specialist did an analysis. He realized that the only change made recently was the application developer had made a change to the production application for Subsidiary D to cater for Goods and Service Tax (GST). After the application change had been reverted, the problem has disappeared.

Box 1. IBM problem scenario.

The brief given to students was as follows: "The [student] project team is expected to produce an ITIL Service Operation documentation proposal for further analysis and evaluation by IBM Consultants."

The next slated combined session for students in Week 7 was aimed at enabling them to have the employer representative answer questions. In the meantime students were required to discuss the problem and generate questions which were placed on a forum devoted to the his purpose on the eLearning system. (Week 7 was also the due date for the icebreaker ITIL research exercise).

In terms of defining remaining time points, it can be seen that students were required to submit their 2500 word report in Week 12 and deliver their 15 minutes presentations (using video conferencing) in Week 13. The aim for students was to development a concise presentation that contained info graphics.

3.2 Project Administration

The authors made sure that students use a common learning platform (Moodle) to collaborate in discussion forums. This learning platform (see Figure 1) is also used for official collaboration tool between the teaching teams and the students.

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[1] For convenience, the Wollongong campus session times are used. INTI Subang session times do not coincide with Wollongong campus.

Step 1	Employer Relation (ER) Office source for Industry projects from the partner companies
Step 2	ER Office share the projects with the Deans
Step 3	Deans share the projects with the respective faculty
Step 4	If suitable, the lecturer concerned maps the course learning outcome to company's problem statement
Step 5	Project Proposal is sent to ER Office
Step 6	ER Office gets the endorsement from the company
Step 7	Lecturer prepares the Requirements Specification Document (RSD) and send to ER Office
Step 8	ER Office arrange conducts prep session with the students
Step 9	ER Office together with the lecturer plan for few important dates #(Project Kick-off date, Mid-checkpoint Review date, and the Final Presentation date) for managing the project
Step 10	Appropriate representative from the company will attend all the meetings as per the agreed dates.
Step 11	ER Office is directly involved in all the dates mentioned and take photos for documentation
Step 12	ER prep Session for students using video conference (UOW Week 2)
Step 13	UOW Week 3 Kick-off: This is done using video conference. Employer representative is invited to explain their company and their project requirements
Step 14	UOW Week 7 Mid-checkpoint: employer representative responds to students questions posted on eLearning forum. This is carried out using a video conferencing session with both cohorts
Step 15	UOW Week 12: written report due
Step 16	UOW Week 13: students presentation delivered using video conference system

Table 1: Employer Project Work Flow

3.3 Student Support

It can be seen from Table 1 above steps were taken to support student learning. For example it can be seen that steps were taken to introduce concepts and outline expectations in a staged manner in Week 2, Week 3 and Week 7. Further support to students can be seen in the alignment between the ice breaker ITIL exercise and the problem statement delivered to students by IBM representative which also focussed on the ITIL framework.

In order to provide students with support during the group work exercise, they were required to provide feedback on their groups progress using a two short survey on the eLearning System (titled Progress Report - see Figure 1). Students were request to answer the following questions.

- In the past week, my team: worked enough; worked some, but not enough; did not communicate

- My team: exceeded this weeks, goals; achieved all of this weeks goals ; fell short of this week's goals

- Our team is: functioning well; functioning well but needs improvement; is not functioning.

- Please list the name(s) of group members who did not participate.

Students were also encouraged to communicate with subject coordinators directly if they held concerns about the progress of their project. On occasions, names were swapped between the subject

coordinators to follow up on students who failed to respond to messages. As with most instances, unexpected events can prevent students from fully participating in assessment activities – these were handled as outlined by normal UOW academic consideration procedures.
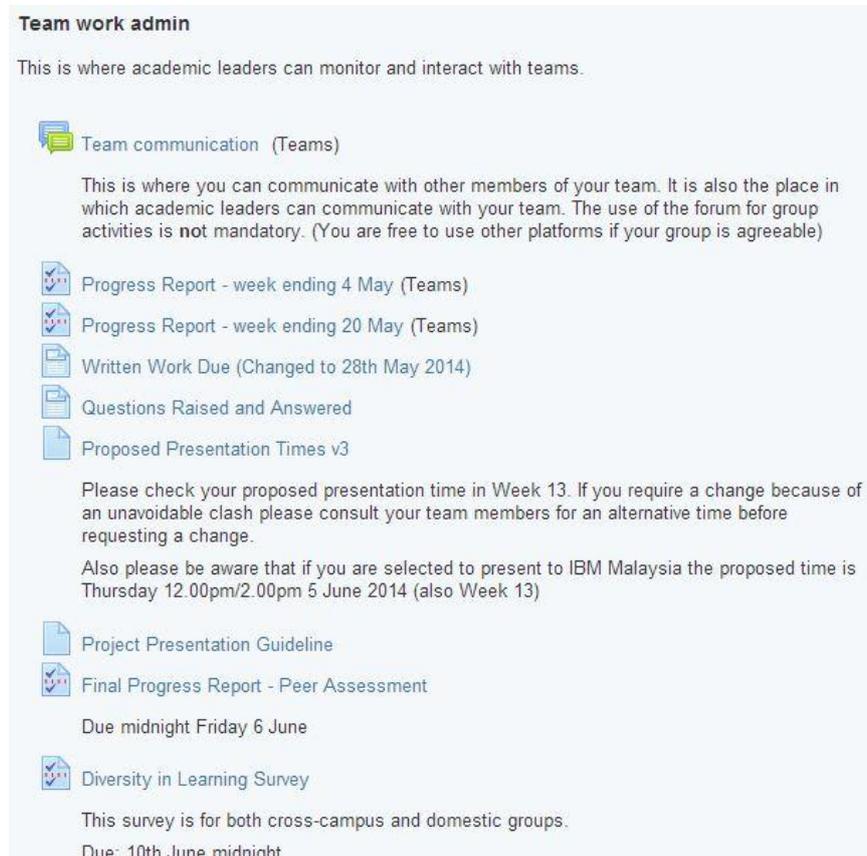
Team work admin

This is where academic leaders can monitor and interact with teams.

Team communication (Teams)

This is where you can communicate with other members of your team. It is also the place in which academic leaders can communicate with your team. The use of the forum for group activities is **no**t mandatory. (You are free to use other platforms if your group is agreeable)

Progress Report - week ending 4 May (Teams)

Progress Report - week ending 20 May (Teams)

Written Work Due (Changed to 28th May 2014)

Questions Raised and Answered

Proposed Presentation Times v3

Please check your proposed presentation time in Week 13. If you require a change because of an unavoidable clash please consult your team members for an alternative time before requesting a change.

Also please be aware that if you are selected to present to IBM Malaysia the proposed time is Thursday 12.00pm/2.00pm 5 June 2014 (also Week 13)

Project Presentation Guideline

Final Progress Report - Peer Assessment

Due midnight Friday 6 June

Diversity in Learning Survey

This survey is for both cross-campus and domestic groups.
Due: 10th June midnight

Figure 1: Moodle Admin Section

4   Assessing student engagement

One aspect to assessing student engagement was during the session when students were asked to report on the internal team machinations (see Progress Report in Figure 1). Figures 2, 3 and 4 indicate the extent to which students were able to maintain adequate commitment to their team exercise.
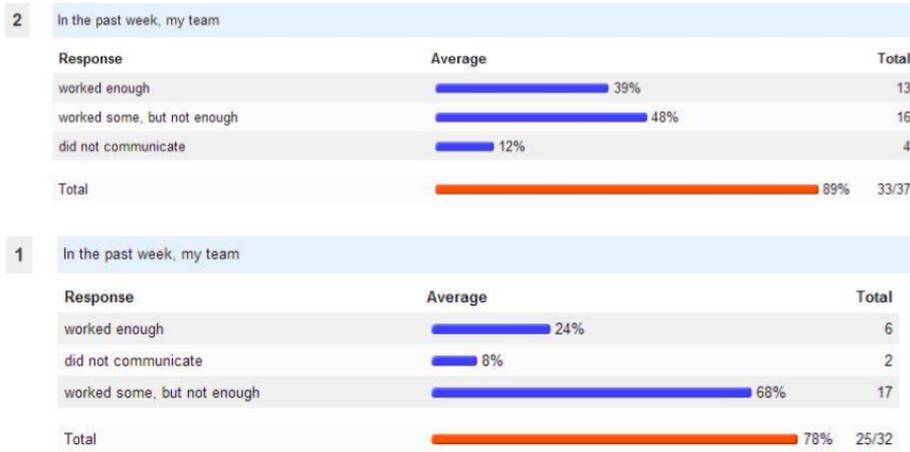
2 In the past week, my team

Response	Average	Total
worked enough	39%	13
worked some, but not enough	48%	16
did not communicate	12%	4
Total	89%	33/37

1 In the past week, my team

Response	Average	Total
worked enough	24%	6
did not communicate	8%	2
worked some, but not enough	68%	17
Total	78%	25/32

Figure 2: Progress Reports – work ethic

3 My team

Response	Average	Total
exceeded this week's goals	24%	7
achieved all of our goals	41%	12
fell short of this week's goals	34%	10
Total	78%	29/37

2 My team

Response	Average	Total
fell short of this week's goals	55%	12
exceeded this week's goals	5%	1
achieved all of our goals	41%	9
Total	69%	22/32

Figure 3: Progress Reports – weekly goals

4 Our team

Response	Average	Total
is functioning well	42%	15
is functioning, but needs improvements	56%	20
is not functioning	3%	1
Total	97%	36/37

3 Our team

Response	Average	Total
is functioning well	24%	6
is functioning, but needs improvements	64%	16
is not functioning	12%	3
Total	78%	25/32

Figure 4: Progress Reports – team function

The progress reports provided valuable information that enabled both subject coordinators to identify groups that were having problems. It can be seen that indications of poor student engagement (absent did not communicate - Figure 2 and not functioning – Figure 4) was low (12% 8% and 3% 12% respectively). Hence it can be assumed that engagement was very high (85%+). In relation to achieving goals it can be seen that students found the WIL activity challenging. This is indicated by the rising percentage of students who reported that they had not fully achieved their weekly goals (34% and 55% respectively in Figure 3).

At the conclusion of the cross campus WIL exercise students were asked to participate in a survey asking them to reflect on their engagement with the cross campus WIL exercise. Firstly, students were asked to indicate engagement in relation to technologies when they were asked nominate the mediums they used to collaborate with each other. Although Moodle was the official source of communication and information dissemination between subject coordinators and students, it was also available for intra-group communication. However, based on the 60% of the students participated in the survey, generally opted for other means. Figure 5 indicates the varied use of social media technologies.
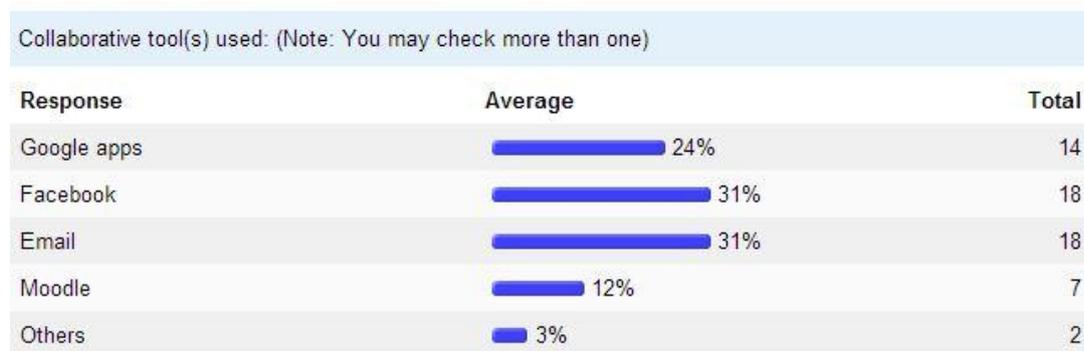
Collaborative tool(s) used: (Note: You may check more than one)		
Response	Average	Total
Google apps	24%	14
Facebook	31%	18
Email	31%	18
Moodle	12%	7
Others	3%	2

Figure 5 – Survey results - technologies

It can be seen that active take up of social media technologies in preference to the communication facilities in eLearning provided students with opportunities to communicate in ways that suited their individual circumstances. In open feedback, one student stated that "*students over UOW [Wollongong campus] prefer using mails or skype as a form of communication but here [INTI], we prefer Facebook. However, they were more adaptable and were more willing to adapt to our choice of communication and it worked wonders after that*".

Through the survey, which 80% of the Students from INTI Subang and the remaining 20% from UOW indicated their agreement to a number of statement that were aimed to measure the nature of their engagement the WIL exercise at a more personal level. (1-stongly agree, 2 – agree, 3 neutral, 4-disagree; 5-strongly disagree). It can be seen in questions, iv., v., vi., and viii. in Figure 6 that there was a bias to more positive responses when considering engagement. 54% agreed that "they are able to lean more through cross-campus groups". 77% agree that "they feel comfortable sharing their perspective and experiences in the employer project". 57% agree that " they enjoy working with cross-campus peers". Brief perusal of the other questions indicate that many students were challenged by the need to re-consider one's own opinion. Even so, the feedback from students was positive as indicated in the following response. One student remarked: "*It's a new experience compared to the normal UOW project which we might not be sure of the solutions that are recommended, might or might not be feasible and it might be outdated. … With guidance from someone who is actually working in the field we are able to gain new knowledge that the current market is using*".

Responses	1	2	3	4	5	Total
x. I don't like differences and opinions and I like my way.	0	6 (23%)	10 (38%)	7 (27%)	3 (12%)	26
v. I am able to learn more through the cross-campus groups.	5 (19%)	9 (35%)	3 (12%)	2 (8%)	7 (27%)	26
i. It is hard to accept to points of view that challenge my values.	3 (12%)	8 (31%)	9 (35%)	3 (12%)	3 (12%)	26
iv. I feel comfortable sharing my own perspectives and experiences in this project.	9 (35%)	11 (42%)	4 (15%)	1 (4%)	1 (4%)	26
viii. I don't feel comfortable to work in this kind of cross-campus project.	5 (19%)	6 (23%)	8 (31%)	2 (8%)	5 (19%)	26
ix. I am willing to adapt differences in thoughts and work on improvements.	8 (31%)	15 (58%)	1 (4%)	0	2 (8%)	26
vi. I enjoy working with my cross-campus peers	4 (15%)	11 (42%)	3 (12%)	3 (12%)	5 (19%)	26
vii. I feel like I have to work harder than other students to be perceived as a good student.	4 (15%)	10 (38%)	9 (35%)	2 (8%)	1 (4%)	26
ii. I always listen to my peers	8 (31%)	14 (54%)	1 (4%)	1 (4%)	2 (8%)	26
iii. I would rather hear a person's conflicting view than have them remain silent	8 (31%)	10 (38%)	5 (19%)	2 (8%)	1 (4%)	26

(1: Strongly Agree, 2: Agree, 3: Disagree, 4: Strongly Disagree, 5: Not Applicable)

Figure 6: Survey results – student perceptions

5   Discussion

Given the challenges of properly assessing the outcomes of WIL activities the aims of this paper are modest. The issue of student engagement is regarded as the first requirements of WIL activities and this is what the paper has endeavoured to address.

It can be seen from both progress reports and final surveys that students demonstrated positive engagement with the WIL activity. While the progress reports suggested that the process was not easy, final surveys suggested that students, on reflection, were pleased with their efforts and found the activity over all an enjoyable one. This was obvious to subject coordinators when students were interacting just prior to their presentation where there casual banter between students suggesting that they had formed friendly bonds over that period.

Students may feel some anxiety about moving out into the professional world beyond university. This was apparent in the serious way students approached the exercise where Prezi software was used to create a high quality presentations as well as taking advice of Employer Project manager Jess Tinawin delivered in the Prep Session (Step 12 in Table 1) to "look good and smell good!". One student spoke of her positive experience as being related to her increased sense of confidence *"We are able to know what is going on in the technological world and at least know what is expected of us [as] networking students to know adequate knowledge"*. Ferns and Zegward (2014) identify the importance of the employer representative (workplace supervisor) to give students this sense of professional standing. The vetting of suitable employer opportunities is indeed a necessary and critical aspect to the success of WIL activities that INTI undertakes

Not all students were necessarily happy. Some students did not participate to their full extent leaving others to pick up the missing parts. In some cases students had suffered unavoidable disruptions to their personal circumstances which were addressed as per normal academic consideration procedures. In one case a student refused to communicate with his group mates using Facebook on the basis that he did not have an account. Communication was constrained as a consequence as messages from, and to, him needed to relayed by UOW's student email service

The internationalisation aspect of the WIL activity was notable for the time zone difference and other logistical problems. Another student noted *"there were also times that we were actually struggling to have our group discussions done when necessary due to different time zones from both sides"*. It can be seen here that the process of working together is indeed a critical aspect to student learning along with the final product (Ferns and Zegward, 2014). In recognition of this, the requirements of the 2500 word report were not onerous.

Gaining consensus in developing marking criteria for written work and presentations was not straightforward. Given the limited time of the Employer Representative as well as unfamiliarity with teaching and learning assessments it was sometimes difficult to give students a definitive idea of what was actually required from them. This normally would be considered as an undesirable outcome in

that most university assessment work requires defined learning outcomes supported by evidence. The uncertainty in learning criteria was presented to students as another aspect of the real world experience of work after university but clearly represents an area for further research to better define the attributes of learning that occurs when students interact with each other as they seek to develop solutions to real world problems. The use of ePortfolios represents one possible avenue by which this can be further explored.

6 Conclusion

This paper took tentative steps to provide an initial assessment of a novel cross campus group work WIL activity between UOW in Australia and INTI College in Malaysia. The use of phenomenography as a research method seeks to record the experience of students in order to assess their engagement with the activity. In summary, it can be concluded the cross campus work in learning exercise conducted by UOW and INTI in the subject ISIT302 Corporate Network management was successful in engaging students in a positive manner. In consideration of future research, the need to better assess process emerges from the analysis. The use of eProtfolios is suggested as a method by which this process can be tracked.

7 References

Åkerlind, G. 2005. Variation and commonality in phenomenographic research methods. *Higher Education Research & Development*, 24(4), pp. 321-334.

Archer, W., and Davison, J. 2008 *Graduate employability: What do employers think and want?* London: The Council for Industry and Higher Education

Argyris, C. And Schon, D., 1978 *Organisational Learning: A Theory of Action Perspective*, Mass. : Addison-Wesley.

Biao, X. 2007 *Global "body shopping": an Indian labor system in the information technology industry*, Princeton, NJ: Princeton University Press

Billett, S. 1994 "Situated Learning: A workplace experience" *Australian Journal of Adult and Community Education*, 34:2, pp 112-130

Bloom, B.S., (Ed), 1964 *Taxonomy of Educational Objectives, Vol, II, Affective Domain*. New York: McKay.

Brown, J. S., Collins, A., & Duguid, P. 1989 "Situated cognition and the culture of learning." *Educational Researcher*, 18:1, pp 32 – 42

Cai, Y. 2012 "Graduate employability: A conceptual framework for understanding employers perceptions" *Higher Education*, 65:4, pp 457-469

Coll, R.K., and Zegward, K. E. (eds), 2011 *International handbook for cooperative and work-integrated education: International perspectives of theory, research and practice*, (2nd ed.) Lowell, MA: World Association for Cooperative Education.

Ferns, S., and Zegward, K. E. 2014 "Critical assessment issues in work integrated learning" *Asia-Pacific Journal of Cooperative Education*, 15:3, pp 179-188

Finger, G., Russell, G., Jamieson-Proctor, R., & Russell, N., 2007. *Transforming learning with ICT: making IT happen*. Sydney, N.S.W.: Pearson Education Australia.

Fox, R., & Trinidad, S. (2006). Frameworks for improving technology enhanced learning. In Tsang, P., Kwan, R. & Fox, R. (Ed.), *Enhancing Learning Through Technology* (pp. 68-81). Hackensack, New Jersey: World Scientific, pp. 68-81.

Hodges, D. E, Eames, C., and and Coll, R. K. 2014 'Theoretical perspectives on assessment in cooperative education placements' *Asia-Pacific Journal of Cooperative Education* 15:3, pp 189-207

Kelly, G. 1955 *The Psychology of Personal Constructs*, New York: Norton.

Mann, S., 1987 *Knowing ourselves as learners and researchers*. In John T.E. Richardson et al. (Eds), Student Learning. London: SRHE Open University Press.

Scarino, A., and Liddicoat, A. J. 2009 *Teaching and Learning Languages: A Guide,* Canberra: Australian Government Department of Education, Employment and Workplace Relations.

Topi, H., Valacich, J. S., Wright, R. T, Kaiser, K. M., Nunamaker, Jr. J. F., Sipior, J. C., and de Vreede, G. J. 2010 *IS 2010: Curriculum Guidelines for Undergraduate Degree Programs in Information Systems*, Association for Computing Machinery (ACM) and Association for Information Systems (AIS).

Acknowledgements

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